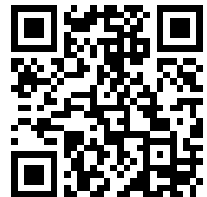


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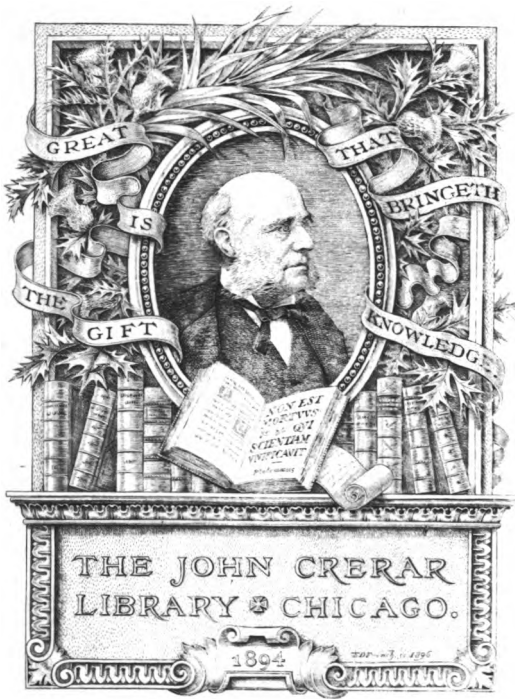
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# Motor Car Upholstering



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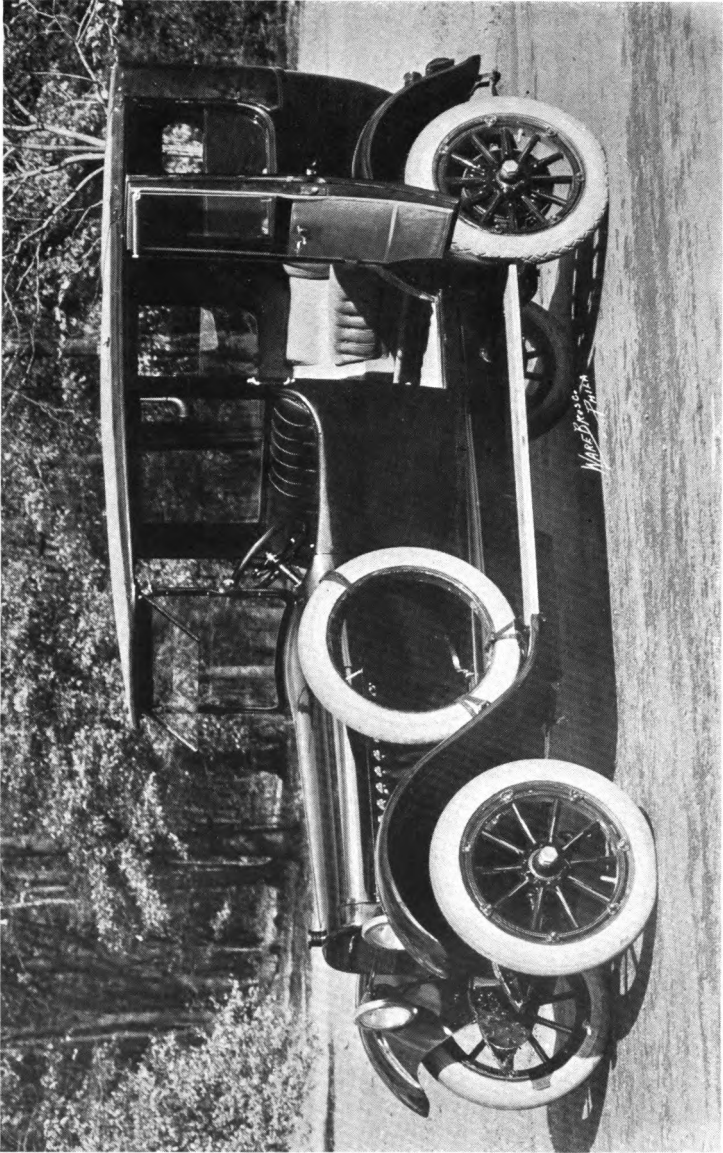






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1940



**LIMOUSINE-LANDAULET (Chalmers)**

Deep, rich colorings give the finish of this car its superior tone. The elegant fabrics and good taste of the interior create an air of luxury and comfort.

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# MOTOR CAR UPHOLSTERING

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A plainly written book on the  
fundamentals of

## MOTOR CAR TRIMMING and UPHOLSTERING



Published by  
THE HIRST-ROGER COMPANY  
Carpet Manufacturers  
PHILADELPHIA, U. S. A.

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# MOTOR CAR UPHOLSTERING

## CONTENTS

### CHAPTER I.

The Young Man's Choice of an Occupation.—The Trimmer's Trade for Ambitious Young Men.—Looking Into the Future.—Light, Pleasant, Constructive Work.—Advantages of a Good Education.—This Book Teaches Correct Principles.....Page 11

### CHAPTER II.

Getting Acquainted with the Shop.—How Patterns Are Filed.—Requisition Blanks and Time Cards.—Tools Used in the Trimming Department.—Tools Used by the Individual Workman.—The Different Types of Bodies.—Principal Elements of Trimming.—Mountings and Accessories.....Page 15

### CHAPTER III.

Motor Car Upholstery Materials.—Seat and Cushion Springs.—Cushion Filling Materials.—Tacks and Their Uses.—Buckram.—Cleaning Upholstery Materials.—Automobile Carpets.....Page 31

### CHAPTER IV.

Laying Out the Work.—The Different Styles of Trimming.—Fitting and Making Cushion Spring Patterns.—Making Patterns for the Back Springs.—The Cushion Spring.—Methods of Fitting Doors.—Cushion Foundations, French Plait Style.—Foundation for the Backs.—Outer Coverings, French Plait Style.....Page 41

### CHAPTER V.

Covering Backs and Cushions.—Hanging the Back.—One-Piece Trimming, Door to Door.—Top Making.—Setting Bows and Trimming the Top.—Method of Top Trimming.—Some Incentives to Good Work.—Individual vs. Quantity Production.....Page 55

### CHAPTER VI.

Tufted Work and Its Characteristics.—Diamond Tufted Work.—Fullness Allowances in Tufted Work.—Making Pattern for Cushion and Laying Out Pattern for Diamond Tufting.—The Diamond and Half-Diamond.—Layout of the Two-Diamond Style.—Making Up the Cushion Top.—Attaching Cushion Top to Spring.—Providing Good Ventilation.....Page 63

# MOTOR CAR UPHOLSTERING

## CHAPTER VII.

Laying Out and Making Up a Diamond Seat Back.—The Different Varieties of Diamond Tufting.—Sensible Spring Construction.....Page 73

## CHAPTER VIII.

The Negligee and Plain Styles.....Page 79

## CHAPTER IX.

Fitting and Making Head Lining.—Finishing Around Front, Back and Sides.—Upper Quarters of a Limousine.—Making Patterns, Cutting Cloth and Materials.—Upholstered Arm Rests.—Making Door Checks.—Covering Robe Rails.—Touring Car Doors..Page 83

## CHAPTER X.

Front Seat Trimming, Plain Work.—Making Front Back in the Plain Style.....Page 89

## CHAPTER XI.

Some Notes on Slip Covers.—Use of Templates on Quantity Work.....Page 93

## CHAPTER XII

Trimming Cape Top for Touring Car.—Setting the Bows on a Touring Car Top.—Making Patterns for Duplication.....Page 97

## CHAPTER XIII.

An Economical Spring Cushion.—Notes on Repair Work.  
Page 101

## CHAPTER XIV.

Complete Trimming of a Typical Enclosed Car.—Advantages of a Sedan Body.—An Opportunity for the Trimmer's Skill.—Making the Cushion Spring Patterns.—The Back Springs.—Building Up the Backs.—Covering the Backs.—Head Lining, Quarters, and Above Belt Line.—Trimming the Quarters.—Carpet Covers the Entire Floor.....Page 105

## CHAPTER XV.

Fitting Up a Custom Trim Shop.—Good Light Essential.—The Proper Care of Stock and Materials.—“A Place for Everything.”  
Page 119

## CHAPTER XVI.

Upholstery Repairs and How to Make Them.—Cushions and Tops.—Curtain Lights.—New Side Quarters.—New Carpets Improve the Appearance.—Thorough Cleaning.—Importance of Careful Estimating.....Page 123

## CHAPTER XVII.

Curtains for a Six-Post Commercial Body.—Trimming Work on a Motor Van.—Repairing a Truck Cushion.—Storm Front with Searchlight Opening.—A Useful Truck Windshield.—Making a Soft Edge Cushion.....Page 129  
Carpets and Carpet Manufacture.....Page 150  
How Hirst-Roger Automobile Carpets Are Made.....Page 162  
COMPLETE INDEX.....Page 177

## Introduction

It should be impressed upon the reader of this book that the purpose of these chapters is to cover that which a thorough mechanic should know about the trimming or upholstering of modern automobiles.

In years gone by a young man served an apprenticeship covering a number of years, during which time he was taught his trade thoroughly and in all its branches.

Today, however, apprenticeships for a trade are not common—each operator becomes a cog in the wheel, so to speak. He is taught but one part of the trade, in other words he specializes, and is given little opportunity for learning the trade in its entirety.

By diligent study and close application, however, the student with the aid of these articles will be assisted wonderfully and become more familiar with the technical and artistic requirements of the all-round trimmer.

And it is well to remember that only those with all round knowledge of the business are considered when there is a vacancy for a trim shop foreman or superintendent.

Vehicle trimming is thoroughly different from any other trade or vocation. It is indeed a valuable art when learned, but very hard to teach, for the reason that it is almost impossible to say where to start. It is unlike other trades inasmuch as there are no set rules or formulas to be followed—no direct lines of application.

The knowledge has been gained altogether at the bench in the shop, and the "rule of thumb" has held sway. For

## MOTOR CAR UPHOLSTERING

that reason there have been so many ways of accomplishing the same results.

A shop under the supervision of one man has been accustomed to do certain things one way and in another shop an entirely different method is followed.

It seems to be a trade which has been "handed down" from one generation to another, and the characteristics of the man in charge of the shop are often his by right of inheritance.

However, the laying out of automobile upholstery fundamentally rests upon the individual. Rules of proportion, beauty of design, comfort and adaptability to the particular job are the basis on which a trimmer has to work. The trimmer's own experience and the experience of others from whom he takes advice, are his chief guides.

As they are presented, we shall try to make the various problems as clear and distinct as is possible, but the reader must remember that this work is only a text book for the proper studying of methods, and that the student will be called upon to use his own brain in adapting these methods to the work in hand.

To be a successful designer and trimmer one must be the possessor of a creative imagination. When he stands before a new job getting his instructions, his mind must be working and presenting to him a mental picture of the completed job. In no other way can a trimmer become successful as a designer. And this ability is brought about only by hard study and work. Neatness, comfort and durability are essentials of all trimming and upholstery work, and it is experience alone that teaches how to obtain these qualities in your performances.

**CHAPTER I**

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**The Young Man's Choice of an Occupation**

For any young man starting to work, his most serious thought should be upon the question of his future. He should, just as soon as possible, determine for himself what line of work he desires to follow. Having decided what that work is, he must bend every effort to become thoroughly proficient.

The learning of any trade is not solely a question of putting in so many hours each day for a certain period. In addition, it means the hard study of text books, and close observation, not only of what takes place in the shop in which he may be employed, but of the products of his trade, emanating from other establishments, wherever and whenever the opportunity presents itself.

As Sir Joshua Reynolds, the famous painter, said: "The more extensive your acquaintance is with the work of those who have excelled, the more extensive will be your own powers of invention; and what may appear still more like a paradox, the more original will be your conceptions."

**The Trimmer's Trade for Ambitious Young Men**

For the development of a successful automobile trimmer, the most essential requisite is that of neatness. Any one learning the art of trimming must develop first of all an attitude of neatness at all times, both personally and in his work. Cleanliness is a "side partner" of neatness where trimming is concerned.

The surest sign of a capable mechanic is his personal appearance, and the condition of his tools, bench and the

## MOTOR CAR UPHOLSTERING

work around him. This is particularly true of a trimmer. The cost of materials used and the character of the work demand that these essentials must be a characteristic of the apprentice trimmer.

In connection with this subject we might call the attention of master mechanics and supervisors to the effect that environment has upon an apprentice. If master mechanics would just consider for a moment what lasting impressions had been made upon themselves by certain happenings during their own apprenticeships, influencing them for better or for worse, how much more careful they would be, when apprentices are around, both as to what they say and do.

The condition of the shop, its appearance, system for filing and tabulating patterns, care of materials, personal appearance, condition of tools and benches, topics of conversations, etc.—all affect the present and future progress of the new recruit. The impressions gained by an apprentice are either good or bad, and are lasting. Let us make them for the best.

### **Looking Into the Future**

In considering the advisability of adopting vehicle trimming for a trade, the boy of today should look into the future. The general utility of an automobile, its value for the increase of efficiency, has been proven. As a means of pleasure, nothing has ever equaled it, and, with the great war now happily behind us, the automobile industry will go forward by leaps and bounds.

The prospects for the future are most encouraging. The demand for capable trimmers will be greater than ever and the remuneration will be such as to place the vast army of trimmers on the highest plane of successful mechanics, enjoying most of the good things of life. There is every indication that this will prove true and there is every reason why the lad about to enter upon an apprenticeship should carefully consider the art of vehicle trimming before deciding upon a trade or profession.

# MOTOR CAR UPHOLSTERING

## **Light, Pleasant, Constructive Work**

Vehicle trimming is light, pleasant and constructive work. By this we mean that regardless of the type of car being trimmed, there is nothing laborious about the work, whether it be the finest limousine or a cab for the heaviest truck. It is pleasant because of the variety in types, styles and materials used; constructive because you witness such a vast change in the body as it comes to the trimming department, compared with what it is when completed.

It is always a source of great satisfaction to a trimmer to watch the development of the trimming of a job. It is a real pleasure to see it develop into a work of art, over which the intending purchaser is going to be elated. He is proud that he owns the beautiful work. You are proud because you created it.

The vehicle trimming trade at one time was a seasonal proposition, but it has come about so that it now has no dull seasons. It affords continuous, all-year employment, and it is all indoor work, so that weather conditions do not affect it.

The trimmer's trade gives assurance of a steady weekly return and should not be classed with some of the trades which pay big while you work, but owing to their dependence on weather conditions, etc., do not permit steady, all-year employment. The steady job is far better in the long run.

Another great advantage of this trade is that after having completed an apprenticeship, the field is opened wider to study. There is a never-ending possibility for development of individuality which makes one's services the more desirable and commands greater remuneration the longer one works at the business. Familiarity with colors, their combinations, etc., is a part of this study. Knowledge of kinds of materials, their wearing qualities, etc., is another line of study not learned in a day.



# MOTOR CAR UPHOLSTERING

## **Advantage of a Good Education**

We are living in a period of better education and increased efficiency. The education of our youths is much better than in years gone by, and the younger men require different handling. The reasons, why and wherefore of doing certain things must be shown, and in order to be convincing the reasons must be in such shape that they are not only understandable, but also reasonable. By this is meant a "reason for doing it that way" must be shown, and the matter not explained as "it is done that way because it is the way to do it."

Then again, the youth with a good education has a wonderful advantage over those lacking such a foundation. He is able to grasp explanations quickly because his mind has been trained, and his progress will be much greater and faster than those not so fortunate. The value of an education for one seeking to learn automobile upholstery cannot be overestimated.

## **The Book Teaches the Correct Principles**

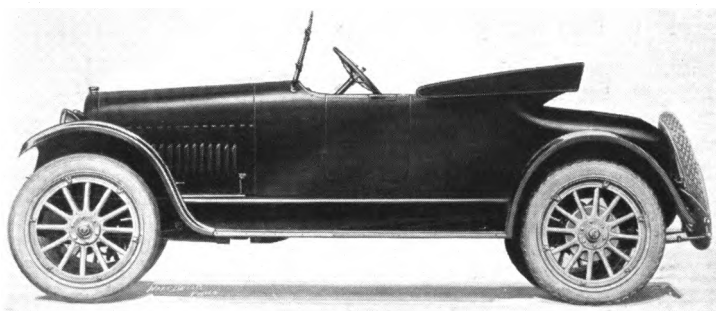
In this book it will be our aim to cover the field with tolerable thoroughness, explaining the various methods in detail. But the student must bear in mind that the **system** is what he is studying, and that he must not attempt to copy exactly the models as illustrated, because in all likelihood they will not be adaptable in details to the job on which he is working.

## **CHAPTER II**

---

### **Getting Acquainted with the Shop**

In covering the art of vehicle trimming in this series of articles, it is the purpose of the author to do so in the same manner in which he would handle a young man who came under his charge and who was willing and anxious to learn the art of trimming in its entirety. For that reason we shall at this time enumerate and explain some of the duties of an apprentice when he first enters the business.



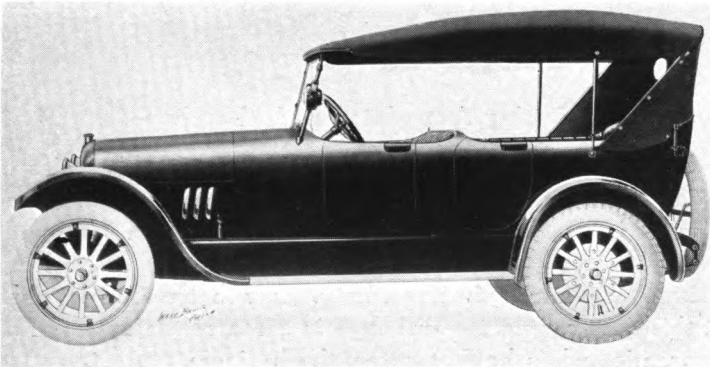
Typical Roadster or Runabout

The first duty of the new apprentice will be to become familiar with the shop, the layout of all its departments and to become acquainted with the men in charge. In other words, he must be acclimated.

The new apprentice will be sent on numerous errands around the plant and to the various departments. He will be required to go to the stock or tool room for tools and materials. He will be expected to lend a hand here and

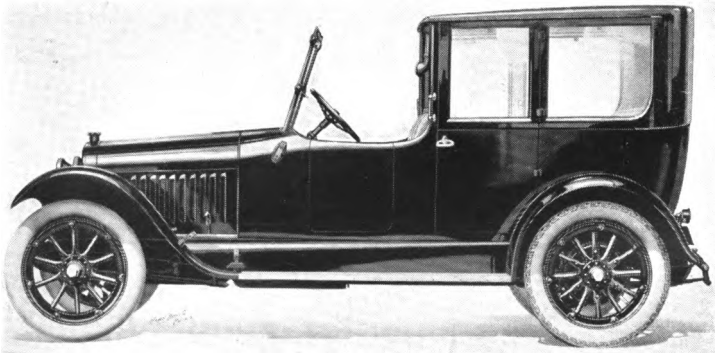
## MOTOR CAR UPHOLSTERING

there wherever required, doing so with his eyes and ears wide open, to see and observe the various operations in the trimming of the bodies.



Typical Touring Car.

He will be called upon to get a certain tool or piece of material. He must be familiar with their names and know them at a glance. He will be told to get certain patterns



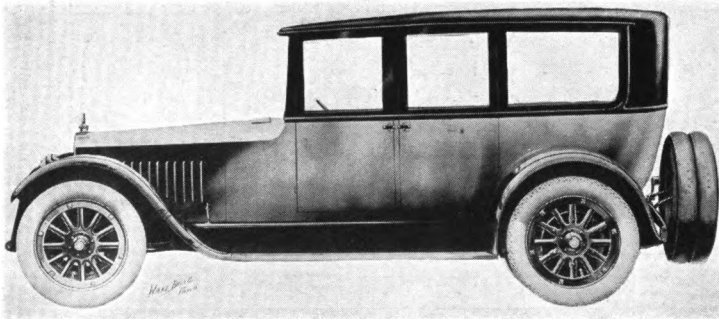
Typical Town Car.

from the files. He must learn the names of these patterns and the part of the body to which they refer. He must learn the names of the various types of bodies and immediately

## MOTOR CAR UPHOLSTERING

be able to recognize them. He must learn the names of the various parts of the trimming, as used in a body and also the numerous appurtenances used to complete them.

He must learn the names and uses of the various machines and gradually learn to operate them. He must learn to check time against the different jobs and keep records of materials used thereon.



Typical Sedan or Enclosed Drive Car.

All the above an apprentice will be required to master before being permitted to do even some of the least important parts of the work. A bright chap, alert and willing to learn, spends but little time in this preliminary training, and within a few days feels very much at home in the trim shop.

### **How Patterns are Stored and Filed**

One of the important things in trim shop management is to have a convenient method for storing the drawings and patterns, of which there is generally a large accumulation. As any one of these drawings or patterns may be wanted quickly, there must be some system whereby the desired sheets may be found without waste of time.

A very simple, yet easily accessible device for filing drawings and patterns is made in the following manner: Two racks of light lumber, say one-half inch by one-inch strips, are built, forming squares as in Fig. 1, on page 18.

# MOTOR CAR UPHOLSTERING

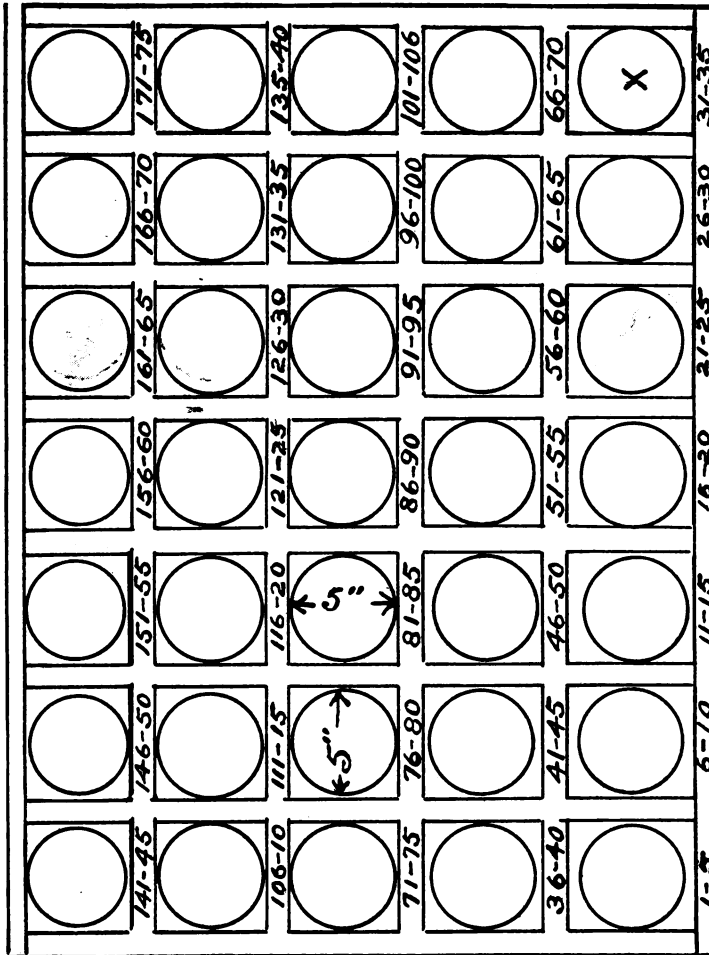


Fig. 1. Front View of Rack for Filling Drawings, Patterns and Blue Prints.  
(See also Fig. 1a. Side View, on next page.)

## MOTOR CAR UPHOLSTERING

These two are then set up with a space between them of thirty inches and securely fastened in this position. Card-board tubes, similar to large mailing tubes, are then placed in each division and numbered, each tube carrying five numbers. Thus a rack of thirty tubes carries one hundred and fifty numerals. A card index is then used for indicating where the pattern or drawing is to be found. The card is made out carrying all the needed information, as in Fig. 2 on page 20.

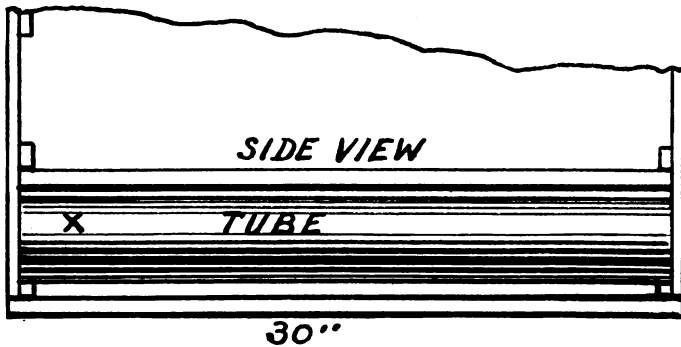


Fig. 1a. Side View of Rack Shown on page 18.

A card would also be made out in the name of Mr. Doe, containing the same information (Fig. 3.) These cards are then filed alphabetically. Then, should it be necessary to duplicate such a job, the card is referred to. It shows the patterns and drawings are filed in tube 33. It requires but a minute to put your fingers on the exact information wanted, and you can find it either under Mr. Doe's name or under the style of body that the trimming was applied to.

Different shops, of course, use different filing systems, but the one described, or something very similar, will be found in most shops where system is a feature.

Packard Limousine 335
Built for Mr. John Doe
Trimmed 10/26/18.
Cloth Laidlaw 836
Leather Front - L.G. Bright Black Leather
Style of Trimming, French Plait.
File #33.
Details on Spec. card in file
Job 4627

Fig. 2. Index Card for Locating Blue Prints and Patterns as Applied to a Particular Kind of Body. In this case, a Packard Limousine.

Doe, John
Limousine mounted on Packard 3.35
Trimmed 10/26/18
Cloth Laidlaw 836
Leather, Front L.G. Bright Black
Style of trimming - French plait
File 33
Details on Spec. card in file
Job 4627.

Fig. 3. Index Card for Locating a Job Done for a Certain Customer. In this case the customer is John Doe.



# MOTOR CAR UPHOLSTERING

## **Requisition Blanks and Time Cards**

All materials and tools, of course, are taken from stock on requisition. Numerous types of requisition blanks are used in various factories, but they must all contain the same information. They must bear the date of requisitioning, the order number of the job or jobs on which the material is to be used, the amount of material, and the signature of the person receiving the material. It has always appealed to the writer to have these requisitions in book form, carrying a carbon copy, permitting of easy reference for the man in charge for checking the materials used.

## **A Time Card for a Medium-Sized Shop**

Where a plant is run on an efficient basis, cost of all work done must be kept. Where the work is not done on piece work or contract basis various methods are in use, some by clock and card system, others by cost clerk in the department and still others by daily work cards, made out by the men themselves, and approved by the foreman in charge. A simple form requiring but little effort and time is shown in Fig. 4 on page 22.

Thus all the workman has to do is to strike a pencil line at the time of starting a job and a line when stopping, marking in between the lines the number of the job on which he worked, as shown in the reproduction. This method is particularly adaptable to the smaller plants and is just as accurate as any other system. The accuracy, of course, is measured by the efficiency of the man in charge. With the above three essentials properly cared for, backed up by the proper supervision, the trim shop is sure to be on the road to efficiency.

The apprentice should get acquainted with all the system cards and blanks used in the shop as early in his career as possible, and adhere to them consistently. System helps to make the shop work move smoothly and also assists you in doing your own particular work.

NAME <i>John Doe</i>			WORKED <i>8</i> HOURS	RATE PER HOUR <i>.75</i>		
NO. <i>176</i> DATE <i>11/18/18</i>			UNACCOUNTED <input checked="" type="checkbox"/>	RATE PER PIECE <input checked="" type="checkbox"/>		
ENTERED COST SHEET <input checked="" type="checkbox"/>			TOTAL <i>8</i>	OVERTIME AMOUNT <input checked="" type="checkbox"/>		
ENTERED PAY ROLL <input checked="" type="checkbox"/>			LATE OR ABSENT <input checked="" type="checkbox"/>	TOTAL AMOUNT <i>6.00</i>		
TIME	WORK	O. K.	TIME	WORK	O. K.	
7.00			36	<i>Lunch</i>		
6			42			
12			48			
18			54			
24			1.00			
30			6			
36			12			
42			18			
48			24			
54			30			
8.00			36	<i>4832</i>		
6			42			
12			48			
18			54			
24			2.00			
30			6			
36			12			
42			18			
48			24			
54			30			
9.00			36			
6	<i>4820</i>	<i>3</i>	42			
12				48		
18				54		
24				3.00		
30				6		
36			12			
42			18			
48			24			
54			30			
10.00			36	<i>4817.</i>		
6			42			
12			48			
18			54			
24			4.00			
30			6			
36			12			
42			18			
48			24			
54			30			
11.00			36			
6	<i>4815</i>	<i>1</i>	42			
12				48		
18				54		
24				5.00		
30				6		
36			12			
42			18			
48			24			
54			30			
12.00			36			
6	<i>Lunch</i>		42			
12			48			
18			54			
24			6.00			
30						

Fig. 4. Daily Time Card, Filled in by the Workman.

# MOTOR CAR UPHOLSTERING

## **Tools Used in the Trimming Department**

Anyone when buying tools should endeavor to buy the best. It always proves to be the cheapest plan in the long run. Tools should always be kept in good working condition. Knives, shears, etc., should be sharp and they should be clean and well adjusted. Each tool should have its place in the kit, and when not in use should be placed there. Then you will know where to find a tool when you need it.

The principal machines used in vehicle trimming are sewing machines of various descriptions, carpet binding machines, tufting machines, button machine, dies for various curtain fasteners, cutting machine, hair picker, eyelet machine, vise and stitching horse. Most of these machines are power-driven. The size and number of these machines vary according to the size of the plant.

## **Tools Required by the Motor Car Trimmer**

In addition to the larger machines mentioned, the trimmer will require a considerable number of special tools as listed:

2-foot Rule	Magnet (for lifting tacks)
5-foot Rule	Mallet
5-foot Square (Wood)	Monkey Wrench
6-inch Square (Steel)	Oil Can
24-inch Gauge	Patented Tufting Needles
24-inch Square (Steel)	Pliers
Belt Punch	Plumb
Bevel Square	Reamers up to 1/4-inch
Brace	Regulators
Counter Sink	Sandstone
Cutting Pincers	Sewing Needles
Files	Shears
Grommet Punch	Small Drills
Half Moon Needles	Spirit Level
Hammers	Straight Edge (Steel)
Hand Drill	Stretchers
Knife	Stuffing Rods, various sizes

# MOTOR CAR UPHOLSTERING

Telescope Rule	Washer Cutter
Thimble	Whetstone
Tickler	Yankee Screw Driver
Tufting Needles	Yard Stick

Other tools, for which there is not so much use, are:

Awls	Pouncing or Stamping Tools
Channeling Tools	Pricking Wheels
Creasers	Punches 0 to 1½ in.
Edge Tools	Round Knife
Gauge Knife	Setting-Up Wheels
Leather Creasing Machine	Slicker
Loop Irons, etc.	Splitting Knife

## **The Different Types of Bodies**

The young trimmer must make himself acquainted with the different styles of automobile bodies. The list is not a long one, and a short experience in the average shop will soon teach him to identify the leading body types without hesitation.

The various types of bodies are the open touring body, the roadster, the enclosed coupelet, sedan, limousine, landaulet, berlin limousine, collapsible town cars, broughams, and many others. It may take some time to be able to identify all of these styles at sight, but when in doubt ask questions, and you will find your fellow workmen will be glad to give you information. Some manufacturers have invented fancy names for their bodies, but the above list contains the standard names as used by most builders.

## **The Principal Elements of the Trimming**

The names of the principal parts of the trimming and the part of the body to which they are applied are:

Head lining, the inner lining of the roof or top.

# MOTOR CAR UPHOLSTERING

Side quarters, being that part of the trimming covering from the rear doors to the back.

Rear back, that part covering the back proper, usually built up over springs.

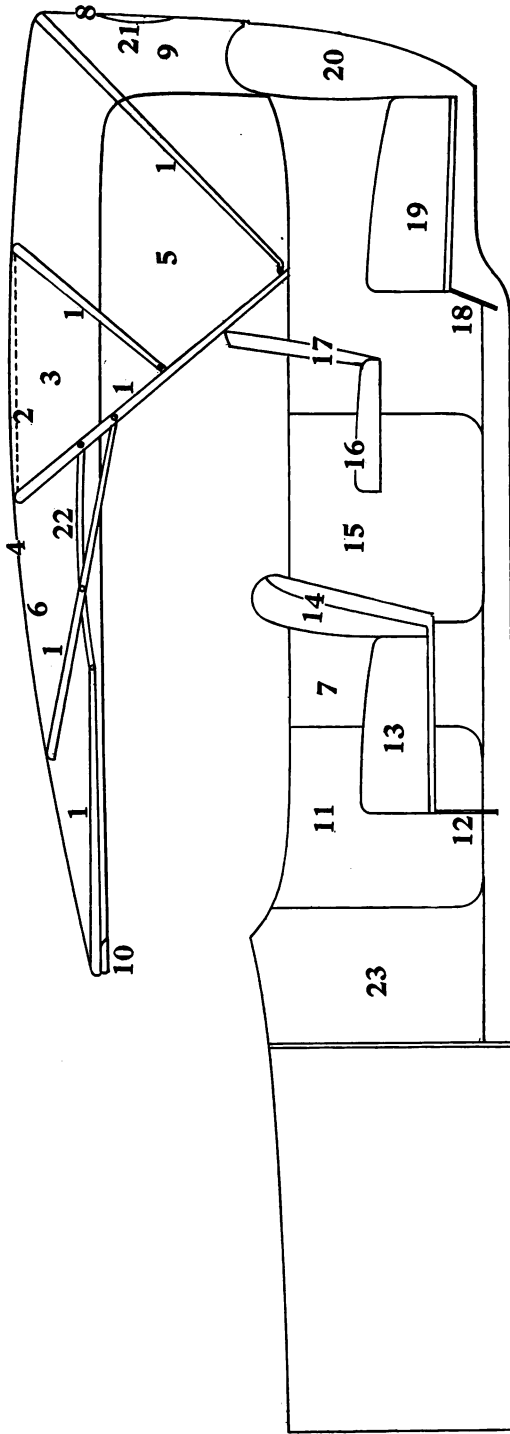
Rear cushion or seat covering.

The parts of the trimming for a Limousine are:

Anti-Rattlers	Front Door
Arm Rests	Front Partition
Auxiliary Seats	Front Quarter
Bind Nail Combination	Glass Channels
Broad Lace	Hassocks
Child Seats	Heel Carpet or Fall
Coupé Pillar	Lazy Back
Cowl	Molding
Cushion Keeper	Pasting Lace
Door Checks	Robe Rail
Door Pockets	Rocker Covers
Door Trimming	Roller Curtains
Draperies	Sash Lifts
Festoons	Slip Covers
Floor Carpet	Seaming Cord
Foot Rests	Toe Carpet
Front Back	Welts
Front Cushion	

The parts of the trimming for a Touring Car are:

Back Curtain	Front Valance
Back Stay	Head Lining
Binding	Hand Grabs
Bows	Imitation Stitch Molding
Canopy	Joints
Cape Top	Metal Molding
Cods	Pads
Curtain Lights	Quarters
Deck	Quarter Pad

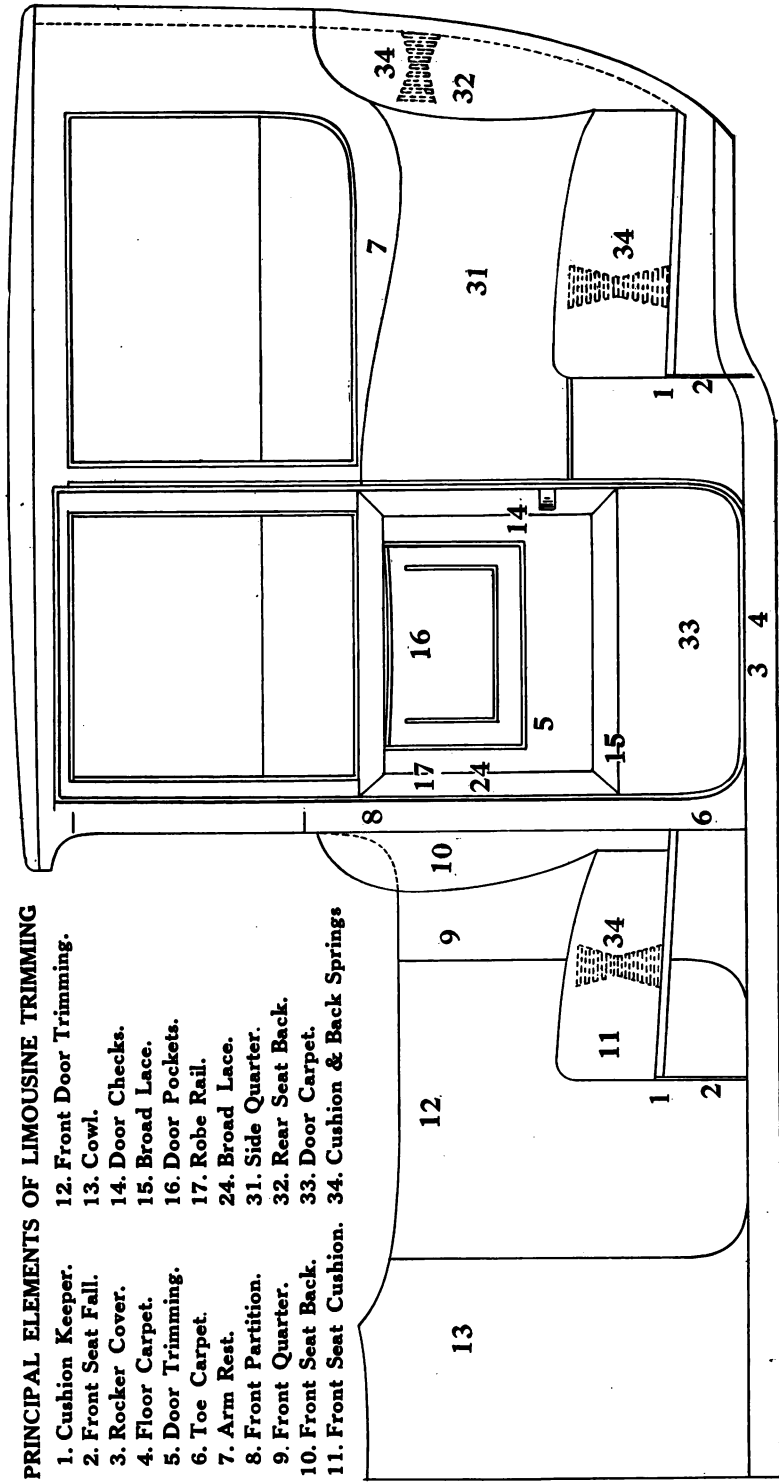


**PRINCIPAL ELEMENTS OF TOURING CAR TRIMMING**

- |                  |                          |                     |
|------------------|--------------------------|---------------------|
| 1. Bows.         | 13. Front Cushion.       | 19. Rear Seat.      |
| 2. Strainers.    | 14. Front Seat Back.     | 20. Rear Seat Back. |
| 3. Pads.         | 15. Rear Door Trimming.  | 21. Oval Glass.     |
| 4. Deck.         | 16. Auxiliary Seat.      | 22. Top Brace.      |
| 5. Side Curtain. | 17. Auxiliary Seat Back. | 23. Cowl.           |
| 6. Headlining.   | 18. Rear Seat Fall.      |                     |
|                  | 7. Side Quarter.         |                     |
|                  | 8. Back Curtain.         |                     |
|                  | 9. Back Stays.           |                     |
|                  | 10. Wind Break.          |                     |
|                  | 11. Front Door Trimming. |                     |
|                  | 12. Front Seat Fall.     |                     |

**PRINCIPAL ELEMENTS OF LIMOUSINE TRIMMING**

- 1. Cushion Keeper.
- 2. Front Seat Fall.
- 3. Rocker Cover.
- 4. Floor Carpet.
- 5. Door Trimming.
- 6. Toe Carpet.
- 7. Arm Rest.
- 8. Front Partition.
- 9. Front Quarter.
- 10. Front Seat Back.
- 11. Front Seat Cushion.
- 12. Front Door Trimming.
- 13. Cowl.
- 14. Door Checks.
- 15. Broad Lace.
- 16. Door Pockets.
- 17. Robe Rail.
- 24. Broad Lace.
- 31. Side Quarter.
- 32. Rear Seat Back.
- 33. Door Carpet.
- 34. Cushion & Back Springs

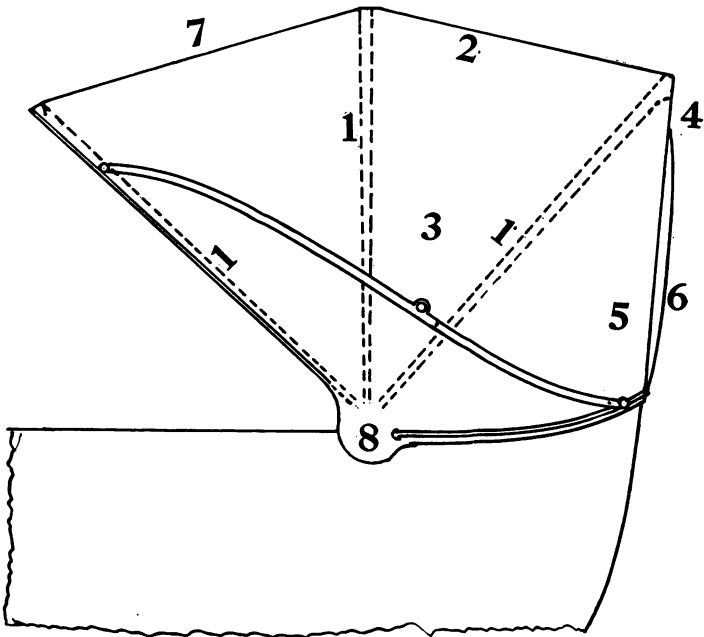




# MOTOR CAR UPHOLSTERING

Rear Quarters  
Rear Valance  
Saddle  
Side Quarters  
Strainers  
Victoria Top  
Wind Brake

Prop Blocks  
Prop Nuts  
Shifting Rails  
Side Curtains  
Sockets  
Top Holders  
Washers



PRINCIPAL ELEMENTS OF A VICTORIA TOP

- |                                   |                  |
|-----------------------------------|------------------|
| 1. Bows (front, middle and rear). | 4. Back Curtain. |
| 2. Headlining.                    | 5. Rear Quarter. |
| 3. Quarter.                       | 6. Back Stay.    |
|                                   | 7. Deck.         |

## Mountings and Accessories

Then there is a rather lengthy list of parts classified as "Mountings and Accessories," which have a great deal to do with the elegant appearance of modern motor cars. In

## MOTOR CAR UPHOLSTERING

the selection and application of these parts the trimmer has a fine opportunity to display his good taste or the lack of it.

Acorns	Luggage Carrier
Annunciators	Megaphone Holders
Bouquet Holders	Pull-to Handles
Cigar Lighters	Roller Supports
Coat Hooks	Sash Plates
Cord Runners	Sash Regulators
Corner Lights	Screw Hooks
Curtain Cord	Screw Knobs
Curtain Rollers	Slide Plates
Curtain Screw Eyes	Smoking Case
Curtain Sticks	Speaking Tubes
Curtain Wires	Switches
Dome Light	Tabs
Finishing Screws	Tassels
Finishing Nails	Telephones
Finishing Washers	Umbrella Drainers
Footman Loops	Umbrella Holders
Frogs	Vanity Case
Glass Frame Plates	Ventilating Knobs
Lace Nails	Window Anti-Rattlers
Landau Curtain	Window Slides
Lever Lock Handles	

**MOTOR CAR UPHOLSTERING**

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Beautifully Upholstered Interior of a 1920 Haynes Coupé.

**CHAPTER III**

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**Motor Car Upholstery Materials**

Among the more important materials employed in automobile upholstery are springs, hair and its substitutes, leather and its substitutes, cloth, duck, sheeting, cambric, muslin, buckram, webbing, bow coverings, various sizes and kinds of tacks, nails and brads, escutcheon pins, cotton wadding and batting, down, feathers, top materials, slip cover materials, carpets, velvets, plush, tapestries, silk, linoleum, rubber, celluloid, curtain fasteners, cardboard, silk and linen thread, paste, cement, enameled and coated ducks, moldings, laces, cords and bindings, felt, tufting buttons, and other materials.

The uses to which the various materials are put demands a very close study, as they are the things that in the hands of the trimmer go to make up the complete trimming of the modern motor car.

**Seat and Cushion Springs**

Springs are used principally in the cushions and backs, serving as shock absorbers and adding to the comfort of the riders.

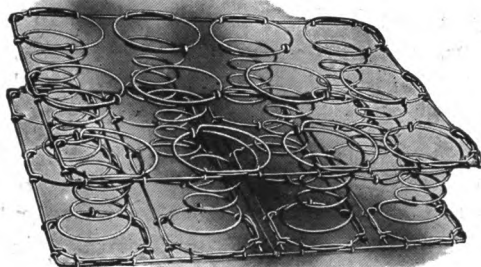
There are three things that intervene between the road and the occupants of a car which serve to absorb the shocks due to inequalities in the highway. These are the pneumatic rubber tires, the springs upon which the body is mounted, and the upholstery structure, built up of springs and the hair, cotton or other resilient materials, used by the upholsterer or trimmer.

Tires, springs and upholstery all play their part in the designing of a luxuriously comfortable car. A great deal

## MOTOR CAR UPHOLSTERING

depends on the seat and back springs as to whether or not a job is comfortable, serviceable and durable.

Various kinds of springs may be used. The ordinary spiral may be used with some degree of satisfaction but the durability of such construction is far from being what is expected. Manufactured woven springs, interlaced and bound with metal, are much more satisfactory. Various types of these kinds of springs are made by numerous manufacturers. Patented features are claimed by some makers, but any standard quality, well constructed lace web spring will be found satisfactory.



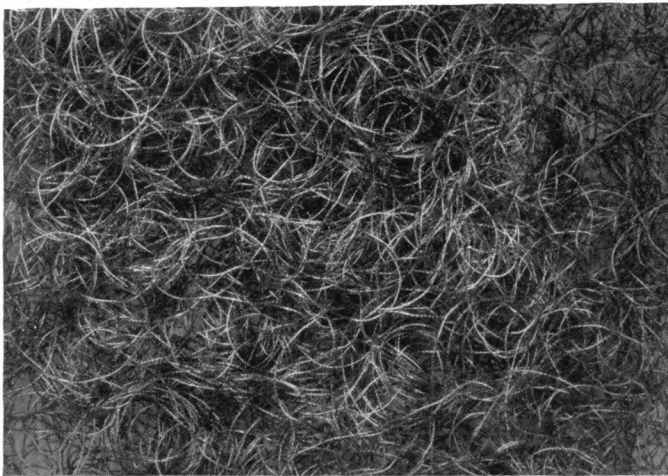
A Typical Spring Seat Construction.

In the making of springs, a great deal of experience is required, for the reason that there are many points to be considered. First the size of the spring for the weight it might be expected to carry, whether one, two or three passengers; second, knowing what the capacity of the springs must be and knowing what height is permitted, experience has taught what gauge wire must be used in the spirals and how many spirals of that particular gauge are necessary to sustain the maximum weight without hitting bottom when "striking bumps" in the road, yet not to be too hard for the minimum weight on smooth roads.

The correct solution of the spring problem is left almost entirely to the spring manufacturer—although certain body

## MOTOR CAR UPHOLSTERING

builders have a reputation for building hard or soft cushions. Where this is the case the body builder has instructed the spring manufacturer as to the kind of spring he wants. This is often accomplished by having samples made by the spring manufacturer after sufficient information has been given him, and then testing the spring and telling the maker that it is too hard or too soft, leaving the question of gauge of wire and number of spirals entirely to him.



Live, Springy, Genuine Curled Hair.

But, as distinctive characteristics of different body builders are evidenced in the completed job each builder's methods of using a spring foundation must vary. Some firms insist on upholstering with considerable fullness and with heavy toppings on the cushions, while others insist on little fullness and light pads.

These differences of method of course are reflected in the kind of spring used—for instance, on two cushions, each 8 inches high, one with a heavy pad and one with a light pad, the heights of the spring constructions would be different in order to permit the use of the different thicknesses of pads to secure the finished height.

## MOTOR CAR UPHOLSTERING

As to the back springs the same principle holds true, but since the purposes of a back spring and a cushion spring are totally different, the springs are also different. We will have something to say about these springs later on in this book.

### **Cushion Filling Materials**

The next important material used in automobile trimming, determining the comfort and durability of a car, is the filling used. Numerous fillings are to be found on the market. Genuine curled hair is generally conceded to be the best. Various grades of hair are to be had, depending generally on the price paid—some hair is hard and stiff; other hair is long and soft, yet has the property of springing back to its original position.

Various interlaced and woven hairs are also used in automobile upholstery. Hair substitutes such as fibre, moss and excelsior, are often used in some grades of work. Recently cotton in its various forms has found many staunch supporters. When using hair the better the hair the surer the satisfaction. But price is not always a criterion for grades of hair. By that it is meant that the more costly hair will often prove the cheaper in the end, due to its greater filling qualities.

Where it is desired to sell the product cheaply, all kinds of substitutes are used for filling, such as fibre, moss, excelsior, etc. This, however, is more particularly true of furniture upholstery. Enameled ducks, drills, etc., are used principally for cushion bottoms and seat board covering, where the boards are not painted. They are also used for linings.

On very special jobs, down and feathers are sometimes used, and then principally for cushions.

Carpets are used principally for floor covering, rocker covering, division covering and heel boards, and the lining of specially arranged compartments, hassocks and foot pads. Linoleum, rubber, etc., are also used for floor covering, heel boards and running boards.

# MOTOR CAR UPHOLSTERING



Interior of 1920 Liberty Coupé.



# MOTOR CAR UPHOLSTERING

In some styles of trimming both hair and cotton are used for filling. The French plait style is an example of this. Over the spring construction a piece of duck, sheeting, bur-lap or some similar material is drawn. This being tacked in place, layers of hair are placed, according to the thickness desired.

In some grades of work the interlaced or woven hair is used, being cut exactly to pattern. This of course saves considerable work and assures regularity in cost, because only so many square feet of the product can be used, whereas in laying hair one trimmer will use more or less than another, and his own work will vary. Sheeting, muslin, or some such similar material is then drawn over the hair and tacked or quilted in place. Over this comes the cloth, leather, or leather substitute in which the job is to be upholstered. In the French plait style the plaits or pipes are filled either with hair or cotton, some manufacturers using the double-glazed cotton wadding, some the cotton batts and others hair.

## **Tacks and Their Uses**

Tacks for automobile upholstery are made in great varieties and each style serves its particular purpose best. The styles mostly used in trimming are upholsterers' Swedish iron tacks, lace tacks, gimp tacks, lining nails, saddle nails, and escutcheon pins. The various styles are made in numerous sizes and the big secret in the use of tacks is to use a large enough size to properly hold the work in place, but not to use a ten-ounce tack where a three-ounce tack is sufficient. The Swedish iron tacks are used generally on foundation work where they are not seen in the finished production. The others are used in various finishes and their names are very suggestive of the uses to which they are put in motor car upholstery work.

## **Buckram**

Buckram is an essential material in automobile upholstering, being made in single, double, and three-ply. It is used

## MOTOR CAR UPHOLSTERING

for reinforcing and backing, for "pasting out," such as doors, flaps, wind-brakes and for a foundation on which springs are sewed for back spring construction, where springs are made up by the trimmer. It is often used for closing in open spaces between strainers or on any part of a job where a more solid backing is required. Owing to its many uses buckram is an indispensable article in the trimming department. It possesses long life and much durability; yet on the cheaper grades of work cardboard is often used for the same purposes.



**TOP CONTAINER BUILT INTO THE BODY**  
This English device preserves the graceful lines of the body when the top is down, the top being entirely concealed from view.

Celluloid or "pyralin," is used mainly for vision lights on touring car tops or for similar use on collapsible cape tops. It also makes an admirable binder and edging for "blind" or concealed tacking.

Cloths used in upholstery are of many varieties, such as broadcloths, whipcords, diagonals, tapestries, plushes, velvets, linens, Bedford cloths, etc. They are of varied colors, figures, textures and weaves, but the better grades are made exclusively of wool and the softness of the materials adds to the comfort of the job. The colors and designs tend to

## MOTOR CAR UPHOLSTERING

enhance the beauty of the interior. Leather and its substitutes are used for upholstering types of cars more directly subject to hard wear and weather exposure, such as the roadster and touring car.

Real leather, that is, hand-buffed top grain leather, is often used in high-grade bodies. Upholstering and top leathers are usually made from cow hides, but goat skins and pig skins are also used. Price considered, leather substitutes answer the same purposes, especially when price is a consideration. Leather substitutes today are made in a variety of finishes and colors and are found quite durable. They may be cleaned exactly the same as leather, are water proof and are not liable to crack or peel.

Grain leather is used also for top coverings, such as Victoria tops, town cars, landaulets, etc. Leather substitutes made for the purpose are adaptable for the same uses. Leather substitute manufacturers are also making special coverings for touring tops, etc.

### **Cleaning Upholstery Materials**

It is well here to call attention to the fact that dirt is the worst enemy of any kind of upholstering material. Since automobiles are subject to considerable dust and dirt, the proper method of cleaning should be known. Gasoline should never be used on any kind of upholstering, particularly leather and its substitutes, as it tends to harden the surfaces. Before using any cleaning fluid, the upholstering should be well brushed. On leather and its substitutes a wash with castile soap and lukewarm water is the proper cleansing method, drying thoroughly. Treating with neats-foot oil or sweet oil will preserve and soften the material. For leather substitutes there are numerous dressings on the markets, most of which are very good, but they should not be used until the substitute has been properly cleansed with lukewarm water in which some castile soap has been dissolved.

Other grades of leather besides the trimming and top

## MOTOR CAR UPHOLSTERING.

leathers are used in automobile upholstery. Both harness and dash leathers are used by trimmers. Harness leather is used principally for straps, foundations for robe rails, door checks or other reinforcements, which are subject to excessive strain. Dash leather is used principally for dashes, fenders, valences, etc.

Special worsted and silk laces, cords, bindings and broad laces are also used, which are manufactured for the purpose. They are used principally to "finish off" the job. Laces, cords and bindings are also made extensively of the materials in which the job is upholstered.

Moldings of various kinds, principally lead filled, blind nailed, are sometimes used for finishing on outside surfaces, either covered with the material used in upholstery, plated or painted. Silk for roller curtains, festoon curtains and draperies are made specially for this purpose to match the various cloths sold for upholstery, 27 inches is the most adaptable width for this purpose.

Other appurtenance manufactured specially to match the cloth are, tassels, handgrabs, sash lifts, robe rails, luggage cords, hat racks, curtain cords and acorns. In connection with automobile upholstery many materials are manufactured specially for certain purposes such as coverings, webbings, gimps, curtain fasteners, curtain lights, footman loops, top fasteners and clamps, pull-to handles, lever lock handles, cap screws, vanity and smoking cases, interior lights and fittings, all of which serve their purposes well, adding to the beauty and comfort of the car and to the pleasure and satisfaction of the purchaser.

### **Automobile Carpets**

Rug making in well-regulated shops is not handled in the body trimming shop. Patterns are made, a sample rug is gotten ready and fitted in the job to prove the pattern. Then, if the pattern proves correct, the amount of carpet is cut to fill the order and the binding and operating is done in the operating room.

## MOTOR CAR UPHOLSTERING

Making carpet for custom work should be done in this manner: The pattern is fitted to the job, carpet cut according to pattern and fitted in the job to prove its fit.

For limousine work the carpet should always be lined. The reasons for lining are, first to stiffen the carpet, secondly to keep road dirt from penetrating the back of the carpet.

Very often the lining is pasted solidly; sometimes the carpet is laid on the lining and sewed around before binding; sometimes there is a piece of cotton used as a padding.

The carpet is bound with the well-known round binding, but frequently in high-class work we create a French binding, which is done by sewing a line on top of the binding at either edge, thus making a flat binding and adding strength to the work. Where the French binding is used it is necessary to cut the pile of the carpet where the binding is done, thus allowing a flat finish.

On the cheaper grades of work in factory outputs a binding machine is used. On custom work the binding is of the same material as the trimming used. There is also a regular manufactured binding of worsted goods the same color as that of the goods in which the job is trimmed. Also where worsted lace is used the carpet may be bound, turning the face over by hand. Often, the pile of the carpet where the binding takes place must be cut down.

Binding with flat lace is done in this manner: Sew the bottom of the flange to the carpet first, all around where it is to be bound, turning the lace over by hand or basting, and sew close to the edge by machine. This also creates a flat binding and is extremely neat.

The same system is followed in the making of carpet rocker covers. They may be cut in numbers and be ready to be placed in the job while at the trimmer's bench. In placing the rocker covers in the job, where radius or shape varies, wetting the carpet on the back and using paste in assembly is necessary.

## **CHAPTER IV**

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### **Laying Out the Work**

In the laying out of all work harmony must exist. Symmetry of lines must be characteristic of the work. For example, in the French plait style, the plaits of the cushion must line up with those of the back, making a continuous line, as if they were one and the same line drawn to a continuation. Method in doing the work is absolutely essential, and a simple process is that of working from the center at all times and strictly adhering to the measurements on the patterns and drafts. (See illustration on page 42.)

### **The Different Styles of Trimming**

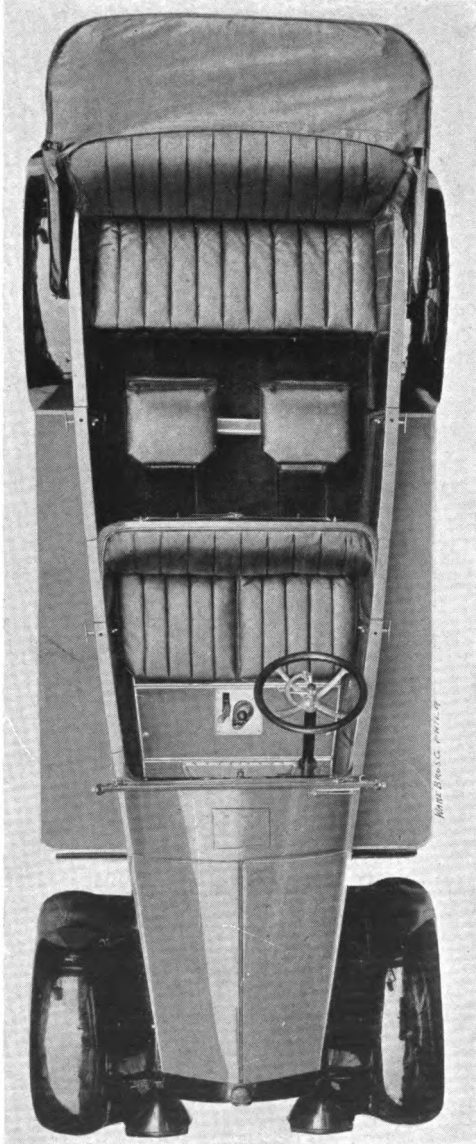
The making of patterns is the foundation for the construction of the completed job, and in the making of patterns and drafts the greatest care should be taken. They should be correct in the first place and then strictly followed.

In the laying out and making of patterns we shall treat the following styles: French plait, diamond tufting in connection with piping, biscuit or block tufting, negligee and absolutely plain work. These constitute the styles of the past, the present and the future, used in all styles of work and in all kinds of upholstery, and will be so used for years.

These are the general styles used and are practically the only styles adaptable to automobile upholstery, so consequently we are using these styles as adaptable to the future as well as to the past and present. Many variations of the above-mentioned styles are used, but fundamentally they are the foundation of all automobile upholstery.

Difference in methods and in their application varies with the individual production. As systems are generally indi-

# MOTOR CAR UPHOLSTERING



TOP VIEW OF A TOURING CAR, SHOWING FRONT SEATS, REAR CUSHION AND TWO AUXILIARY OR FOLDING SEATS.

In the French plait style of motor car upholstering the plaits of the cushion must line up exactly with the plaits of the back, making a continuous line. In the example shown above the lining up is faulty, giving a poor appearance.

## MOTOR CAR UPHOLSTERING

vidual, the methods and systems used by the writer are also to a certain extent individual. While they may not be received as authoritative, they will be used as demonstrative of up-to-date methods and instructive to the apprentice as well as to the workman at the bench.

The methods used in demonstrations, as well as the drawings shown, will be made as plain as possible, as well as the ways of doing the work and the making of patterns, taking always into consideration simplicity and cost of production. Further individuality must be left to the imagination and the practical skill of the reader.

Let us take up some of the details of laying out the work, the making of patterns and doing the work in detail, taking up each individual part separately and completing each portion of the job. We will first take up the laying out of patterns and the making of drafts for each section of trimming where required.

Whereas, in custom shops only the principal patterns are made, such as cushion, back and doors, in shops where large output is required patterns are made for every part requiring the cutting of fabrics, for the reason that it is productive of the saving of much valuable material.

As we are illustrating the making of patterns, we will begin with the making of patterns for each individual part of the trimming of a Touring Car. First, would be the making of the patterns for the cushions and back springs, since these patterns must be sent to the spring manufacturer and the springs must be on hand when the job is ready to trim.

In connection with the making of patterns and the initial work of trimming a body, it may be mentioned here that apprentices and beginners can be used to good advantage in the cutting of foundation materials, "roughstuff," etc., and the pasting out of various parts, in order that they become thoroughly familiar with the patterns and parts. This applies more particularly to the custom shop, because in large factories the teaching of the trade in its entirety is not usual.



# MOTOR CAR UPHOLSTERING

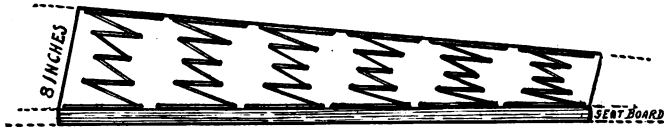
More often, in the larger shops, specialists are trained for each particular operation, such as cutting; operating (usually females); pasting out and cementing (usually females); back making; back hanging; cushion making; tacking in head lining and above belt line (enclosed bodies); rug making, which is done from patterns; top making; slip covering, etc.



Correct Method, Three-Inch Pitch to the Rear.



A Spring Made in this Manner has no Top or Bottom, and is Incorrect. When Placed in Position it will Give a Result as in the Next Diagram Below.



Incorrectly Designed Spring as it Appears When Placed in Position.

## Fitting and Making Cushion Spring Pattern

The manner of making and fitting patterns for a touring car cushion spring will be adaptable for any other type of body after allowances are made for thickness of side quarters and back. In fitting the pattern the thickness of quarters and back must be anticipated for the reason that different types of cars require different sizes of backs and cushions. This is mentioned only as a precaution. As a usual thing the method of fitting which we explain will be suitable to follow in almost any type or style of trimming. We are endeavoring to explain the most simple and accurate method possible, bearing in mind the fact that it is but an example.

## MOTOR CAR UPHOLSTERING

After being first assured that the blocking out is as intended for the particular style of trimming, we will take a piece of paper, cheap canvas or other suitable material, cut of sufficient size, tack temporarily to keep the material used from slipping, mark at the front edge of the seat board and mark accurately around the blocking at the quarters and at the back.

The back, when built permanently in the job, is going to take up from one inch to one and one-half inches where it comes in contact with the cushion. If we find that the construction of the back will fill out one inch or one and one-half inches when finished we must allow that amount of reduction for the size of the cushion spring pattern at this point. These deductions we find are about the average amount of space taken up by the back.

The same consideration should be taken up at the quarters, but the quarters do not take up as much space as the back, and we find that the average is one-half to five-eighths of an inch.

All allowances are made for all the room taken up by the back and quarters and all allowances for the space taken up by the completed cushion. This gives sufficient amount of room when the cushion is finished so that it will not bind at any point.

We must also take into consideration the rounded corners at the rear and sufficient radius must be given at these rear corners, otherwise the cushion will bind at these points and spoil a well-intended pattern.

In making the pattern the height is of the utmost importance. In arriving at the proper height of the spring we have the thought in mind of the measurement from the floor to the top of the seat. For instance, from the floor boards to the top of the seat boards is four inches. The highest measurement for comfort in a cushion should not exceed fifteen inches; therefore, we find a difference of eleven inches and we find that our pad will finish at three inches, so after the deductions are made we discover that our spring must not exceed eight inches in height at the front.

## MOTOR CAR UPHOLSTERING

A pitch or decline is necessary in the shape of springs, and trimmers have found that the average big car is most comfortable with a pitch of three inches. So we arrive at the conclusion that our spring shall be eight inches high in front and five inches high at the rear. Later-day body construction usually permits that the spring be made square up all around. By this is meant square up from the seat board. The illustration shows the correct way for the making of a spring. (See diagrams on page 44.)

At all times the gauge of the wire used is that adaptable to the carrying capacity of one, two or three passengers. This gauge is usually left to the spring maker, after noting on your pattern the uses to which the cushion will be subjected, but at all times the spring should be of sufficient gauge to take the bumps and jars of road driving. Some manufacturers require an unusually soft cushion, while others are not so particular, so consequently this is arrived at by the requirements of the builder. We believe that we have made clear the average method required in the making of a spring and pattern.

### **Making Patterns for the Back Springs**

Back springs have probably a greater variance than the cushion springs and there are many different styles of back spring constructions now in use. There are division backs or divided backs for one, two and three passengers, but at this time we will treat the construction of the single back spring.

When making the pattern for the back spring we must take into consideration the thickness that the finished quarters will take up, the height of the finished cushion and the thickness the back is to be when finished. We are treating of the lace web style of spring construction for the back as well as for the cushion. However, many manufacturers require that the back springs be made up of spiral springs sewed to buckram in the trimming shop, but there are many advantages in using the manufactured springs.

## MOTOR CAR UPHOLSTERING

We must allow enough "play" or clearance at the side quarters so that the back spring will not bind, which would cause it to buckle toward the center, thus allowing a sinking in of the back.

### **The Cushion Spring**

The cushion spring that we have just made is to be five inches in height when finished, so we must make that deduction for the back spring at the bottom. Allowing for trimming, the spring should set about seven inches from the floor, one inch from the quarter and be even at the top at the framework on a body. The height of backs vary, but these measurements being followed usually, we have a comfortable, well-working back.

Patterns should be made from the same material as that which is used for making of the cushion pattern. Duplicate patterns should always be kept on file so as to prove the correctness of the manufacturer's delivered spring, and for future reference.

We have used this method of making spring patterns with the thought in mind of demonstrating as an example the French plait style of upholstery, where the work of finishing is done over the springs themselves, yet the springs are adaptable for tufted, negligee or plain work, which styles will be discussed further on.

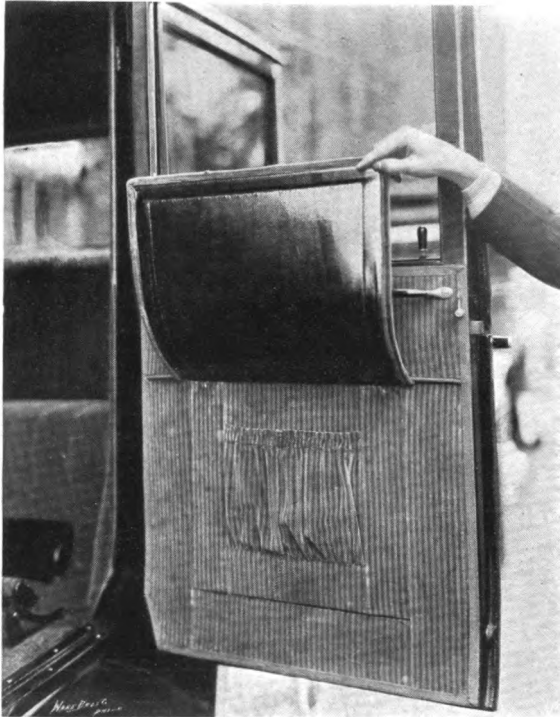
### **Methods of Fitting Doors**

For custom work, where the size of doors that have not been made to forms will vary, it is necessary to make patterns for each door, especially where anything but plain trimming is used. The patterns should be made from paper, marking accurately around all the outer edges, then laying out for the pockets and flaps, from which the buckram or cardboard foundation is taken. Allowances should be made and deducted from the outer edges for the width of the laces or other finishes that may be used. This explanation will apply to almost any style door trimming.

# MOTOR CAR UPHOLSTERING

## Foundation for the Cushion, French Plait Style

The spring pattern having been previously made and having kept a duplicate at hand, we must order made a wood frame on which the spring is to be attached. We are using the wood frame for the reason that it is most adaptable to rapid work, and also for the reason that it always keeps the cushion permanently in position.

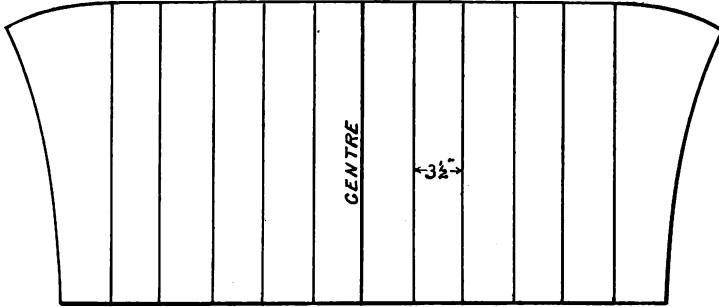


AN UNUSUAL DOOR TREATMENT.  
Showing rubber-gathered velvet pockets in door and concealed under the flaps. A closed car convenience. (Stephens car.)

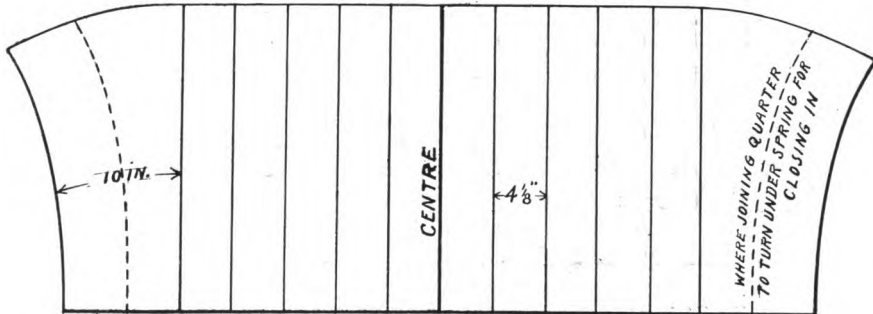
The wood frame should be made about four inches in width, seven-eighths of one inch in thickness, to the exact size of the spring pattern. The spring is attached to the wood frame with three-quarter-inch galvanized iron staples

## MOTOR CAR UPHOLSTERING

and assures that the spring is firmly attached. The wood frame gives the means of firmly holding the trimming in position.



Foundation Pattern for Back—French Plait Style.



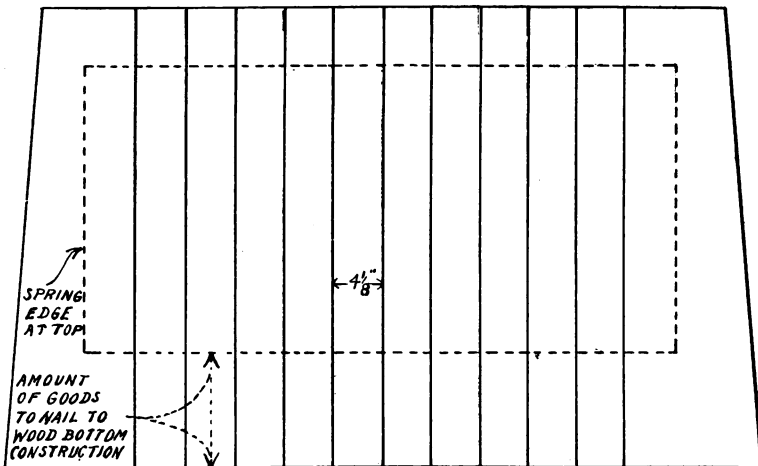
Fullness Pattern, Which is Just an Enlargement Over the Foundation Pattern; the Fullness, When Sewed to the Foundation, Leaves Room for Filling.

The top, or rather the entire spring, is covered with a piece of ten-ounce duck or other suitable material, tacked to the wood frame around the outer edges. A roll is then sewed one and one-half inches from the outer edges of the spring by "shot stitching," or this covering may be fitted and the roll sewed on by machine. That is, the inner part; or a manufactured roll, may be sewed around the sides and front. Stitch strings across, under which the hair is placed, topped off lightly with hair. A covering of five-ounce sheeting is put over the hair, stretched tightly and smoothly.

## MOTOR CAR UPHOLSTERING

Quilting is often necessary. It should be then stitched all around under the spring edge, that is, the top spring edge.

The top part is now ready for the trimming proper, but the strain should be taken from the spring, that is to say, the covering that we have already placed over the entire spring should be left free around the sides; then tacked permanently around the wood frame at the bottom of the spring. The cushion is now ready for the outer covering.



Fullness Pattern for Cushion. The Foundation Pattern Would be the Same as Above, Reduced Five-eighths Inch Between Each Vertical Line.

### Foundation for the Backs

In forming the foundation for the back (the making of the spring and patterns having been previously described) the spring is placed in position in the job and is covered with a suitable spring covering of ten-ounce duck or other material and the goods are sewed to the spring after being placed in the proper position. Over this is placed another covering of the same material, and across the bottom, above the cushion line, a line of sewing is made, allowing on the sides a sufficient amount of material to turn in, thus forming a pocket.

## MOTOR CAR UPHOLSTERING

The hair is either strung in and topped off, or pushed in by hand until the desired shape is attained. The outer covering is drawn up and the hair is then quilted to keep its shape. The utmost care should be taken that the back is built to the required measurements of the draft.

This is a simplified method of building the foundation for a back of the French plait style of work, and it has proved to be satisfactory and is used by many of the best body manufacturers.

A pad can be made on a frame at the bench, but the first-mentioned method permits a more rapid production and at a less cost, and proves very satisfactory. The back is then ready for its outer covering.

### **Foundation Patterns for Outer Covering, French Plait Style**

The foundations for the back and cushion having been described, we will now take up the making of patterns and the method of handling the outer covering for the French plait style of work.

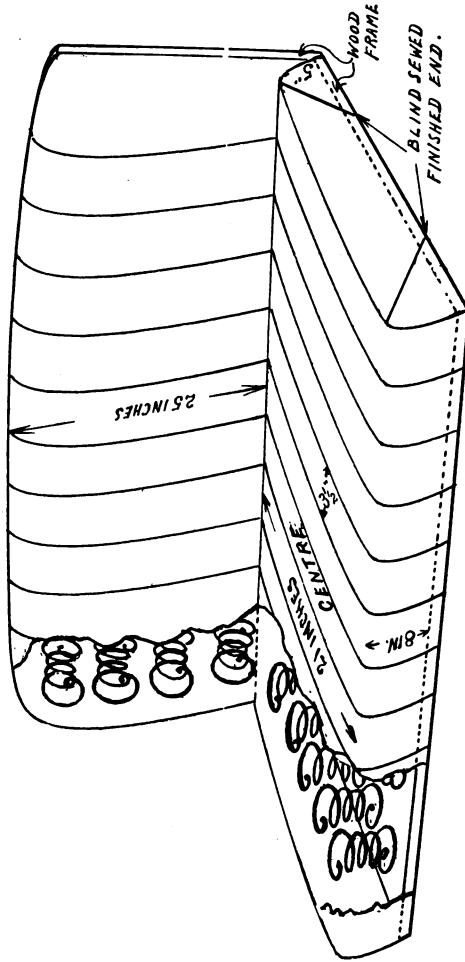
Making the patterns for the French plait style in a cushion shop, or in a shop where large production is required, is the feature we are attempting to describe. In order to get correct patterns, this method must be used in either case, for we must build our foundation before the correct pattern can be arrived at.

To make the pattern proper for the outer covering, we must take a piece of pliable goods which can be used for the completed section, or, we mean to say, that if we are building a custom job the same goods used in making the pattern will be used for the foundation, hence there is no waste.

Stretch the goods firmly over the part to be fitted—the cushion, the backs or the quarters—and temporarily tack. The cushion, for instance, is covered in its entirety over the foundation which has been mentioned. Mark around the outer edges of the top, and the four corners of the wood frame at the bottom, marking the centers accurately front



# MOTOR CAR UPHOLSTERING



Rear Cushion and Back, Showing How Lines of the Back Cushion are Brought to a Perfect Alignment with Those of the Seat Cushion. Compare This Drawing with the Photograph of a Touring Car Shown on Page 42.

## MOTOR CAR UPHOLSTERING

and back; take up; lay on the bench; space off in the manner illustrated in the drawing. (Page 52.)

We have spoken in the first part of this chapter of symmetrical lines; we intended to convey the idea that the lines in the back shall conform with those in the cushion, or vice versa. The way we arrive at the lines for the laying out of the plaits in the back and the cushion is as follows:

When starting to lay out our pattern, we mark on the seat board the exact center. Then we cover the back with the goods in the same way as we did with the cushion, marking around the blocking at bottom of back along the quarter lines; fitting closely along extreme edges at the top of the back. We then figure where to place the outer plait line, always allowing the outer block to be larger than the inner blocks. (Refer to page 49.) The pattern, as taken from the foundation, is laid on the bench and the drafting then takes place. We use the square, straight-edge and dividers, and space off from the outer lines, which have already been indicated, in suitable widths to meet the requirements.

Four to four and one-half inches is usually sufficient for the widths of the piping. The lines are drawn accurately, taking the bottom lines and the outer line for our objective points, working always from the center line that has been previously mentioned as marked on the center of the body and on the seat board. This plan is also followed in laying out the fullness pattern for the cushion. The spacing from the center of the back and cushion permits of accuracy, thus giving corresponding lines for the back and cushion.

The fullness pattern for the quarters is arrived at in the same manner. In order to construct the fullness pattern, the foundation patterns already having been described, a fitting thereof and the addition of the fullness required is necessary. This means simply an addition to the foundation pattern. For instance, if we are requiring a flat surface we would add five-eighths of one inch, or, if necessity requires it, three-quarters of one inch.

We mention this because of the fact that either a cotton filling may be required or a hair filling; but the average

## MOTOR CAR UPHOLSTERING

amount of fullness, using the cotton filling, is five-eighths of one inch, thus allowing for one-quarter of one inch to be taken up by sewing on each plait and allowing three-eighths for filling. The fullness pattern is used for the cutting of the actual materials in which the job is to be trimmed.

In the cutting of materials, patterns should be made for all parts of the trimming, but we are using the above parts as a sample or demonstration. The fullness patterns are laid on the goods or material to be cut, which is cut out and punched to the exact size of the pattern. In cutting out, if leather is to be used, all the patterns which the size of the hide will permit should be laid on the hide before a single cut is made, so as to make sure there will be as little waste of material as possible. The exact lines of the pattern must be followed. Lines should be punched and drawn for sewing. This explanation is used only for jobs in custom shops and we are endeavoring to make it plain for the beginner. Where large production is required a different method would be used.

Having made the foundation patterns and the fullness patterns, and having the goods cut, it yet remains for us to sew the goods which have been cut from the fullness patterns to the foundation patterns. This is often done in custom shops by the trimmer himself, but in the larger shops experienced sewing machine operators are employed for this purpose. The sewing of the fullness must conform with that of the foundations which have been laid out, and must be strictly followed to secure harmonious lines.

The outer trimming having been sewed to the foundation, there yet remains the filling. The cotton filling is usually cut slightly less than the measurement of the foundation pattern. Three or four thicknesses of glazed cotton wadding, cotton batting of sufficient thickness or woven hair may be used. This is placed in position with a wooden paddle or pusher, the entire length required. Care should be taken that work is done smoothly. The outer covering of the French plait style of work is then ready to be placed in position.

## **CHAPTER V**

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### **Covering Backs and Cushions**

We will explain the covering of the back and cushion, which should suffice, as examples, for the other parts of the job.

In placing the outer covering on the cushion we must measure our foundation properly, find the exact measurement from the center to the outer line of plaits; start at the center; make outer lines conform both front and back, stretching smoothly and tightly front and back; tack to the wood frame of the cushion, underneath, stretching at the sides, causing the lines to become perfectly straight.

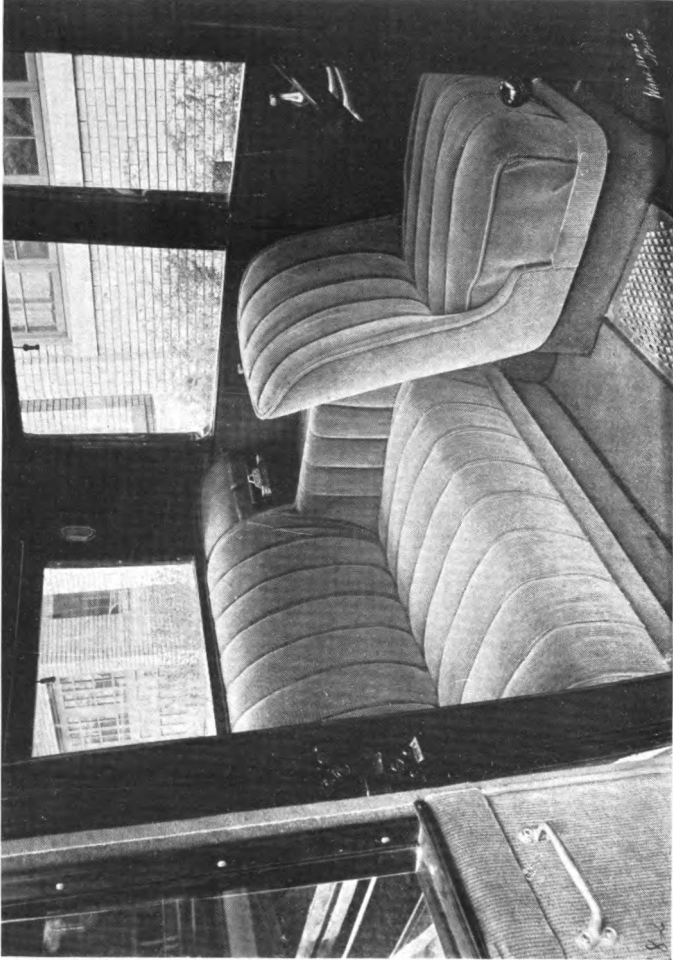
We fill in that space in the outer block with cotton or the other materials mentioned, to harmonize in thickness with the inner pipings already filled. Close in the sides in the same manner as the front and back, using the surplus goods at the corners to form a plait and "blind sew." Trim off the surplus material at the bottom, which has been tacked on the wood frame and the cushion is finished, with the exception of covering the bottom.

Ventilating holes must be provided in the bottom to the size of four inches in diameter; this is to give the cushion ventilation and to keep it from being air-bound. The seat board should also have an opening to permit the escape of compressed air, otherwise the effect of a comfortable cushion will be lost.

### **Hanging the Back**

In this style of trimming (the French plait style) the back has been practically hung. It yet remains to place the outer covering. The outer covering being practically the same as that of the cushion, we hang the back, working from the center the same as on the cushion. We refer to our foundation pattern, get our measurements, and cause the lines to measure accordingly.

MOTOR CAR UPHOLSTERING



Interior of the New 1920 Haynes Coupé.

## MOTOR CAR UPHOLSTERING

Working from the bottom and the top, the same measurements are followed, paying particular attention so that the pipe lines are straight.

Stretch tightly and smoothly, taking out all draws and wrinkles; turn in the surplus goods of the foundation around the sides of the spring and padding; fill in the outer block with the cotton or other fillings mentioned, in harmony with the inner pipings; throw the outer covering or leather into the corner around the spring and padding; close in entirely; tack smoothly at the top and bottom where the finish is required and trim off.

This is a simple method of doing the French plait style of work, causing the lines of the back and cushion to be in harmony with each other, for it is essential on first-class work that this harmony be secured.

### **One-Piece Trimming Door to Door**

A discussion has sometimes arisen among trimmers as to whether the French plait style of trimming on a rear or front back, running from door to door, could be made in one section. It can. And to do it is a comparatively simple operation.

The back and quarters are made in separate sections, exactly the same as if we were making the back and quarters separately. These parts, after being made up, are tacked in the job over the padding temporarily, after the pipes have been filled as in the ordinary manner. They are then placed in position, fitted, marked out exactly in the same manner as we would fit a slip cover, and are sewed together at the corners (on the machine), which represents a continuation of the piping.

Where sewed together at the corner the four blocks, or the two corner blocks on each side, being triangular in shape, could not very handily be filled with the cotton or filling used for the piping, but as the backs are being hung permanently over the covering or foundation pads, these corner pipes referred to should be filled with hair, presenting the

# **MOTOR CAR UPHOLSTERING**

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same appearance as if the entire back was fitted and laid out in one piece.

## **Top Making**

Any consideration of top making should always be with reference to the type of car for which the top is intended. Various styles of bodies require different overhang at the rear bow. The position in which the windshield is set regulates the length of the top.

Bow manufacturers who make a specialty of furnishing different types of patented tops furnish the body builder with a drawing for the ordering of bows suitable for the style of car for which they are intended. These may be followed with more or less satisfaction, but certain rules must be adopted in order that a satisfactorily shaped top may be produced, or, in other words, a top too high or a top too low would spoil the appearance of a well-designed body.

## **Setting Bows and Trimming the Top**

It has been found from actual experience that the average measurement from the floor boards to the main bow should not exceed 52 inches, nor should it be less than 50 inches. The overhang of the rear bow varies as to the construction of the rear panel, varying from no overhang or nothing to 2½ inches.

The front bow should project sufficiently over the windshield to permit a proper appearance, also taking into consideration the kind of windshield fasteners to be used.

The drop of the front bow below the main bow should average 5 inches. The drop of the rear bow should average 3 inches. The second bow and fourth bow should be on a line from the first to the third bow, and the third bow to the fifth bow, on a five-bow top.

The width is arrived at according to the construction of the job, measuring the width at the goosenecks and causing the bow holders or saddles to be placed in the position in which the top when thrown will fall free.

So much for the "setting" of the top; now for the "trim-

## MOTOR CAR UPHOLSTERING

ming." Various kinds of top materials may be used, such as mohair, cotton goods, substitute leathers and rubberized materials.

### **Method of Trimming a Top**

Many different styles of tops are now in use. Some are "freakish," but we are going to treat of a conservative style of top and its trimming.

The bows being set in position on the job, we must hold them in position by means of a temporary strainer over the top, and from the top of the back bow to the body. The wood part of the bows, or the top of them, is covered with a light material to match the goods of the top. The permanent strainers are then tacked in their respective places; quarter pads are made of the same material, stretched and tacked in position. These quarter pads should be on an average of 8 inches in width, running the entire length of the top. The padding or filling is placed therein, and either cotton or hair may be used for the padding. The padding is then permanently closed by sewing. Some paste the upper covering of the pad, but this method is no longer approved by good practice.

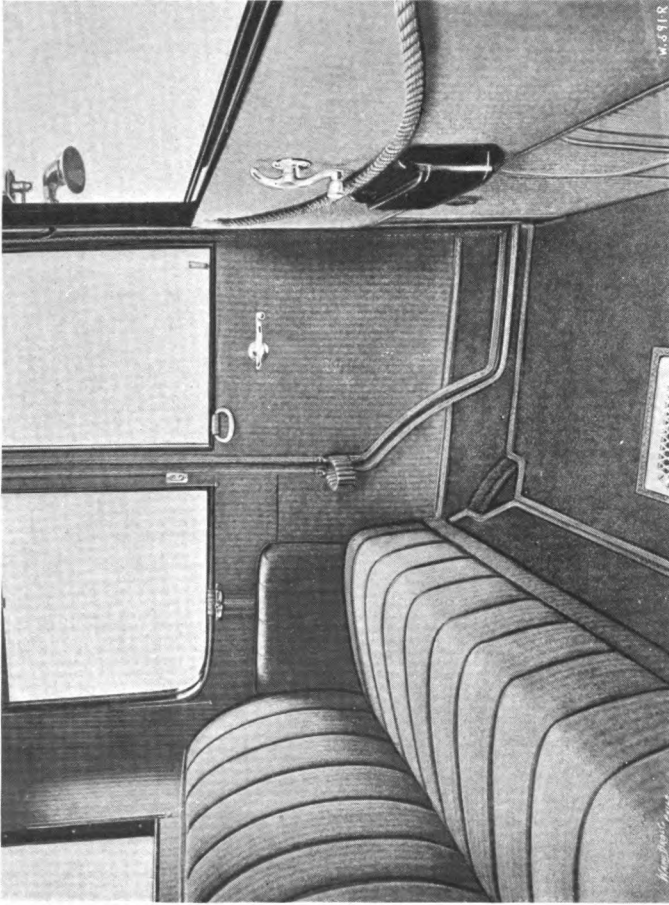
Pads and strainers being placed in position, goods for the deck, quarters, back curtains and side curtains are cut. We usually fit the quarters first by stretching them over the pad, marking out the quarters for the position in which they are intended to be placed when finished.

The next thing to do is to stretch the deck into position, extending over the quarters; turned under along the quarter line intended; creased down and marked, marking the quarters and deck along the quarter line at one time, scoring marks with chalk by which the operator can follow with the stitching of the seam.

Back curtains may be made in various shapes and styles, but the fact should be emphasized that in custom work the fitting of all parts must be done separately in order to insure a perfect job. The top and back curtains being fitted, the finish of the edges varies. On some tops there is a round



# MOTOR CAR UPHOLSTERING



Interior of 1920 Liberty Brougham.

## MOTOR CAR UPHOLSTERING

binding finish; on others a straddle binding. Very often it is just hemmed and trimmed off.

Care should be taken that the bows are perfectly in line. Care should also be taken in drawing on the top and placing the back curtain in position that a natural strain be given the goods, otherwise, when thrown and being placed back in its original position, the top will be under a severe strain, owing to the fact that the material has been stretched too tight.

There are usually six side curtains for a large car, and these should be fitted as a unit and marked off at the same time to get a perfect fitting, owing to the fact that on custom jobs there is variation.

The fitting of a well-made boot is quite an effort and the fitting should be done on the individual car. It should not be too tight nor too full, and should be fitted when the top is completed. The matter of cutting varies according to the size of the top.

### **Some Incentives to Good Work**

The demand for luxury in automobile bodies, and the consequent striving on the part of manufacturers to excel each other have constituted the motives behind the modern development of automobile upholstery work to the plane of genuine art.

The designer of automobile upholstery today must be an artist if he expects more than a moderate degree of success. He must be a close student, a diligent and watchful observer. His faculty for the proper blending of lines and colors must be well developed and a full appreciation of the value of harmony must be one of his most important qualifications.

The above observation applies just as strongly to the designer in a factory turning out hundreds of cars as to the designer in a custom shop, even though the responsibility is of such a different character. The factory designer, whose production is large, whose costs must be maintained at a minimum, and whose styles must appeal to the multitude, has a big proposition to face. His ideas may be good, the

## MOTOR CAR UPHOLSTERING

execution may be well performed, yet costs of production may make his design prohibitive.

On the other hand, the cost of production may be within bounds, yet it may not appeal to the public, which would be a most serious condition and hamper sales. The responsibility attached to the proper designing of upholstery may therefore be realized.

The custom designer, however, has a different proposition. Usually the customer believes he knows what he wants; he selects his materials and suggests the style of trimming to be used, pointing out particular features he wants emphasized.

### **Individual vs. Quantity Production**

The big difference in the two types of upholstery lies in the fact that the factory production must appeal to the general buying public, while the custom-made body must satisfy in all details the individual buying it. For that reason, in a custom-built body, greater stress is laid on upholstery and its details than in a factory job.

The factory job is sold with the chassis as a unit—a factory product—and while it is expected to render service, it is never subjected to the critical inspection or called upon to render the service expected of a custom-built body.

The car built in quantities, which is sold as a unit, must of necessity have appealing lines, a body of utility, pleasing and comfortable upholstery, but it is often upon the satisfaction which the engine renders that continued sales can be based. The body, if there is beauty in its lines, and the upholstery, if comfortable and well made, add greatly in making sales easier.

On the other hand, the custom-built job must rely solely upon the service and satisfaction which the body, its upholstery, etc., render. The body alone is responsible for continued patronage. It can therefore be easily realized that the methods used in upholstery a custom-built job are totally different from those of factory production.

## **CHAPTER VI**

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### **Tufted Work and Its Characteristics**

It is our purpose in this chapter to treat of tufted work, and we think it well to call attention at this point to various features, both good and bad, which are characteristic of this type of work, particularly the diamond or half diamond style. It is first of all harder to lay out, harder to execute, requires more material and is more difficult to keep clean, but, on the other hand, permits a greater display of skill, has longer life, is more comfortable, and is, by most people, thought more beautiful.

The reason for diamond tufted work requiring more material lies in the fact that considerably more fullness is used, varying from one-half inch to one inch more than in the French plait style. This amount of fullness, multiplied by the number of pipes, represents considerable material.

These remarks, of course, apply only to the upholstering materials, because the foundations would be almost identical in the amount of goods required.

### **Diamond Tufted Work**

The laying out of diamond tufted work should be adapted to the particular type of car for which it is intended. In the large, roomy limousine there would be permitted a greater amount of fullness than could be used in a smaller type of car. In the cases mentioned the experience of the trimmer has taught him the amount of fullness necessary.

The calculation for fullness varies in cloth and leather. Cloth has more stretch, and often we use slightly less fullness than we would were we using leather. Fullness required also varies according to the size of the diamond.

## MOTOR CAR UPHOLSTERING

A large diamond requires less fullness in proportion than the smaller diamonds. The smaller diamond holds up better after use than does the large diamond, for the reason that a lesser degree of shifting of the hair is permitted in the small diamond, while the larger diamond has the advantage probably of being softer. But these variations are overcome, to a certain extent, by expert workmanship. Some trimmers prefer a diamond not to exceed in size six and one-half inches long and proportionate in width.

There are certain methods to be followed in the laying out of diamond tufted work that are essential to follow. These rules being followed, there will be but little cause for complaint.

In laying out the work, the requirements of the employer are considered from an economic standpoint. The more fullness required the more material used. Large output considered, the matter of fullness amounts to a considerable sum in materials used, either cloth, leather, hair or cotton.

Fullness required varies from three-quarters inch to one and one-half inches; on factory outputs three-quarters inch is used; on custom work one inch appears to be about the average. Where three-quarters inch fullness is used in the width of the diamond three-eighths inch would be the amount to use in the length of the diamond. When in doubt as to the proper amount of fullness to use in length we would suggest this simple method in order to find the correct amount of fullness:

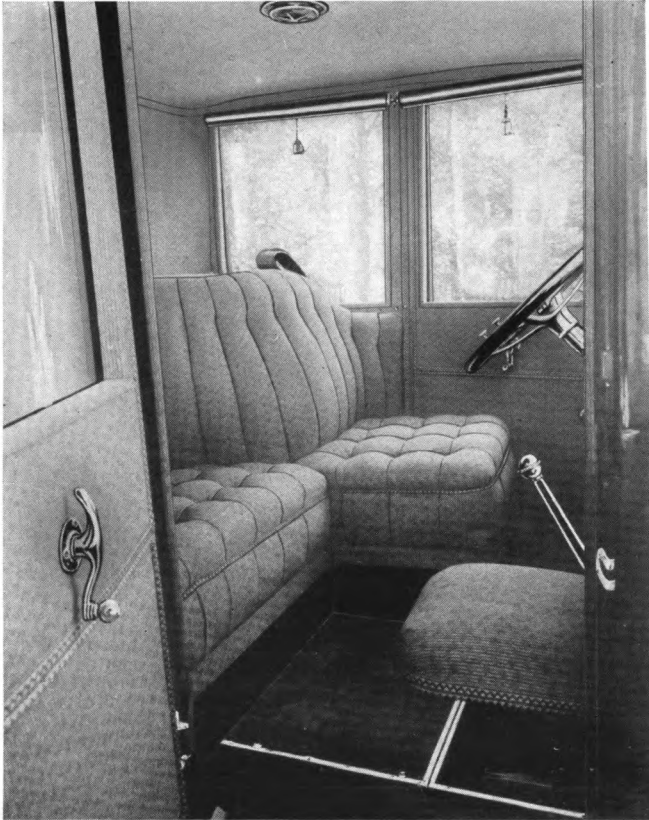
### **Fullness Allowances in Tufted Work**

Fullness across the diamond is determined by instruction from the employer, or, if left to the trimmer, according to the requirements of the job.

For the purpose of explanation, we will say that one inch has been decided upon for fullness across the diamond. Now it is necessary for us to know exactly what fullness is required in length, which we can easily determine in this manner:

## MOTOR CAR UPHOLSTERING

Take a piece of string one inch longer than the width of the diamond; tack on the points as laid out on the foundation pattern for the width of the diamond; raise it into a position describing an arc; tack another piece of string at



A Closed Car Interior, Showing a Good Example of Tufted or "Biscuit" Style Upholstery.

the point forming the end of the length of the diamond; raise this piece of string into a position describing an arc the same height as that across the diamond and mark the length of the string required to reach the other end of the length of the diamond.

## MOTOR CAR UPHOLSTERING

The difference between the length of this piece of string and the distance between the two points representing the length of the diamond is the fullness required. This is a very simple method and insures absolute smoothness.

The fullness may be calculated accurately by one thoroughly versed in higher mathematics, but since it is seldom that trimmers have been fortunate enough to have had the advantage of this training, the above simple, practical and accurate method will be found easy and reliable.

### **Making Pattern for Cushion and Laying Out Pattern for Diamond Tufting**

The spring being ready, we will take a piece of duck of sufficient size to cover the entire cushion, that is to say the top and the four sides. The spring we are using has been attached to the wood frame at the bottom, which is now generally used. Tack the goods, entirely covering the spring, to the wood frame temporarily, and mark around the outer spring edge and the bottom of the wood frame.

After the material is so marked remove the goods; lay it on the bench smoothly; draw positive lines which represent the spring edge at the top and the wood frame at the bottom, striking a line about three inches in from the spring edge all around the top. From this line we arrive at our objective lines for the laying out of the diamonds. Our dividers are then used for the spacing of the width of the diamonds.

The finding of the width of the diamond is arrived at in the following manner:

Sometimes a diamond and one-half pattern is used, sometimes two diamonds or two and one-half diamonds.

Having divided the distance between the objective lines at the front and back of the pattern, using the rule that the width of the diamond must be more than one-half and less than two-thirds of the length, we can readily arrive at an approximate figure for the width of the diamond.

## MOTOR CAR UPHOLSTERING

For an example, we will say that the length of the diamond is nine inches; one-half of nine is four and one-half, and two-thirds of nine is six; so that the width of our diamond must be more than four and one-half inches and less than six inches. Taking any figure between these two, say five inches, we divide five into the distance between our objective lines at the sides of our pattern, which will give us equal spaces and a half of a space, which would be unsightly.

We can easily see that the width should be slightly less than five inches, equally divided, so we will divide the distance between our objective line at the sides into equal spaces. Thus we arrive at the width required.

### **The Diamond and Half Diamond**

In order to complete the pattern for the diamond and half diamond, after objective lines are laid out and spacing is done, for the width of the pattern for these points we will strike three equal points across the width of the cushion, marking from the second line to the fourth or rear objective line, which gives the length of the diamond.

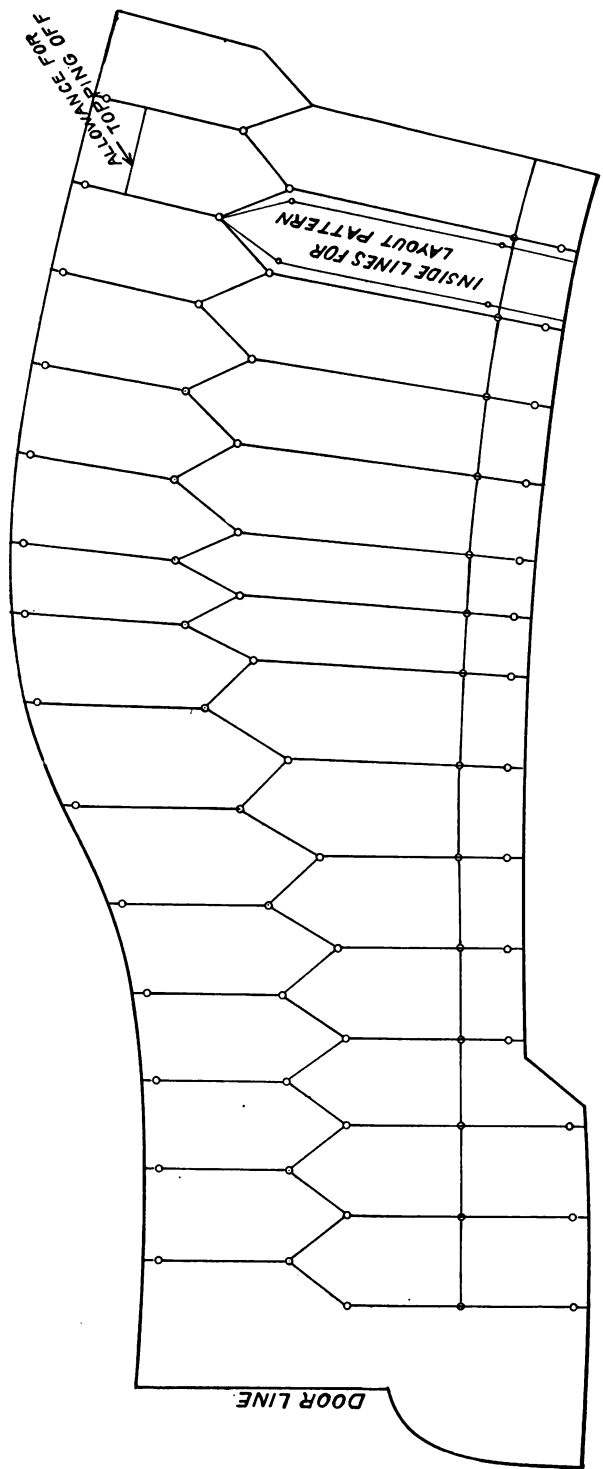
Mark diagonally from the outside tufts on the second line to the second tuft on the rear or fourth line. Continue to mark diagonally across the pattern; reverse and mark the opposite way across the pattern. This completes the diamond inside the objective lines.

Then draw lines from the outer line of tufts square to the outer edges, thus completing the lines for the foundation pattern. Where a cord is sewed in the cushion around the top, three-eighths of one inch should be allowed over the size of the spring.

### **Layout of the Two-Diamond Style**

For the two-diamond layout the outside objective lines are in the same position, but we divide the width of the cushion into four equal parts and the pattern is made in the same manner as the diamond and one-half design, with this





ONE-HALF FULLNESS PATTERN FOR FIVE-PASSENGER TOURING CAR.  
 Showing Lines for Layout and Fullness Patterns and Allowance for Topping Off.

## MOTOR CAR UPHOLSTERING

difference, that we lay out for the width of the diamond from the second and fourth lines. The fullness pattern is made in exactly the same manner as if laying out the foundation pattern, with the addition of the fullness required.

While we have allowed a certain amount of fullness, we have taken into consideration the sewing, which consumes about one-quarter of one inch of the fullness. The sewing is done on all the lines indicated in the pattern.

The best way is to sew all the way out from the outer line of tufts, thus permitting the lines as laid out to be followed absolutely. In the sewing it is well to jump a stitch or two each side of the tuft, as this permits of all the fullness and allows the tuft to sink in deeper.

### **Making Up the Cushion Top**

In making up the top a wood frame of sufficient size is covered with a duck suitable for top making, on which is laid the foundation patterns which have been described. The tufts and lines are then marked from the pattern on the frame.

Hair in a sufficient quantity is laid on the frame, the lines as marked giving the shape to which the hair is laid, of sufficient height to round out the fullness required. The experienced trimmer knows about the height required for the different fullnesses.

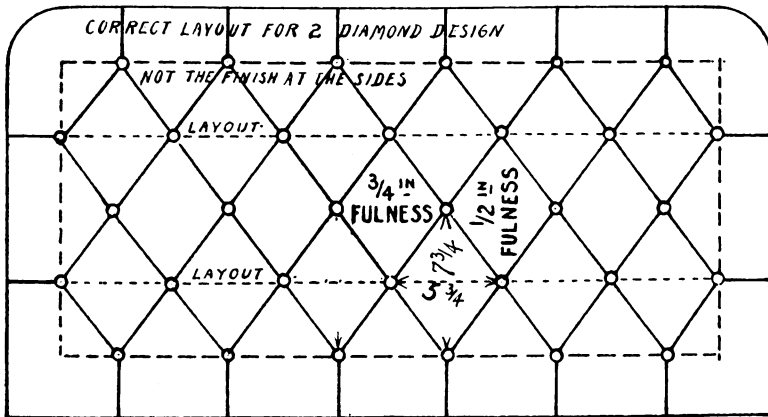
Over the hair is placed a layer of cotton. We might mention here the reason for the use of cotton. Cotton prevents the hair from working through the cloth, if cloth is used. We might also mention that the trimmer in laying hair, picks the hair apart or loosens it, which requires considerable time if done by hand. Well-equipped shops use a hair picker, which permits the work to be done more rapidly.

The outside covering is then laid over the hair and cotton, and fastened to the foundation temporarily by the use of upholsterers' pins. The tufts are then drawn through the outer covering to the tuft marks indicated on the founda-

## MOTOR CAR UPHOLSTERING

tion. The tufts are tightened to a backing of cord or rolled strips of muslin, drawn tightly by means of a slip knot, which is tied securely.

After the tufts are all drawn in position the plaits are turned and regulated. On first-class work care is taken that the plaits are all turned the one way, to the left. The reason we turn the plaits to the left is that brushing or cleaning is usually done working from the right to the left; thus we avoid forcing the plaits out of position.



Correct Layout for Two-Diamond Design.

The tufts being in position permanently, we must see that the diamonds are perfectly smooth. Very often we must work the hair up to the buttons by the use of a stuffing rod and regulator.

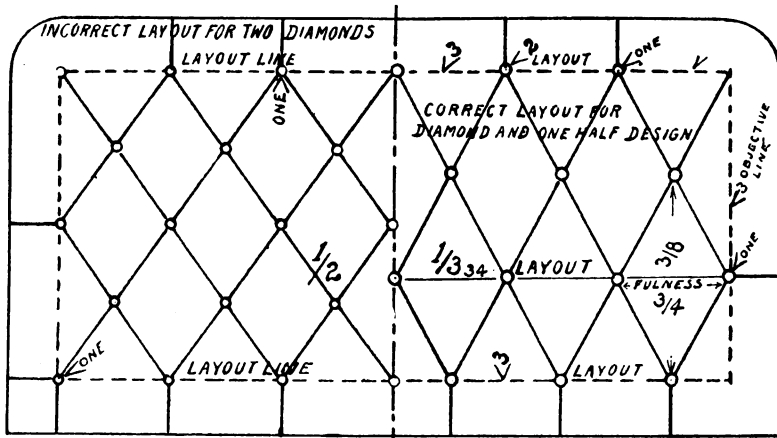
The inside of the cushion top being completed, we begin to draw from the outer line of tufts to the sewing line of the cord, if a corded top is to be used. We stretch out smoothly at the lines indicated, shifting the upholsterers' pins, taking up the fullness at each plait, drawing smoothly between the plaits at the outer lines and sewing through all around the outer line of the cushion, indicating the cord line.

Where the corded top is used a facing is necessary. The facing pattern is obtained by fitting around the cushion

# MOTOR CAR UPHOLSTERING

spring, marking off the upper part of the spring edge and the bottom part of the wood frame of the cushion.

The goods being cut to the pattern, a cord is sewed around the top part of the goods, a sufficient amount being allowed for the "take-up" of the cord, which is usually about three-eighths of one inch. The facing is then sewed around the cushion top while on the frame.



Incorrect Layout for Two Diamonds.

Correct Layout for Diamond and Half Diamond Design.

## Attaching Top to the Spring

Let us now attach the top to the spring in this manner: Either the sides of the spring are covered with suitable goods or the top and sides are covered and tacked to the wood frame. The top, which has been made, is sewed fast to this sub-foundation, either around the spring edge or underneath it, but the sub-foundation should be whipped (whip stitched) to the top of the spring, thus avoiding the shifting of the top when sewed into position. The facing is then drawn down and nailed to the underneath part of the bottom of the spring or wood frame. The bottom is then closed in with a covering of canvas or enameled duck.

# MOTOR CAR UPHOLSTERING

## **Providing Good Ventilation**

Ventilation should be provided in all cushions by means of grommets on the sides and rear facings, together with ventilating holes in the bottom. A cushion, to give satisfactory results, must be well ventilated, otherwise the compressed air will cause unsatisfactory results in an otherwise perfect cushion. It should be mentioned here that the use of good hair is always required to give proper results.

## CHAPTER VII

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### Laying Out and Making Up a Diamond Seat Back

Fitting the pattern for the back is done in two ways—either by fitting over the springs or simply to the frame. Fitting over the springs probably would be the better method for custom work, but allowances can be made without the use of the spring.

The average amount of "take-up" is about two and one-half inches, so if a pattern is made or fitted to the frame this amount of allowance should be made for the "take-up" of the spring.

The material from which the pattern is to be made is tacked temporarily over the spring construction; the outer lines where the finish is required is marked while in position, at top, bottom and sides, allowance being made on the sides for the thickness of the quarters.

Calculation is then made for the outer line of piping, which is determined from the bottom. The average position for this point is about four inches from the center of the radius at the seat board. Thus we have found our objectives, which are (1) the top finish, (2) the seat board where the back comes in contact with the quarter, and (3) the outer line of piping.

The pattern is then removed, the center is marked, and the dividing of the width of the pipes from the outer line gives the width of the pipings. We should work at all times from the center in laying out the foundation for both the back and cushion.

In diamond tufting, the first row of buttons should average five inches from the top. From the top line of tufts to the point of the diamond should average three and one-half inches, and the bottom lines of tufts should be placed about three inches above the top of the finished cushion.

## MOTOR CAR UPHOLSTERING

The fullness required across the back varies as in the cushion, one inch being the average. The fullness between the points at the top of the back averages three-eighths of one inch. Fullness from the points to the bottom line of tufts varies according to the contour required, from one-quarter of one inch for a flat back to one and three-quarter inches for a full back.

The fullness pattern is determined in the same manner as the foundation pattern, being an exact duplicate, with the addition of the fullness required, and the amount of goods required for a turn-under at the side and a finish for top and bottom.

The patterns for back diamond tufting, when completed, are made up on a frame in exactly the same manner as the cushion top, with the difference that the top and bottom are left open, and are closed in with the hanging of the back.

In laying out of both the back and the cushion we are working always from the center lines, working to the center in the hanging of the back and the building of the cushion, following closely the lines of the foundation patterns.

In the hanging of the back the center is marked on the seat board; the foundation pattern is measured to ascertain the distance between the outer lines for the piping, which is marked on the seat, and the lines of the back are caused to conform with these measurements when hanging the back. The same method is pursued in the building of the cushion, thus causing all the plaits to conform.

It is the purpose in this book only to give methods, descriptions and examples, without the complete trimming of any particular or individual job, taking only into consideration that these instructions are intended primarily for beginners in the art of automobile upholstery.

### **The Different Varieties of "Diamond" Tufting**

There being various styles in which diamond tufting can be used, we will submit drawings showing the half-diamond pipe back and a full-diamond pipe back, a back made

## MOTOR CAR UPHOLSTERING

separately with separate side quarters and a one-piece back running from door to door. In making the one-piece back we will call attention to the proper method of making the pattern.

Owing to the fact that in a one-piece back the lines are drawn absolutely square, there will be a tendency to have the appearance of the line not being squared up. This is an optical illusion. While the lines will appear to be out of plumb, it is caused by the contour made by the springs. So to overcome this optical illusion, while laying out our pattern, we contract the outer line marked inside the radius of the seat at the bottom, three-eighths of one inch for the first line, one-quarter for the second line, one-eighth for the third line, the rest of the lines for the pipes to the center being square up. This will make the lines appear absolutely square.

This method being followed in the laying out of the back pattern in one piece will permit of easy back hanging, especially where many jobs are being built for an order. For large output the first pattern as it is laid out may not be absolutely correct, but while the first back is being hung deductions can be made, the pattern can be altered and will suffice for an indefinite number of jobs.

On large outputs particular attention should be paid to the amount of wastage. This should also be deducted from the original pattern. We are calling attention to this fact as an economic example, for an inch wasted here and there is not an economical proposition. The beginner should bear in mind these facts, for a dollar saved by the firm which employs him means a more stable position for himself as well as securing credit for his own efforts.

It has often been questioned, "is a one-piece back and quarters as comfortable as one made in three sections?" What we have learned from experience is that there is as much comfort and satisfaction in a one-piece construction as in a three-piece construction. So far as comfort is concerned there is no difference.

On a one-piece back running from door to door, the



## MOTOR CAR UPHOLSTERING

radius at the corners will be maintained permanently, while on a back made in three sections, viz., back proper and side quarters, being free at the corners, has a tendency to sink in and become square and lose the radius altogether, causing a hollow to be made to which the body will not conform.

We mention the above as an example, for the reason that invariably a person riding in a car will endeavor to seat himself comfortably in the corner, and after all fair deductions are made, even after taking into consideration that a one-piece back may be air-bound, we still find that the one-piece back has the advantage, because outlets for the air can be provided by the use of grommets below the top line of the cushion, these grommets, of course, being concealed from view.

### **Sensible Spring Construction**

Much of the success attributed to a trimmer as to comfort depends on proper spring construction. The utmost care should be taken to have properly fitted springs of the right construction. There have been many patented springs placed upon the market, and these have given more or less satisfaction. Freak spring construction is seldom satisfactory, either to the maker of the car or the user.

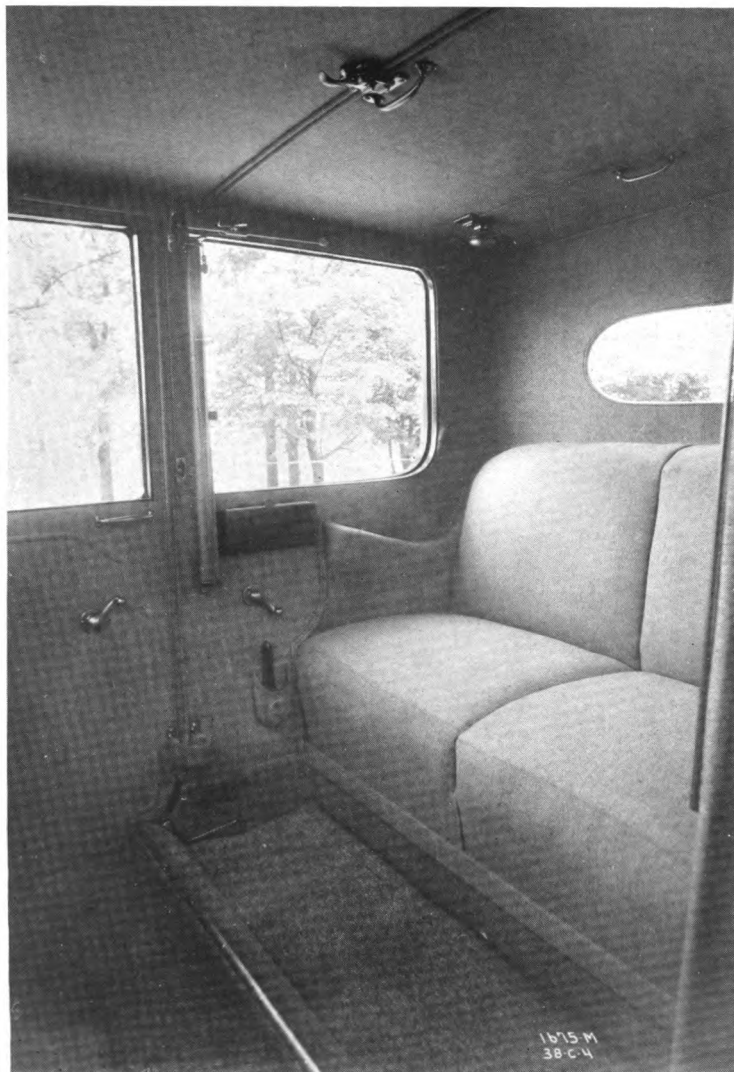
The height of the spring determines the gauge of the wire to be used in making the spring. The spring must have a sufficient resistance to take the bound and rebound and yet be resilient enough to permit of comfortable riding. The day is past for a trimmer to create his own spring construction and he is relieved of this effort by the seat spring manufacturer.

In fitting spring patterns, care should be taken that the spring does not bind, either at the back or quarters, and it should have a pitch or an incline toward the rear, on the cushion spring. The average pitch required in present-day construction is three inches. The reason for having the pitch is to incline the rider toward the back, and the back spring should rake toward the top. This combination in spring construction permits of the utmost comfort.

## MOTOR CAR UPHOLSTERING

The use of too much hair, or making the back pad of the cushion pad too thick, drawing down the cushion too tight or hanging the back too tight, will cause the springs to lose their effect, making them stiff. The springs should always have their full freedom so that the maximum of results may be attained. Back spring construction is so made that there is no shifting permitted, and no tying in of springs is done. This condition permits of rapid back hanging.

**MOTOR CAR UPHOLSTERING**



**An Example of Severely Plain Upholstery.**

**CHAPTER VIII**

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**The Negligee and Plain Styles**

Negligee work, which is considered by many people the finest, most beautiful and most comfortable upholstery, is today almost entirely unknown to the majority of mechanics. The beauty of this style lies in the fact of its apparent looseness, the graceful and natural folds of the goods showing the application of real mechanical skill.

The laying out of patterns for negligee work is done practically in the same manner as the diamond tufted work, but with this difference: There is no plaiting, fullness need not exceed three-eighths of one inch, and the diamonds are made considerably smaller. Cushion tops are made almost invariably with a corded edge and plain facings.

In order to get the extreme effect in negligee work it is necessary that the cloth should be lined with a layer of cotton wadding and muslin. The cloth, after being cut out, is laid on the bench, back up; the punch marks for the buttons are touched lightly with paste over which a layer of cotton is placed. The outer edges of the cloth are also pasted just beyond where the cord is intended to be sewed. The cotton is trimmed off just inside this, pasting at the outer edges, and the muslin backing is laid over the cotton.

Care should be taken that none of the three pieces of material is stretched, thereby allowing each section to have an equal amount of fullness, so that when the tufting is done each piece of material has an equal amount of play. This section is then laid aside for the paste to dry.

The foundation pattern is laid on the covered frame, which is marked to correspond with the foundation pattern. Two layers of hair are laid on the frame and the outer cover-

## MOTOR CAR UPHOLSTERING

ing laid over the hair, held temporarily in place by the use of upholsterers' pins. The buttons or tufts are pulled through at the points indicated on the pattern, drawn very tightly, tied fast and with the use of a tickler creates an indentation along the lines from button to button. This causes the impression of a line between the diamonds.

Pat lightly with the hands all over the top, thus flattening out the hair. Use a regulator through the back to work the hair up to the button. Very often it is required to use a stuffing rod in order to fill up any hollow that may be caused by the shifting of the hair while working up the pad.

After this has been done draw the outer line of plaits firmly to the outer edges where the cord finish is to be placed. The goods between the outer lines is to be left natural and the sewing is done by hand around the cord line, sewing the cloth to the frame covering.

The stitching is done the same as a basting stitch, up and down, in spaces of about one-half inch, not back stitched under any consideration. The up and down stitch causes an indentation which gives the negligee effect. The back stitch would cause the appearance of a series of small plaits, and this we must avoid, otherwise we would not create the negligee effect.

No creasing or ironing is required, for in order to get the negligee effect there must be no plaits formed, and the material must find its natural position to create the desired negligee effect.

The advantage of negligee work is that after use it usually improves in appearance, proving that the goods must find a natural position in the make-up. Negligee work properly executed is very attractive and serviceable, and always excites admiration.

After the top is sewed in the above manner the facing, with a cord attached, is sewed by hand around the lines which have been basted. The sewing should be done by the well-known trimmer's back stitch. The back stitch adds more strength and will not affect at this point the negligee effect.

## MOTOR CAR UPHOLSTERING

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In making up the back the outer covering is made in the same manner as described for the cushion top, but in making up the back foundation a pad is required before the outer covering is placed in position.

We will now describe the method of making this back on the frame, as all negligee work is frame work. The frame being covered, the pattern is marked thereon; a pad about two inches thick is made of sufficient size as indicated in drawing. The pad should be made extending a couple of inches beyond the point where the buttons are to be placed, that is, top and sides. At the bottom of the back the pad should finish a half inch above the bottom line of buttons. The pad should be flat and loosely quilted through, thus keeping the hair permanently in position. Over the pad is piled hair the size of the pad; over the hair is placed the outer covering.

The buttons are drawn through, and care should be taken that the buttons are drawn perpendicular to the marks indicated for the buttons on the foundation, because if the buttons are not drawn through the pad properly there will be a variation in the fullness.

The two top lines of tufts are drawn down just as far as the pad. The bottom line of buttons, as already indicated, are to be placed below the pad, which allows the bottom line of buttons to set deeper than the upper line, thus giving a square effect and causing a back to be made that will hold its original shape indefinitely.

The buttons being tied securely in position, we will finish the sides and the bottom. The body of the back having the lines regulated into position and the hair worked up smoothly, the bottom is drawn down to the finish line and basted.

No hair is required from the bottom line of tufts to the bottom finish, thus permitting this section at the bottom to be flat, which allows the cushion to extend under the "belly" of the back, permitting more cushion room and giving the benefit of the maximum space.

## MOTOR CAR UPHOLSTERING

That section of the side between the pad and the quarter line is filled in with hair and the cloth is basted down at the quarter line, indicated from the top to the bottom. The foundation is cut from top to bottom and the surplus cloth is thrown around and basted to the rear of the back.

The top of the back can be finished in the same way as the bottom by basting in position, or it can be left open and closed in when hanging the back in the job, but often the closing in on the frame can be accomplished with less effort and requires much less time in hanging.

The making of the quarters can be done either on a frame at the bench or it can be made up on double-ply buckram as a foundation and can be finished in the job. The fullness can be worked in by the tacking at the finish edges. The above description is for separate backs and quarters.

## **CHAPTER IX**

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### **Fitting and Making Head Lining**

Owing to the fact that different weights of cloth have a different amount of stretch, the measuring of the spacing of the ribs is not practical.

The simple method is, after the cloth is cut of sufficient size, the ribs to which the listing is to be attached are selected. The cloth folded to the center is tacked temporarily at the front and the back and the ribs as selected, and marked at the selected ribs where the listing is to be placed. The folded cloth is laid on the bench and the lines squared across from the center. Lines are drawn, to which the listing is to be attached, and the listing is sewed either by machine or by hand, by "shot stitching." This method of fitting is simple and takes out just the amount of stretch required.

Where three ribs are used for the listing we must tack to the front or back of two ribs and to the opposite of the third selected rib, the center rib being tacked to first, and the first and back ribs last.

### **Finishing Around Front, Back and Sides**

The finishing around the front, back and sides should be carefully executed, as the sewing at the listing must be kept straight. The main part of the stretching is done at the front and back, the sides being closed in naturally, no stretching being done, for the stretching would cause the head lining to "cup."

Care should also be taken where striped goods are used that they are stretched evenly, otherwise irregularity of the stripes will be caused.



# MOTOR CAR UPHOLSTERING

## **Upper Quarters of a Limousine**

The "upper quarters" of a limousine also comprises the upper back. A pattern is made one-half the size, of the distance from door to door, marking around where the head lining is finished at the back and quarters, around the quarter light and rear light. The material is never wide enough to make this section in one piece, so we do our piecing at the center of the rear light. The neatest method of joining is by sewing a flat seam, pressing out the seam and sewing on either side from the face.

The open space between strainers should be closed in with buckram, cardboard or canvas, over which is placed solidly a layer or two of cotton wadding. In hanging the cloth we tack temporarily, working from the center, tacking smoothly at the finish.

The stretching should be done the "up and down way" of the goods, allowing the closing in around the quarter lights and rear light to fall in naturally. Any stretching done across the goods at these points will cause the corners to lose the shape of the body.

The pillar trimming should always be padded, but the padding should be cut sufficiently far in to allow for the cord and welt finish or other finish that may be used.

## **Making Patterns, Cutting Cloth and Materials**

In small shops there is seldom considered any system whatever, which often causes much inconvenience and waste of goods. A well-trained trimmer should endeavor to use a system which is as adaptable to a small shop as to a large one in relation to execution and economy in material.

The job should be measured and the amount of goods required ordered with the idea that no material shall be left over as waste. It is often the case in small shops that an insufficient amount of goods is ordered for a single job. Now if an order for an insufficient amount of goods is placed and more is required to finish the job the same goods may not be found in stock, consequently the trimmer proves his in-

## MOTOR CAR UPHOLSTERING

efficiency and puts his employer in an embarrassing position. So in buying material for a special job, be sure to get enough, but not too much.

Patterns should be made for each individual part of the trimming. Each individual part of the trimming being measured thereby allows the ordering of enough goods and no more. The cutting of material is an economical proposition and the goods for the job should be cut completely at one time.

All the patterns should be laid on the cloth and placed in such a position as to reduce waste. This not only saves time, but is the most economical method.

The trimmer should keep at all times a record of the job and the amount of material used, and this record will be useful for duplicate orders. The operating should be done at one time and not as a particular section is being made. This also saves time, not only in large shops, but in small ones as well.

### **Upholstered Arm Rests**

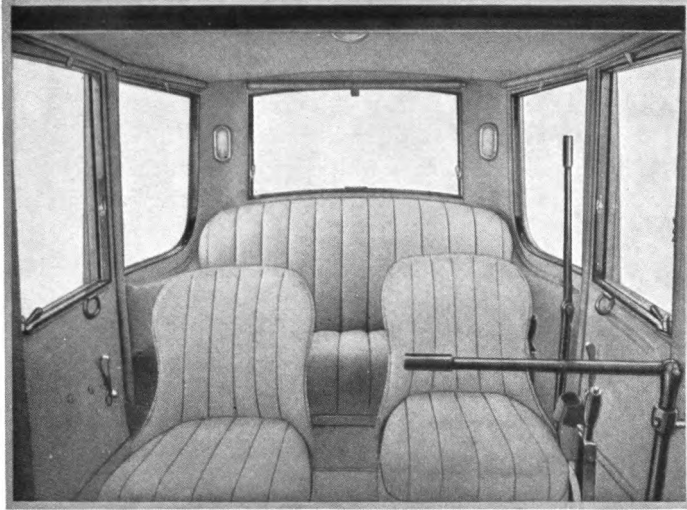
Shapes and sizes of arm rests vary and are made adaptable to the job for which they are intended. Arm rests are seldom used in touring cars or cars of a like character. In limousine work there has been a tendency to reduce the size in order that the utmost room may be given to the riders.

A simple method is to use a block of wood made to the shape of drawing, which is screwed on at the proper place, over which the quarter trimming is drawn, producing a pleasing effect. (See page 90.)

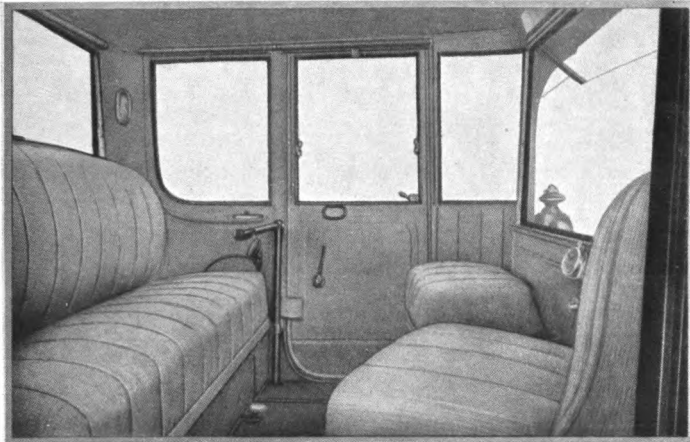
### **Making Door Checks**

Door checks are made with the use of footman loops and harness leather, covered in the same manner as the robe rails, but are made flat instead of round, usually one and one-half inches wide. This is intended for custom work. Various methods are used for factory outputs.

## MOTOR CAR UPHOLSTERY



Front View of French Plait Upholstery in an Electric Car.



View of Same Upholstery as Shown Above, Seen from Another Angle.

# MOTOR CAR UPHOLSTERING

## **Covering Robe Rails**

A robe rail is attached to the rear of the front seat partition, both on touring cars and limousines. It is intended for the carrying of blankets or coats or any other articles that may be desired for immediate use.

Robe rails are made in various ways. A simple rail permitting of rapid work and yet neat in appearance is made in this manner:

A piece of harness leather one and a half inches in width is wet and cat-stitched together; a piece of wire in the center, which is intended both to strengthen and shape the robe rail, is inserted; footman loops are used, over which the harness leather is securely fastened and the leather is then rounded to shape.

This foundation is then covered with the cloth or leather that is used for the trimming of the job and is closed in with cat-stitching. Then, again, robe rail material is furnished by upholstery makers and jobbers to match the laces.

## **Touring Car Doors**

As much room as possible is given on touring car doors for pocket space. Very often the entire body of the door constitutes the pocket. The door is lined with canvas or other suitable material by pasting and turning the goods over the strainers.

The outer covering is then tacked to the frame of the door and the outer door trimming is made in this manner: Double-ply buckram is used as a foundation, the size of the opening of the pocket as provided for.

The foundation is fitted to the door, marked around the outer edges, cut three-quarters of an inch smaller all around, thus avoiding any obstruction to the lace or molding finish.

The outer covering of cloth or leather is pasted smoothly around the pocket opening, turned for a hem one-quarter of one inch from the edge and is ready to be tacked in place. Two layers of cotton wadding are placed over the surface of the foundation and trimmed even with the buckram. The

## MOTOR CAR UPHOLSTERING

outer covering is then tacked smoothly in position. The flap is made on buckram, padded; outer covering hemmed and tacked in position. The door is then ready for the welt or molding finish.

If molding is used for a finish, a pattern is made the exact size of the door where the finish is required, and the molding is made from this pattern. The molding may be of nickel or brass finish, enameled black, or may be covered with the material used in trimming the job.

## CHAPTER X

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### Front Seat Trimming—Plain Work

Plain trimming is much used at this time in closed car work. In fact at this writing the honors seem fairly to be divided between the French plait styles and the plain. Only where the customer especially desires it do we find examples of tufted work, but this does not mean its permanent retirement from public favor. Tufts may "come in" again. Who knows?

The plain style of trimming permits of the use of a minimum amount of hair if executed in the following manner: We will take as an example the making of a plain top front cushion which has been used with much success.

We have described the making of spring patterns and the making of springs, mentioning the gauges of wire, the pitch, and other essentials; so we will endeavor to explain only the making of a plain top cushion using a facing.

A piece of duck covering the spring, except the bottom, is used. Place temporarily in position, marking around the upper spring edge and the bottom of the cushion frame.

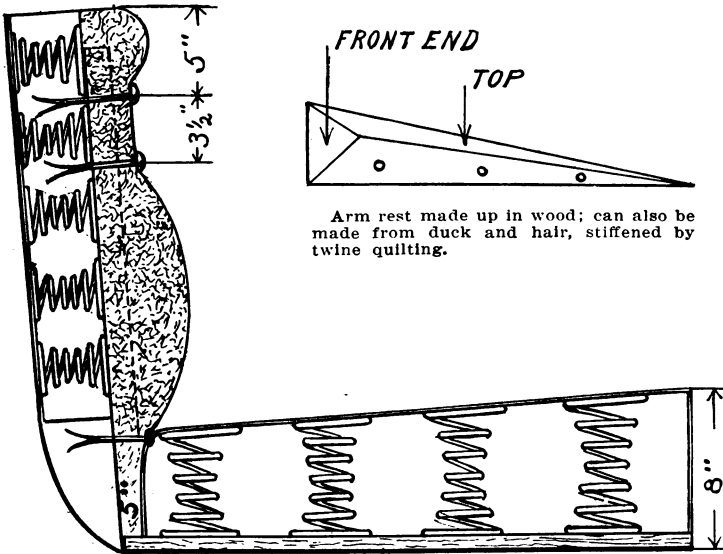
Draw a line one and one-half inches in from the spring edge on the front and the sides; sew to this line a piece of muslin or light duck; replace in position over the frame; whip the goods fast around the spring edge; throw in a cotton roll from one to one and one-half inches in height, which is worked to the shape of a hard roll.

The foundation material is then tacked to the wood frame of the cushion at the bottom, tacking carefully along the face edges.

The covering and roll being in position, plaited in at the corners and trimmed off at the bottom, we stitch strings

# MOTOR CAR UPHOLSTERING

across the length of the cushion in three or four equal parts, the width of the cushion, under which the hair is strung smoothly. Any irregularities in the hair are then filled in and a muslin cover is stretched over the hair, upholsterers' pins being used in this operation. After the pad is made smooth we can lightly quilt, in order to flatten or shape the surface.



DIMENSION AND LOCATION DIAGRAM OF SEAT AND BACK.  
May Be Used for Either Diamond Tufting or Negligee Work.

The outer edges of the muslin covering are stitched to the foundation at the sides by the use of a half-round needle. The pad being made, the leather is fitted with the use of upholsterers' pins, marked around the spring edge or where the cord is intended to finish.

The cushion facing is made by fitting a pattern around the sides, and is marked for the cord finish, as intended, around the top spring edge and the bottom of the wood framing. A sufficient amount of goods is allowed to tack

## MOTOR CAR UPHOLSTERING

underneath as a finish. Three-eighths of one inch is allowed for the cord finish at the top. The facing is then fitted, with the cord attached to the facing.

The top proper and the cord are then score-marked, so as to permit the operating to be done as fitted. The leather is then detached and the facing operated to the top.

The amount of material which has hung over in the fitting should not be trimmed off until the top and facing is again stretched into position. The surplus goods which have been left are then sewed by the use of a half-round needle to the duck foundation around the sides, underneath the spring edge. This makes it certain that the top covering will permanently hold to its position.

The facing is then drawn down and tacked underneath the wood frame, and I might mention here, lest it be overlooked, that air ventilation must be provided either by the use of grommets placed at the side and rear of the facing or in the bottom covering.

A cushion made in this manner proves successful, allows the cushion spring to have its absolute freedom and the "full of its life" and permits a minimum amount of materials to be used.

Two pounds of hair would be the maximum amount required by making over the spring. Were the pad to be made on a frame, more material and more time would be required.

### **Making Front Back in the Plain Style**

In trimming a plain back over the springs, the following method proves effective: The spring is placed in position, covered with a layer of duck, tacked to the wood framing of the seat and at the top rail, stringing across. Under the strings is placed the hair.

The hair is piled to the desired shape; an outer covering is placed over the hair, tacked to the seat frame at the bottom and at the top rail. A sufficient amount of goods is left on the ends to turn in, thus forming a pocket. The pad is then quilted through to avoid the shifting of hair.



## MOTOR CAR UPHOLSTERING

The leather or other material is then tacked over the foundation, covered with a layer of cotton, tacked first to the seat board, drawn tightly to the top finish and turned in at the ends. This forms a well-constructed, comfortable back, with the use of a minimum amount of hair.

The finish is accomplished by the use of lace or metal molding. This style of back is built at a less cost than a back made on a frame with a pad.

The finishing off of a job has a great deal to do with the impression created. A body may be exceptionally well trimmed, but if the laces, welts, etc., are not tightly drawn, smoothly laid and evenly tacked, the entire effect is lost. It perhaps is one of the hardest operations in trimming a body, requiring the utmost patience and extreme neatness. Even a good trimmer will find it a nice test of his ability.

## **CHAPTER XI**

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### **Some Notes on Slip Covers**

It is our purpose to treat of a job as received in a custom shop for top and slip covers, where first-class high-grade work is done. The method we propose to explain, both as to top and slip covers, is one which might be adapted to large-scale production with the use of patterns.

In making patterns for slip covers for duplication, all parts must be fitted and basted. The sections, such as the backs, quarters, cushions or other parts, which must be shaped to the upholstering, must be basted on the job while being fitted. After the basting the goods are trimmed off,  $\frac{3}{8}$ -inch allowance being made for the beading. A spring punch (a No. 1 punch) is used to make guide holes for joining by the operator.

After the shaped parts are fitted completely and accurately they are taken apart and from this fitting the patterns are made for duplication.

### **Use of Templates on Quantity Work**

Generally upholstery work is so accurately made by the use of templates on standard factory built jobs that slip lining is not only possible, but very easy. We will endeavor to explain the making of a slip lining in the most simple manner as made in a high-class custom shop and which method can be used for duplication or quantity work.

Rough patterns should be cut for all separate sections for slip lining. The cutting of patterns for the cutting of the goods saves material. All parts should be cut at one time after rough patterns are secured. Cutting all goods at the one time saves much material and labor.

## MOTOR CAR UPHOLSTERING

The section at the rear of the back, say, for instance, the rear back, where the fasteners are placed for the back curtain and side curtains, which constitutes the center of the rear back and side quarters, should be fitted first. Leather is used as the top section over the quarters. The outside parts should be fitted and sewed together at the corners.

That part of the top which constitutes the center part should be fitted and sewed together at the corners. These two sections are basted together and then the bottom part of the quarters and back is fitted and sewed together at the center part of the radius. This is then tacked in position and stretched tightly and basted to the two previous sections which have already been placed and basted into position.

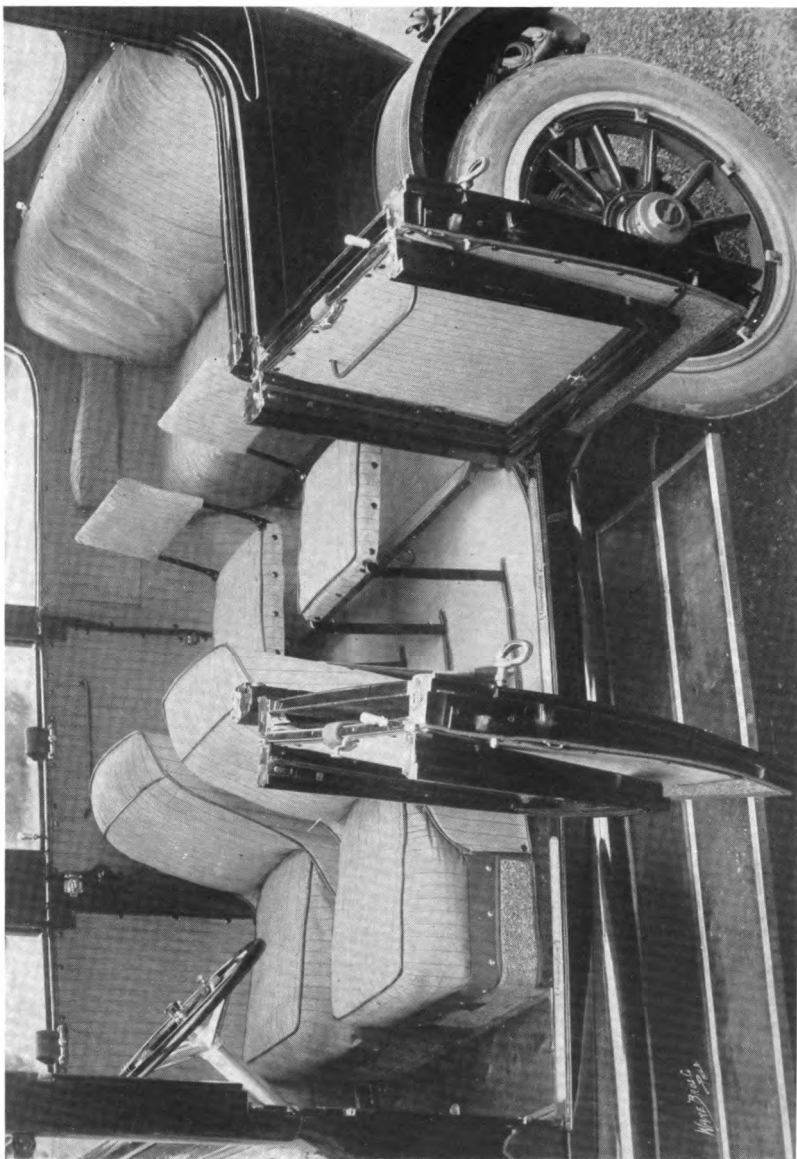
Mark around the bottom, allowing an inch or so for tacking to the wood seat framing, where the parts are basted together. Trim off about five-sixteenths inch from the basting. A spring punch is used (a No. 1 punch) punching through in spaces close to the outer edge, as trimmed. This gives a guide line for the operator and eliminates the use of chalk. Chalk is often undesirable as an operator's guide from the fact that chalk marks are hard to remove.

Most all slip linings today are welted, so in order to welt the work the stitches must be removed and the goods turned the opposite way from that on which it was basted.

The outer edge of the rear back section is bound with manufacturer's binding, that is to say, a binding prepared by manufacturers with one edge cemented and turned. This permits of a neat, flat binding with the outside stitching showing, and is rapidly done by an expert operator, and no basting or turning is required. The welting is five-eighths to three-quarters inch wide and is also furnished by manufacturers of welting in 100-yard rolls.

The front seat is fitted and finished in the same manner. The fasteners used are of various makes, all of which are good if they are easy to attach and hold the lining close to the job. First-class custom slip linings are usually attached by the means of such fasteners, and tacks are seldom used.

# MOTOR CAR UPHOLSTERING



Car Interior Fitted with Slip Covers for Summer Use.

## MOTOR CAR UPHOLSTERING

Doors and other flat parts are fitted to cover the upholstery, reinforced around the edges to give strength to the fasteners and finished with the flat binding.

It is well when beginning to make a job of slip lining work, especially where leather is the upholstery to be covered, that the lines intended for the welting should be marked off on the job, with chalk, thus laying out your lines for basting in keeping with the shape of the job.

In fitting for the cushions, mark off with chalk on the cushion top where the beading is intended to be placed. Take the goods cut for the top and pin in place with the use of upholsterers' clamps. The lines intended for the beading should be placed far enough in from the outer edges so that all the beading may show.

A slip lining for a cushion looks much neater with the welting all around the top rather than attempting the faceless front, and holds its shape much better.

Where the cushion is nearly square the side facings are not required to be fitted, but where the pitch is two inches or more the facing must be fitted to get a smooth job. Otherwise with a square cushion, the size of the top piece being gotten out, a facing could be sewed around with the beading without fitting. But where the facing is fitted it is shaped to the cushion, basted to the top and sewed together.

The bottom of the cushion is marked off, folded over on the bottom at the front, mitered at the back corners underneath and hemmed as a bottom finish. Straps of the same material are made in three-fold, three-quarter inch in width, three straps across cushion. Fasten with skate buckles.

For children's seats, the backs are usually fitted and made the same as a flat bag and closed with a flat binding, glove fasteners closing in the bottom. The seat proper is usually mitered at the corners, turned over at the bottom and the bottom closed with a flat, square piece with glove fasteners.

The goods required for slip-covering a seven-passenger job averages fifteen yards of fifty-inch material. Time required, first-class work, one man completing the job, forty-five hours.

## **CHAPTER XII**

### **Trimming Cape Top for Touring Car**

Various methods are pursued in top building which are governed by shop conditions and output. Custom work tops are built on the job, but top work for duplication is oftentimes built with the use of a "buck"; that is to say, a framework is built to represent the body irons and shape of back of job, also representing the windshield.

But the use of a "buck" sometimes proves to be a failure unless they are made heavy and absolutely rigid. The better method, where large output is concerned, is to use a model body with windshield attached and fasteners placed in the job, and the entire top can be completed.

The boots are made from patterns and do not require a fitting for each individual job. After the bodies are trimmed the fasteners can be placed to fit the rear and side curtains by the use of templates.

There are various shapes of tops, the bows having different positions, different styles of back curtains, different shapes of quarters, but all are intended to harmonize with the job for which they are built.

A wonderful selection of top materials is obtainable, each material having its particular virtue. There are various patented methods for curtain arrangements and curtains to swing open with the doors by the means of removable rods are made. The most satisfactory curtains in use today are the last mentioned, and when made by an up-to-date trimmer please the most critical.

### **Setting the Bows on a Touring Car Top**

In building a touring car top on custom work this procedure is followed, but the same method can be used in obtaining measurements, patterns and amount of goods re-

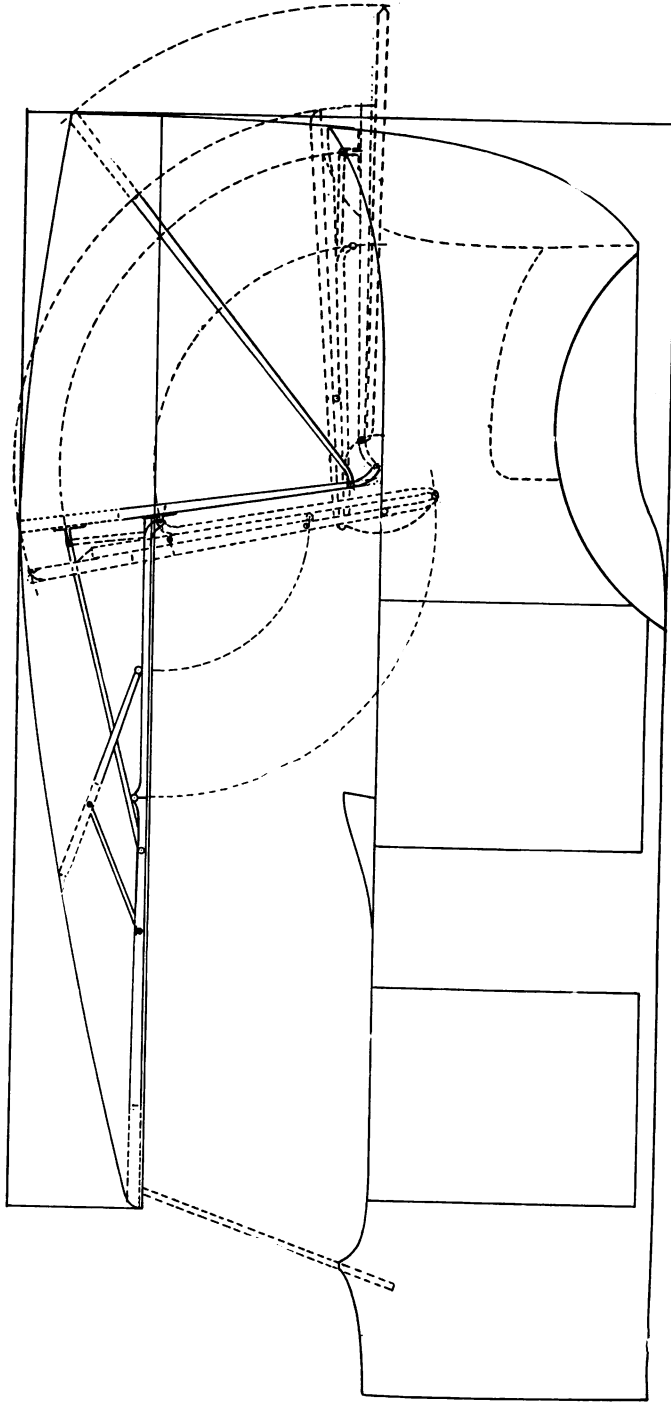


Diagram Illustrating the Proper Setting of a "One-Man" Top

## MOTOR CAR UPHOLSTERING

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quired. The top is first set, giving the proper "over hang" at the rear and the pitch of the bows, which on the ordinary touring top is five inches on the front and two and one-half to three inches on the rear.

**Bows.**—A piece of non-stretchable webbing is tacked on the front, second, third and rear bows to hold the top in shape. The pads are then stretched in position.

We might make reference to a little "stunt" that helps to keep the wrinkles and draws out of the pad. The back part of the pad is made wider than the front and a seam is stitched the length of the pad in the center. This helps wonderfully in making a smooth pad.

The pads being tacked in position, four lengths of non-stretchable webbing is placed over the pad and about four or five layers of cotton wadding tapered off at the edges and cut from over the bows and tapered, over which the pad covering material is stretched. This is joined together by stitching.

In laying on the cotton padding each layer of cotton should be touched with paste. The strainers across the bows, if used, are stretched into position. The cutting of the materials should be done at the same time. That is, marking out on the goods of the different sections, and then cutting them.

The quarters are then fitted and should be stretched tightly and smoothly; the quarter line is marked out and the deck stretched over the quarters, turned under at the edges at the seam lines, and marked with chalk and checked for operating. Care should be taken that both the quarters and the deck are stretched in position with equal strain.

After the fitting the goods are removed and a reinforcement sewed along the bottom of the quarters, which is intended for the fasteners of the curtains, if they are required.

A good finish for the quarters is of leather to match the goods, made as a flat binding. The back curtain is fitted and marked for the fasteners and curtain lights.

A sufficient amount of goods should be left below the edge of the body to close tightly when placed in position.



## MOTOR CAR UPHOLSTERING

Backstay strips are most reliable if made of harness leather to match the material, which are attached by means of footman loops on the bow and body, with a buckle provided to take up the play.

The top and back curtains, having been duly operated, are drawn and tacked into position. The quarters and back curtain being bound with leather, the finish for the front and back bows should be a cord made of the same leather as the binding, to which is added a metal-covered molding.

The side curtains should be finished with a leather binding. All side curtains should be reinforced around the edges. The windbrake beyond the windshield should be made of metal, covered with the same material and fitting closely to the windshield when in position.

The amount of goods required is thirteen yards of 60-inch goods. Time required for custom work, one man doing the work completely, is about forty-five hours.

### **Making Patterns for Duplication**

In making patterns for duplication, as each section is completed and found to be correct, it should be transferred to a pattern, that is to say, strainer lengths can be obtained, pad sizes, curtains cut and bound, quarters cut and bound, back curtains cut and bound, lights placed in the same, all made up, laid away and ready for each top as soon as the bows are set up and the pads are built. The quarters and deck are bound and ready to be fitted and the deck seams joined together by the operators and are ready as soon as the back curtains are placed in position.

This method is used when tops are being built over sample bodies or "bucks." When bows are required to be covered with leather they are done in advance and ready for the particular job as it comes along. So by using this method top builders can be kept continually assembling without interruption.

CHAPTER XIII

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**An Economical Spring Cushion**

Motor car upholstery can be very economically done through the use of properly made and arranged spring construction and manufactured cotton batts.

The spring construction required is of the lace web type, made to the shape of the back required and the shape of the cushion required, woven across with wire netting where the covering of upholstery comes in contact with the springs.

Spirals of course are used and are held in position by wire supports. The spring is covered over with a light duck or burlap covering, over which is stretched the French plait style of work filled with cotton batts. If the spring construction is properly manufactured and properly shaped a satisfactory degree of comfort and durability is obtained.

In making a cushion of this type, the back would be made along the same lines. We would suggest the following method: The springs should be made the height and size required. The top covering of the spring should be of closely woven net work. The French plait style of work is made up in the usual manner.

A good, heavy thickness of cotton batt is pushed in the plait and is fitted over the spring and marked off at the back, the sides and the bottom of the frame. The spring is attached to a wood frame with staples. The material at the bottom of the front is allowed to turn-under and is tacked to the wood frame. At the sides and back it is marked around the spring edge, to which the facing with cord attached is fitted and sewed to the top by machine.

The spring should be covered with a good, heavy layer of cotton, over which the top is stretched and attached to

## MOTOR CAR UPHOLSTERING

the wood framing at the bottom and finished off with either a covering of canvas or manufactured lace.

Ventilation must not be overlooked at the bottom or the rear and side facings. This will complete an acceptable cushion for the cheaper grades of work without the use of hair.

### **Notes on Repair Work**

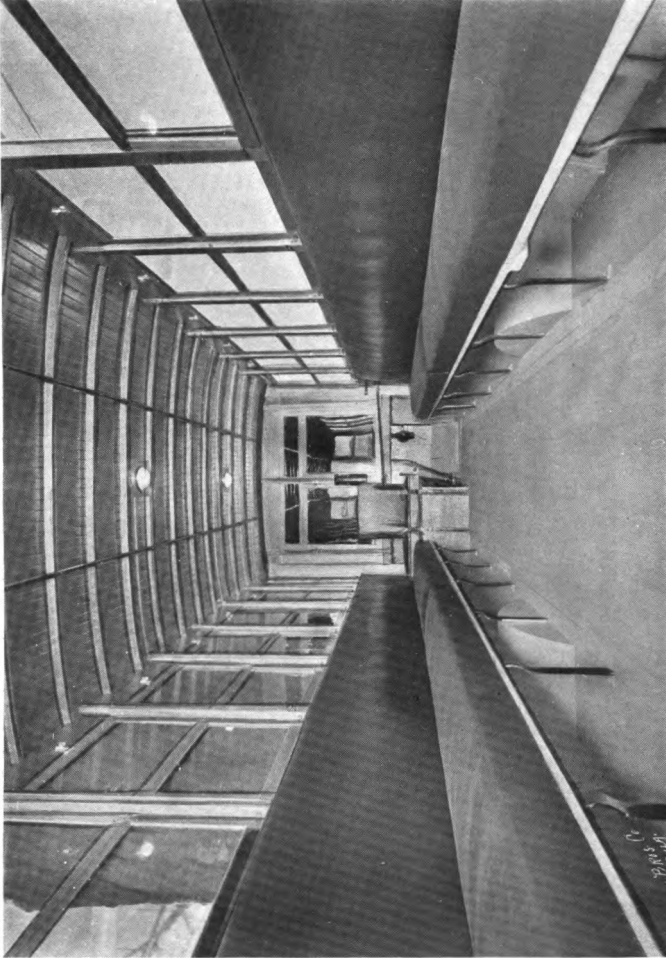
Where an apprentice is connected with a custom shop or jobbing shop a wonderful opportunity for his development is afforded in repair work, where trimming must be removed and replaced, thus affording him an opportunity to acquaint himself with the materials used and being, so to speak, a preliminary education.

The removing of upholstery must be done with judgment and care. Tacks should be lifted and entirely removed from the cloth. The upholstery should never be pulled until the tacks have been lifted, and if no marks are visible for the position of the upholstery, guide lines should be placed thereon to insure the replacing of the upholstery in exactly the same position from which it is removed.

Tacks should never be left in the upholstery as removed, for the reason that they are very apt to pierce the cloth or scratch the leather, and if by accident they should be carelessly handled the goods may be ripped or some trimmer is likely to have a cut finger.

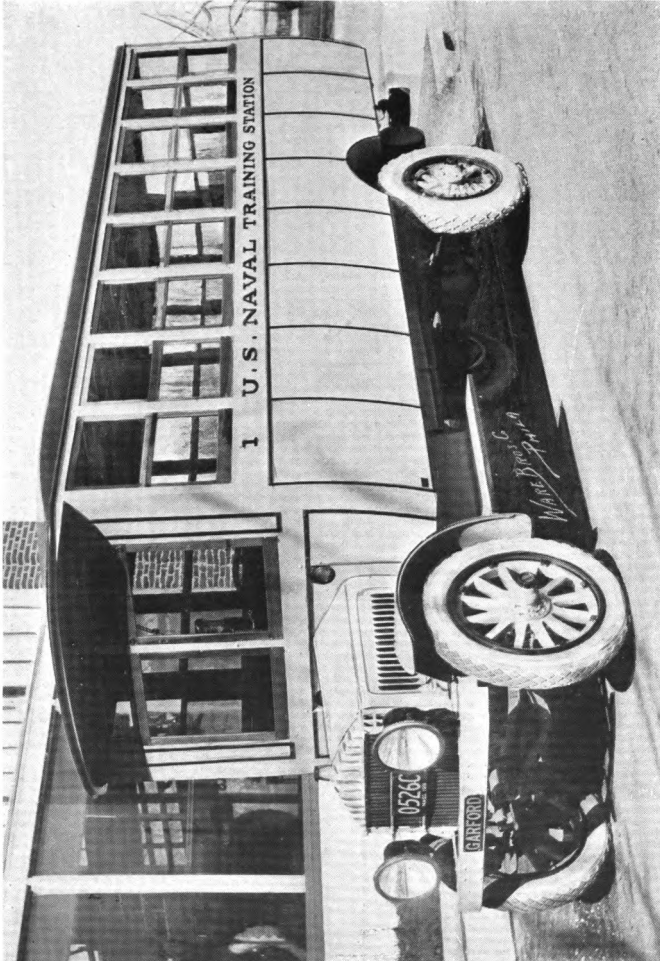
The handling of repair work by an apprentice acquaints him with the various parts and styles and different methods of doing the work, and gives him much food for thought.

# MOTOR CAR UPHOLSTERING



**JITNEY BUS, USED BY THE U. S. NAVAL TRAINING STATION AT NEWPORT, R. I.**  
Omnibus bodies represent a class of work with which every trimmer should become familiar. The work is plain, but there is a great deal of it to be accomplished.

# MOTOR CAR UPHOLSTERING



Exterior of the Omnibus the interior of which is pictured on page 103. Besides the long seats in leather or leather substitute there are sixteen Pullman style curtains which the trimmer must fit and install. Motor bus transportation will have a wonderful development in the near future and he is a wise mechanic who makes himself familiar with this line of work.

# MOTOR CAR UPHOLSTERING

## TRIMMING OPERATIONS CLASSIFIED

Automobile trimming may be divided into the following branches or operations:

### CUTTING ROOM

Creating the design.	Cutting of the materials.
Making the patterns.	Getting out rough stuff as
Laying out the foundation patterns.	foundations for doors,
Laying out the fullness patterns.	quarter pads or other
	parts that require pasting and drying.

### OPERATING ROOM

All sewing that is to be done.

### BENCH WORK

Cushion making.	Carpet making.
Back making.	Lace making.
Quarter making.	Robe rail and door check
Auxiliary seat trimming.	making.
Hassock making.	Welt making.
Curtain making.	

### BODY TRIMMING

Trimming above the belt line.	Finishing, such as lacing off, hanging curtains, robe rails, door checks, pull-to handles and other detachable or removable parts.
Back and quarter hanging.	
Door trimming.	
Cowl trimming.	

Separately trained workmen can be used to work the above system successfully, permitting the specializing of operators for each particular branch of trimming.

Many of the above operations may also be sub-divided where the production is sufficiently large to warrant a sub-division. By this method, together with the proper supervision and distribution of materials and work, costs can be maintained at a minimum.

## **CHAPTER XIV**

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### **Complete Trimming of a Typical Enclosed Car**

In the pages that have preceded, we have confined our instructions to the broad, general principles of motor car upholstery. In other words, we have outlined general methods with wide application to the different types of cars.

Now, as an illustration of the complete trim of a car from start to finish, we will take up a particular type of body and discuss it in its entirety. We have selected for this purpose one of the most popular styles of closed bodies, the reason for this choice being that in a closed car we perform virtually all the operations necessary in an open car (with the exception of the folding top) and besides have the advantage of reviewing the principles involved in trimming the upper parts and the head lining of the closed car, which are not to be found in cars of the touring and roadster types. We will proceed to describe the upholstery of a sedan, in the French plait style.

A sedan, as defined in the dictionary, is a covered, portable chair for carrying a single person, but as used today in the automobile industry it is the name of an automobile body with a permanent roof and carrying numerous persons. The characteristic features of the automobile sedan are:

- First—A car for all seasons.
- Second—A family car.
- Third—Adaptability for owner's personal driving.
- Fourth—Sociability features.
- Fifth—Roomy passenger accommodation without crowding.

# MOTOR CAR UPHOLSTERING

## **Advantages of the Sedan Body**

We find in the sedan body many valuable and important features which put it in a class by itself. As an all-season car it is indeed more valuable than the open or so-called touring body. It affords considerably more protection in cold and stormy weather than the touring body, yet in clear, warm weather permits of all the ventilation necessary. Some types are fully as open as any touring car, with the exception that the roof is permanent, and it is even now an open question as to whether or not the permanent roof is not an advantage.

## **The Sedan a "Family" Car**

As a family car the sedan is indeed winning great success. For mother and children feel more certain when touring, that should a storm arise the car can be closed up tightly and they are as safe and dry as they would be at home.

The sedan also affords all the conveniences of any other enclosed body with the additional features of being adapted for the owner's personal driving. The owner may drive a sedan, yet be "one of the party"; he may enjoy conversation with his family or guests without being isolated and made to appear in the rôle of chauffeur on the job.

For touring, theatre parties or visiting, the sedan, as a family car for the owner who likes to drive, is the logical body. With it he gets all the features of the touring car and limousine without the disadvantage of being made to feel like a chauffeur. Then again, due to the construction of a sedan and the seating arrangements, the owner of the car may take with him five or six guests, and they are all together, and may enjoy the social advantages incident to the occasion. None are isolated and none are separated by a partition from any of the others.

The sedan body, for the owner who likes to drive, becomes not unlike a living room on wheels. It may be adopted for all uses—to take the family on a tour; an even-



## MOTOR CAR UPHOLSTERING

ing or Sunday drive; for the theatre party or a trip down town. He may take his friends with him and enjoy the benefit of their company and they his. The car may be used in business. Its construction permits of more room than any other type of body, and the backs and cushions may be made as deep and as comfortable as the big arm chair in front of the fireplace at home.

Owning and driving a sedan, with the benefit of congenial company, together with a drive through the country, broadens a man's mind, educates him and really makes life one round of pleasure, in addition to keeping the family healthy by getting them out in the air and permitting them to enjoy the beauties of nature.

Can you imagine anything more satisfying, giving more pleasure than a drive through the country when the leaves are turning and all the world seems like a riot of color, the air sharp and snappy—yet you and yours are warm and comfortable in a big, roomy, well-upholstered sedan?

We shall ask you to imagine taking a trip in a seven-passenger roomy sedan (mounted on any good chassis) painted battleship gray—and for a sedan that is a mighty good color—upholstered partly in cloth and partly in gray Spanish leather or a good leather substitute.

The cloth is of harmonious color to match or harmonize with the paint and leather. The cushions are deep, well made and comfortable. The backs well shaped, and giving absolute ease and rest.

The style of upholstery used is the genuine French plait. The front seats are trimmed in leather or leather substitute. The roof and all above the belt line is trimmed in the same material, and the rear seat, quarters and doors, up to the belt line, are trimmed in cloth.

The floor is covered with a good grade of gray carpet, in the form of a rug, the reverse side being lined with rubber for stormy weather. The body is thoroughly equipped with all the up-to-date mountings and appurtenances.

# MOTOR CAR UPHOLSTERING

## **An Opportunity for the Trimmer's Skill**

To really make the sedan the enjoyable body it should be, the trimmer has a wonderful opportunity for displaying his skill. Since this description is primarily for the benefit of the trimmer, we shall now endeavor to treat in detail the trimming of such a body.

The first consideration in the trimming of a sedan is to lay out the plans in order that all necessary equipment be at hand when the job is placed at the trimmer's bench. By this we mean that the material necessary must be ordered in advance and be in stock when the job is ready to trim—springs, cloth, carpet and all necessary equipment—so there shall be no unnecessary delay in completing the job.

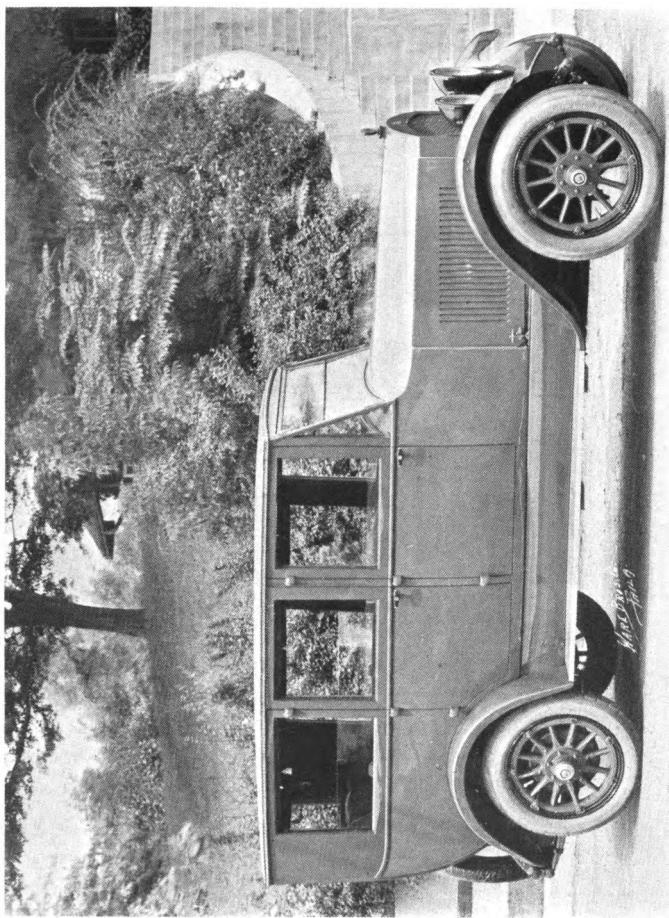
## **Making the Spring Patterns for Cushion**

The spring patterns should be made before the job is ready to trim, in fact, should be done as soon as the job is far enough along in its construction to permit their being correctly made. In making the spring patterns a cheap grade of thin canvas may be used. The use of canvas is recommended rather than paper because of the nature of canvas; it is more adaptable to the "folding in" and marking and can be more readily preserved and filed for future use.

In marking the pattern, allowances should be made at the quarters and at the back, taking into consideration the absolute freedom of the spring. By this is meant that no resistance shall be offered the spring, due to its contact or binding at the quarters or at the back, thus permitting all the resiliency possible.

That the springs shall be just right is a very important matter. In order that all the room possible may be given (considering that the back should have ample depth) the measurements as laid down by experience should be  $\frac{5}{8}$  of one inch on each side and  $1\frac{1}{2}$  inches at the rear, thus giving ample freedom for the back.

# MOTOR CAR UPHOLSTERING



A 1920 MODEL SEVEN-PASSENGER SEDAN (Cole "Aero-Eight")

## MOTOR CAR UPHOLSTERING

We consider that the proper pitch under the present demand should be 3 inches, or the front of the spring should be 8 inches, while the rear of the spring should be 5 inches. In these measurements we take into consideration not only the pitch of the spring but also the height, so as to offer sufficient resistance to take the bumps and jars of high-speed traveling. After the patterns are made for duplication, patterns should be preserved. We do not mean preservation of the pattern for the cushion only, but of all other patterns, because in large shops the trimmer is always called upon for measurements in order that duplication can be made.

### **The Back Springs**

In this particular type of body we are considering comfort as well as roadability and durability. As much attention, if not more, should be given to the proper construction of the back. In order to have absolute freedom, clearance must be provided for at the sides in making the pattern for the back spring, which we are now considering to be of the manufactured type. It is much better to have more room on the side for spring action than not enough. One inch should be absolutely free of the quarters, thus giving ample space for the building in of the back when placed in the job.

### **Building Up the Backs**

The old methods of building in the backs are now not in vogue, as a spring construction is placed in the job and the back pad is built up in the job instead of being made up on the bench as formerly.

The method now used in building the back is that of placing the spring construction in the desired position, then tacking a first covering of 10-ounce duck, soft buckram or other suitable material. The spring being covered, it is pressed into the desired position. Care should be taken that the forward or outer framework of the spring construction is placed in such a position that the spring will not sag downward, or in other words, the spring when placed in

## MOTOR CAR UPHOLSTERING

position should be caused to work on its absolute centers. The spring when in this position should be whipped fast to the upper and lower frame construction. This method holds in place the spring, eliminating all shifting.

The spring now being in position, use the curved needle. Some of the "boys" term these the "half moon" needle. Twine it across in four equal spaces. Twine in the hair, placing it in such a position and in sufficient amount that no trace of the spring may be felt, then draw on outer covering of the same duck or buckram. Build the back to the desired shape.

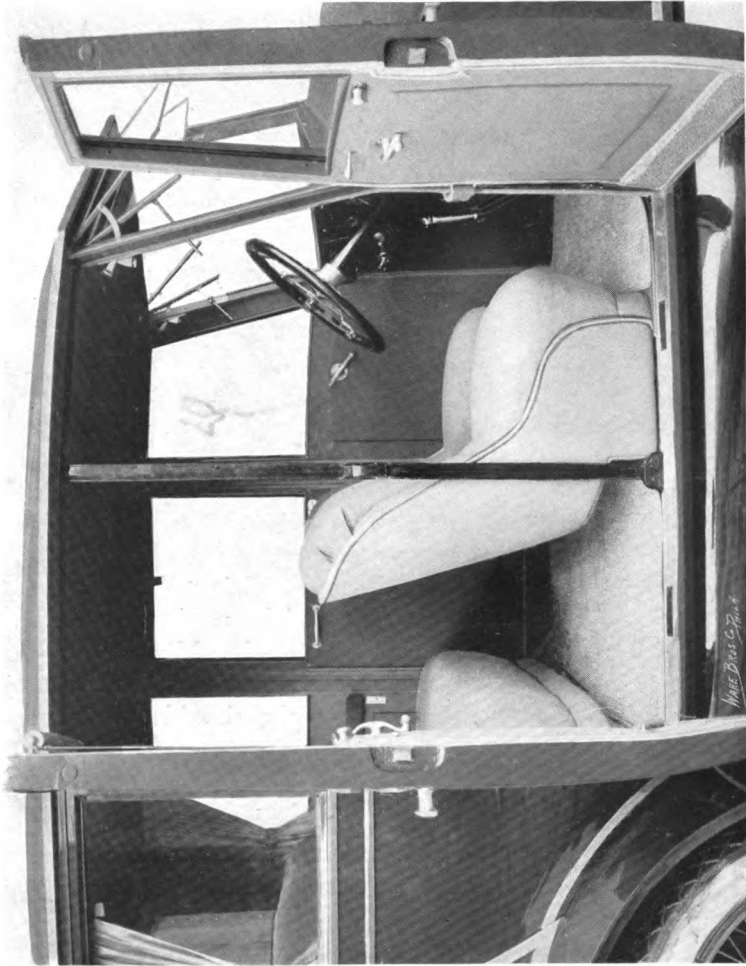
### **Covering the Backs**

The back is then ready for the placing of the outer covering. In building a back of this description it is necessary that the sides should be given due consideration so that no hair may work out. This is accomplished by throwing the surplus material at the sides, which the trimmer terms a "pocket." When the outer covering is placed, all that is necessary is that sufficient goods be allowed to throw in between the back and quarters.

The style of the front backs in this particular type of car is that of the rounded or Pullman seats. In the building of these backs, owing to the "round" in the back and the small amount of space permitted for spring arrangement, the writer prefers the use of the old method of sewing in the springs on buckram or cardboard, being bridled or tied in by the use of spring twine to the desired shape. While the writer prefers to take into consideration the driver and his companion, it is not possible, due to the construction of the job, to give as much spring construction as is deemed necessary.

The building in of the front backs after the springs are placed in position is accomplished by the same methods as used in the rear back. While the cushion springs for the front, owing to the fact that there is less swell in the backs, require less play at the rear, in this case one inch freedom is ample.

## MOTOR CAR UPHOLSTERY



A Sedan Interior showing the extent to which carpet is used as a floor covering in this type of car. This particular body is of very light, though strong construction.

# MOTOR CAR UPHOLSTERING

## **Head Lining, Quarters and Above Belt Line**

Methods of trimming are modified by experience. Quantity of production materially affects systems and methods in the different classes of trim shops. Where large outputs are handled and where different grades of mechanics follow one another in the completion of the job, the writer prefers to use the method of "above the belt line first."

First place the upper rear quarters and cover all the upright pillars. The fact that the head lining is hung after the trimming is placed in position above the belt line, gives more freedom to the workmen. As this job is trimmed above the belt line in leather or leather substitute, the process of fitting the head lining most advisable is that of selecting the ribs on which to tack the listing, placing the leather or other material in such a position that the ribs may be marked. This method is more absolute than that of measuring because the nature of some leather as well as leather cloth is to have more stretch than others.

The manner of tacking and finishing the head lining is that which is well known to all proficient trimmers and is best learned by watching a good trimmer actually do the work. The listing should be allowed sufficient drop at the ribs so that no impression appears. The method used in attaching the leather or leather substitute head lining to the listing is by machine stitching from the face side. The finishing around the sides, front and back, should be given slightly more than the depth of the ribs.

## **Trimming the Quarters**

All above the belt line now being trimmed, then follows the placing of the quarters. We are trimming this job in the well-known French plait style. It is usually considered that the French plait style is the next thing to plain work, and some relief should be given to plainness.

We are also considering as much room for the passenger as is possible in the construction of the body, yet some little relief should be given, and provision should be made for

## MOTOR CAR UPHOLSTERING

an arm rest. But the object of the arm rest at the present time is only to relieve the appearance of plainness, or in other words, the arm rest should be made as small as possible, yet should be made in such a way that there is a semblance of a rest. The same effect is accomplished by the use of a wood block, triangular in shape, about  $2\frac{1}{2}$  inches at the top and  $2\frac{1}{2}$  inches in height at the front, tapering back about twelve inches to a feather edge. A listing is sewed on the quarters, over which the arm rest is placed in position, thus holding the quarters in closely to the sides. The goods are thrown over the top in position, and the finish obtained is both pleasing to the eye and permits the trimmer to display neatness and skill.

In the lining up of the back and quarters the curve desired is that of a graceful, easy, comfortable chair, which result is obtained by taking the height of the back at the center of the rear and curving in at the side at the position of the arm rest.

We consider in the trimming of all work the length of service it is to endure and make provision accordingly, namely: the protection of the trimming when the car is repainted, hence we place at all outer edges, where coming in contact with the paint, a leather beading or cord in keeping with the color of the upholstery, against which is placed the flat welt of the same material in which the car is trimmed. The reason we are making flat welts of the same material as the cloth or leather used, is because worsted laces and molding are now seldom used.

### **Carpet Covers the Entire Floor**

The carpet of the sedan, owing to the construction, permits of an entire covering of the floor, giving a "home-like" appearance. Certain manufacturers, whose goods are referred to in the latter part of this book, specialize on carpets made especially for automobiles, offering a wide range of patterns and colors, and in the exact widths to fit any car.

Drafts or patterns for the laying out of the work can be



## MOTOR CAR UPHOLSTERING



A MODERN EXAMPLE OF THE AUXILIARY SEAT

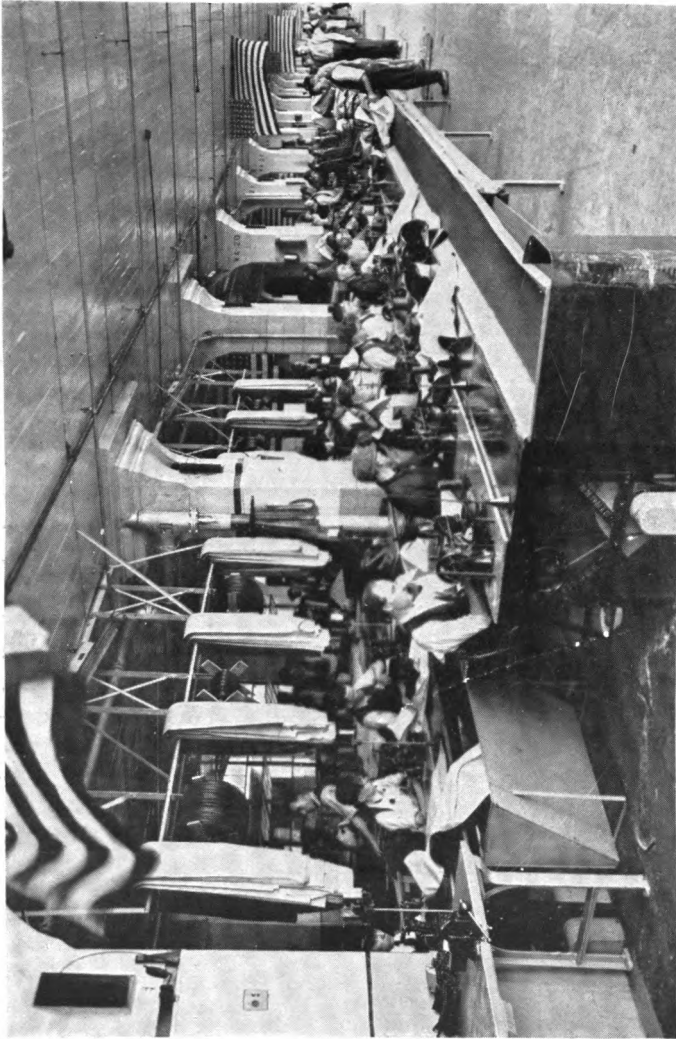
One of the very newest patented auxiliary seats, as shown here, requires the same kind of upholstery treatment as would be given to a chair for household use. When not in use this seat folds and is virtually out of sight.

## MOTOR CAR UPHOLSTERING

referred to in previous chapters in this book, but we might mention that in the French plait style, the plait should be as near as possible to  $3\frac{1}{2}$  inches in width. The fullness required is  $\frac{5}{8}$  of an inch, thus permitting the filling up of the plait with layers of cotton batting which will completely fill this amount of fullness. This comment refers to the genuine French plait. The covering of cushion keepers and other small details is left entirely to the judgment of the trimmer, considering, of course, the construction of the body he may be trimming. The construction of the typical sedan is such that two doors only are usually to be trimmed. The back cushion and quarters, as well as the front backs and cushions, are French plait; the doors should be trimmed plain with the addition of pockets, and in this style we would advise that a flat pocket be made with the use of a rubber band at the opening, covered with a plain flap. Many styles of pockets are made on doors, but those which take up the least possible space are desirable. As a handy provision, a robe rail may be placed at the rear of the front backs. High-grade appurtenances are used to finish the trimming, making the job complete in all details.

The amount of goods required where special colors are used for individual jobs is as follows: Three hides of leather (or its equivalent in leather substitute) for head lining, above belt line, front backs and cushions. Seven and one-half yards of cloth and about eight pounds of hair. Let the springs do the work in the cushions and backs—save other material wherever you can. Such a practice is in line with a sensible policy of conservation of resources, and is as applicable in the trim shop as anywhere else.

## MOTOR CAR UPHOLSTERING



Upholstery Department of a Detroit automobile factory, where hundreds of yards of leather substitute and other materials are used daily.

**CHAPTER XV**

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**Fitting Up a Custom Trim Shop**

No matter what subject comes up for discussion, there is always room for a difference of opinion, and so in the fitting up of the trimming department a great deal must be left to individual judgment.

How to arrange benches, fixtures, tools and stock so that everything will be handy when needed, are matters of prime importance and have a marked influence on the success or failure of the trim shop.

Practical men have frequently given useful advice on the subject of trim shop efficiency, but there is still room for improvement and suggestions that may lead to these improvements.

There is a great difference in trimming rooms, simply because different ideas prevail, but those who direct such departments should see to it that every tool and appliance is in the right place, easy to reach, without losing any valuable time.

A great deal can be learned from the factories where the wholesalers build their work, for as a rule their trimming shop is large and well ventilated, provided with sunlight or good artificial light, all the necessary appliances, and with a store-room to be proud of. But all these advantages are necessary on account of the quantity of material so rapidly handled, or everything would be in a state of chaos.

But why should not a small custom shop be run quite as economically as the large wholesale plants? The builder who employs from one to four trimmers should take care to manage his small shop as well as a large one, for in this

## MOTOR CAR UPHOLSTERING

branch of the business a larger amount of waste can be made than in any other branch, of the automobile building business.

### **Good Lighting Essential**

The trimming room should be spacious and should be favored with abundant light and properly heated. The benches should be placed along the windows so as to obtain the best possible light and the windows should be kept clean so as not to obstruct the sun's rays. The benches should be about three feet wide and forty inches high, from the floor. The board, if composed of parts, should be well jointed, for open joints are objectionable. A large drawer for each trimmer should be under the bench, which drawer should be partitioned so as to separate the tools when placed in it, as tools should all be kept in drawers or in separate boxes.

There should be a closet large enough for the business carried on, for the storage of all trimming material, placed under lock and key, all material in order and kept so. The sewing machines should be placed in the best possible position, where good light can be had. Cover machines when not in use and be careful to keep them in good running condition, as the sewing machine is the heart of the trimming shop.

### **The Proper Care of Stock and Materials**

There should be drawers or boxes for the enameled and patent leathers, also for ducks and rubber goods, so as to know just where to find each article when needed. Bins or barrels for hair and moss should be kept in the store-room, conveniently placed, and should be kept covered at all times.

The keeping of leathers on shelves near the ceiling should be discontinued, as the greater heat at top of room has the effect of drying out the leather, making it harsh and brittle. When in such a state and worked in a colder atmosphere it is very apt to crack and break. A chest or closet of shelves

## MOTOR CAR UPHOLSTERING

a trifle above the floor is the best place for all leather. All threads not in actual use should be kept in the box or in one of the drawers under bench, so as not to expose them to the action of sunlight, which is apt to fade the colors, or out in the atmosphere, which is apt to cause threads to decay.

### **“A Place for Everything”**

It is also important to provide a place for every article needed by the trimmer so that dust will not settle on them, and all men employed should be requested to keep things in their proper place, thus avoiding the loss of time involved in looking for things that are not replaced. There are men so careless with their bench and tools that they are always looking for something that they have misplaced.

Another thing each man should have is a box on his bench for keeping his individual tacks, having the different kinds and sizes in this box, so that when a certain kind of tack is wanted he can see at a glance where it is. Some men have their whole bench strewn with all kinds and descriptions of tacks and can never find the one that is needed without going over the whole motley assortment. That is not efficiency.

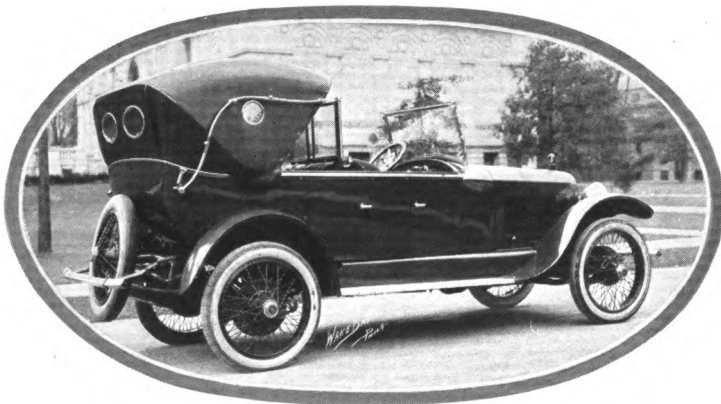
## MOTOR CAR UPHOLSTERING

### **HARMONY BETWEEN PAINTING AND UPHOLSTERY IS ILLUSTRATED IN THESE TWO CARS**



**A CUSTOM-BUILT ROADSTER IN GREEN**

This job, mounted on a Peerless chassis, is trimmed in a smooth, green, dull finished leather, and painted in a special green color. Wide striping runs along the bevel of the edge on sides. The knock-down rail shown in the photograph pushes down into the body. All mountings nickeled.



**A VICTORIA TOP TOURING CAR IN GREEN-GRAY**

Car painted in green-gray throughout, with no striping. Entire body upholstered in green cloth with blue stripe in same. Carpets front and back to match. All mountings nickel.

*Courtesy A. H. Gabel Co., Rochester, N. Y.*

**CHAPTER XVI**

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**Some Motor Car Upholstery Repairs and How to Make Them**

There is always a steady demand for used cars. The appearance of the body has a great influence on the prospective customer and, in fact, its condition limits the price for which the used car will sell. Dealers are recognizing this fact and are devoting considerable time to making the body and top as presentable as possible, spending just as much as the condition of the motor, etc., will warrant, while leaving them a fair margin of profit.

**Repairs to Cushions and Tops**

It is often found necessary to go over the top and line it up, and many times it is the upholstery that requires attention. The cushions, particularly in the cheaper cars, always need some minor repairs. The top of the cushion is often sunken from use, even though the spring is in good condition and may need no repairs, yet the cushion must be attended to in order to give a good appearance. It can be done at a very small cost of labor.

The following method will be found to be a rapid, economical and durable cushion repair. In the cheaper grade of cushions we find that there is no wood frame at the bottom, as the facings are finished by machine in a metal tubing, so we make a wood frame the size of the spring, and attach the cushion in the condition we find it to the wood frame by means of staples. We cover the top of the cushion with a layer or two of cheap hair or substitute.

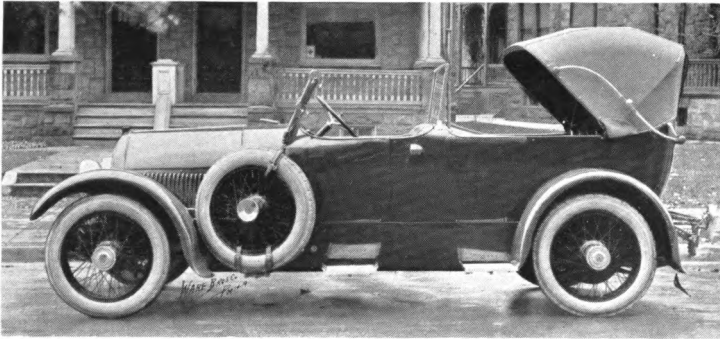
Take a piece of goods to match the trimming, which is usually a substitute leather, stretch tightly and smoothly,



## MOTOR CAR UPHOLSTERING

nail to the underneath part of the frame, turning the surplus at the corners to form a plait, blind sew the plaits, and with this simple operation we have a cushion similar to a car seat, and which often times will hold up better and have a longer life than as originally made. The backs sometimes have sunk in from use, and these repairs are as simple as the cushion, but usually requiring less labor.

Spring construction in some of the cheaper cars is often more durable than those of the higher grade cars for the



Sometimes an old cape or "one-man" top is removed on the customer's order and a neat Victoria top substituted. Such a change effects quite a transformation in the appearance of the car.

reason that these springs are made the shape of the back and being made entirely of metal usually have long life; consequently we seldom have a loosened spring. So really the repairing of the back, if not torn, of course, needs only this simple treatment. The mere loosening up the top of the back, working up the hair with the rod and filling in with a small amount of hair or its substitutes, topping the back off and replacing the trimming in its original position, requires but little time and expense and adds wonderfully to the appearance. Then only a coat of dressing is required to complete the job, which pays a reasonable profit to the dealer and benefits both the purchaser and the trimmer.

# MOTOR CAR UPHOLSTERING

## **New Curtain Lights Help to Sell the Used Car**

When a dealer is endeavoring to dispose of a used car these minor details are the first things that attract the prospect's attention. Most of the cheaper cars use celluloid for the curtain lights, the rear curtain being the most noticeable. A vast improvement can be made in the appearance by using a window of glass with metal rim. If the size of the light used will warrant it, a new glass light can be installed without removing the rear curtain. This requires but little labor and enhances the value considerably, since the appearance is wonderfully improved and is up to date.

## **New Side Quarters May Be Necessary**

The side quarters of the top we oftentimes find have been worn through by the saddles or bow holders. A new quarter must be made, and in order to do this quickly, we must remove the entire top, being extremely careful in chiseling out the tacks that we do not destroy the top.

It is not necessary to make a fitting of the quarter over the bows, but we remove the quarter by cutting the stitching loose at the seam line. But it should be understood that we must mark with chalk before the stitching is cut. When the quarter is removed make the fitting from the old quarter by stretching out tightly over the goods to be used; finish the quarter the same as the original, sewing it back in the old position, as marked, and replace the top in its original position. To be economical the operator must be careful not to spoil any old material, thereby making it necessary to replace with new material. This is particularly true of finishing laces.

## **New Carpet Improves the Appearance**

Carpets in the type of work we are mentioning very often require attention. Usually on this type of work the carpets are found to be edged by machine and which sometimes frays out. It takes but a very short time to run a round

## MOTOR CAR UPHOLSTERING

binding of canvas around the rug, which is very noticeable to a purchaser making his inspection of the car's interior. If the carpet is much worn, of course it is a good investment to furnish a brand new one.

### **Thorough Cleaning Must Not Be Overlooked**

The top should also be dressed. This helps the appearance of the car to a great extent and very materially lengthens the life of the top.

The combination lace used around the doors and backs, when worn, is unsightly, and it requires but little time to replace it. If the upholstery of the car happens to be leather or a substitute it may be easily cleaned with castile soap and lukewarm water, and in the case of leather, after being washed, it is dressed with neat's foot oil, castor oil or linseed oil, it will soften up and greatly improve in appearance and length of life.

While the above treatment of a used car, to be resold, may seem unnecessary, it has been the experience of many dealers that it is profitable when handled by an experienced mechanic, who will use his brains as well as his hands, using judgment as to how far to go in making the repairs and renovations.

### **Importance of Careful Estimating**

In connection with the repair and overhauling of an automobile body, the person giving an estimate for such work must be extremely careful in making up his costs for doing the work. He must absolutely itemize every part of the job on which he figures, and when the job goes into the shop a copy of the items to be taken care of must accompany the car, and remain with it until the work is finished.

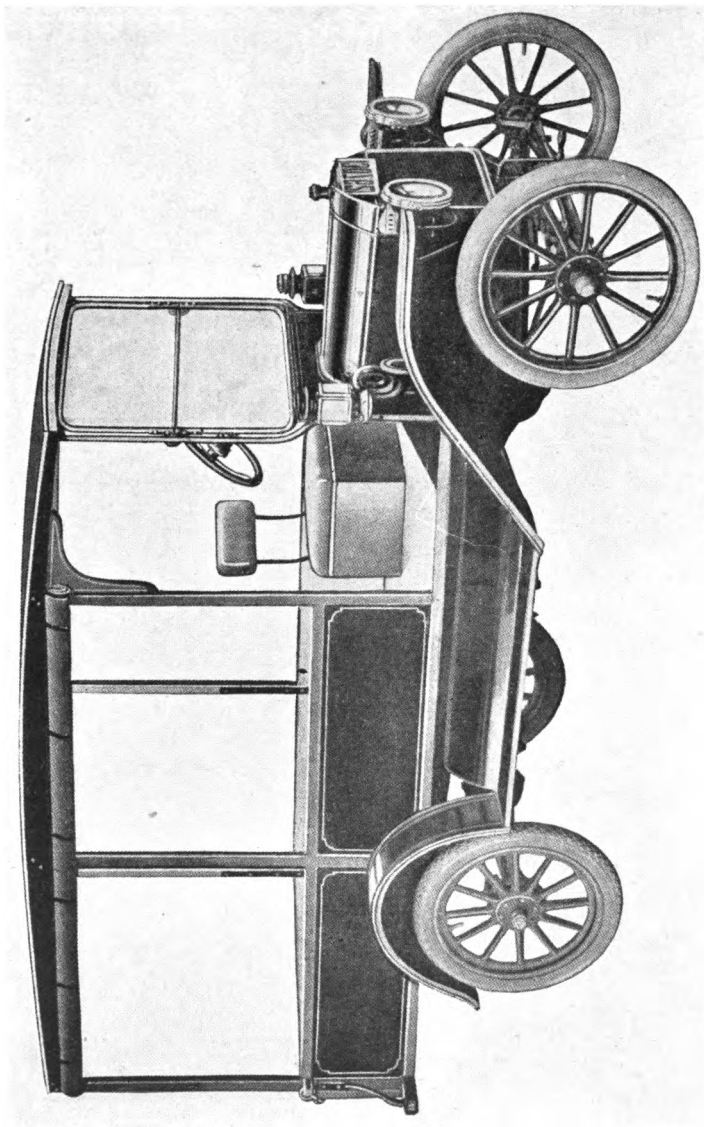
There is a two-fold reason for this. It is absolutely necessary that a repair card accompany the job to insure attention being given to everything figured on. This is essential in order to have satisfied customers. But it is just as necessary from the manufacturing standpoint. For in a repair job,

## MOTOR CAR UPHOLSTERING

when it is started through the shop, there is a great possibility of spending more for labor than was estimated on, thereby causing the manufacturer a loss. This is caused very often by doing work which was not included in the estimate and cannot be charged for. For instance, a celluloid light is found to be broken in one of the side curtains and it is repaired, yet it was not figured on in the estimate. This would entail some time to repair and would require some new material, yet there will be no return for it.

In this way many jobs in the repair shop which should have shown a fair profit have been caused to show a loss; in the greater number of cases it can be traced directly to the person making the estimate. He has been careless in itemizing the repairs to be made. The men in charge of the departments endeavor to use judgment in making repairs when no detailed, itemized card accompanies the job. But they are not mind readers and cannot be expected to know what was figured on unless it is given to them in black and white. In these times when the conservation of labor and material is of paramount importance, details of this character must be closely watched and estimates of cost strictly adhered to.

# MOTOR CAR UPHOLSTERING



A SIX-POST COMMERCIAL BODY

The trimmer's work on this style of commercial body includes the roll-up curtains on the sides, the cushion and lazy back for the driver, and sometimes a storm-proof enclosure at the front.

## CHAPTER XVII

### COMMERCIAL WORK

#### Curtains for a Six-Post Commercial Body

There are several different ways of placing the large side curtains on a six-post open body, with the belt panel at top.

The regular way, that is, the way it has been the custom of doing, is to make the curtains to run up and tack on the inside of the belt panel, being cut out for the posts and when tacked up on job, the roll-up straps tacked on so that curtains would roll up on the outside.

Making the curtains in this way, of course, produces a good job, but also makes some extra work in making all the cut-outs for posts and placing a lining piece to reinforce the curtains where strength is needed.

But a better method and one that gives a good appearance is as follows: When a job of this description is being built, and while in the wood shop, have the woodworker to place a heavy drip molding along each side of belt panel about  $\frac{5}{8}$  or  $\frac{3}{4}$  inch up above the bottom of panel. Then when making the curtains, make them to tack up on outside of belt panel underneath the drip molding, using three-ounce upholsterers' tacks close together. When tacked fast have the woodworker to nail a  $\frac{5}{8}$ -inch molding on top of curtain. Then the roll-up straps are tacked up in place, and, of course, the curtains roll up on outside.

Curtains applied in this way make a clean, smooth-looking job, and it takes less time to make the curtains.

There should be an extra patch placed at each top corner of curtains to strengthen the latter at places where most needed.

## MOTOR CAR UPHOLSTERING

In making curtains in this manner on a package delivery body, the screens which are placed on body can be made to run all the way up, whereas on a body on which the curtains are tacked up on inside there must be at least a four-inch opening at top of screen so that curtains can be run up and fastened, and that when curtains are down they will not wear on the top of screen.

The back curtain on this job is made, of course, to tack up on inside and roll up on the inside in the regular way.

Following the above method, the body, when complete, will make a neat appearance whether curtains are rolled up or tied down, everything being smooth and neat.

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### **The Trimming Work on a Motor Van**

There is quite a little trimming work to be done on the up-to-date motor storage van, and as there are always jobs of this style being built, a description of the trimming work on one of these jobs is timely. The trimmer's work on this job consists of the top cover, the inside pads, covering of the gate chains, cushions, backs and all the curtains around front of job. There is at least one week's work for a trimmer on an ordinary sized van.

#### **The Top Cover**

The first thing that is done in the trimming of the van is to place top cover on body. This is done while body is in the wood shop, white duck being the goods generally used, it being given two or three coats of paint before being turned out of the shop.

To place the cover on van top, cut a piece of No. 6 white duck, large enough for top, roll goods out on top and tack temporarily at back corners; then pull goods tight towards front and tack at front corners. Tack fast all around, tacking about one inch down, using 3-ounce tacks, two inches

## MOTOR CAR UPHOLSTERING

apart. When all tacked, trim off goods close to tacks and the top is ready for the molding which the body builder then places around top.

### **Making Pads for Van**

The making of the pads is the largest job the trimmer has on the van. There are different ideas and methods used in the making and placing of these pads, but the best and quickest method, in our estimation, we will now describe.

First measure the inside of van to get the size and number of pads that will be needed. The best width would be about four feet six inches wide; that is, use about fifty-four inch wide goods. Sometimes these pads are made narrow and sometimes wider than the above size, but the four-foot six-inch wide pad is the best width to use, as it is easier to handle than the wider pad, and there will not be so many to handle as when the narrow pads are used. Thus the fifty-four inch wide goods is used. Measure from floor to roof of inside of van to get the length, and make pads long enough so that they will hang two inches up from floor when finished. Then measure around the inside to get the number of pads that will be required to cover the whole inside, allowing pads to lap about three inches. It generally takes about four pads the above width on each side and an odd-sized one in front, sometimes made narrower or wider than the others, so as to cover the whole inside of the van.

When the inside is properly measured and the size and number of pads needed is determined, measure the doors and make pads to fit on to the doors. As a rule there is a larger pad made to hang on outside of doors for use when the tail gate is utilized for carrying goods. This outside pad is made the full width of body and to reach from the heavy drip molding above the door on which it hangs, to about two inches above floor of job.

The best goods to use would be No. 6 or No. 8 brown duck, fifty-four inches wide. Cut off pieces twice the length that pad is to be, folding piece over which forms the pad,



## MOTOR CAR UPHOLSTERING

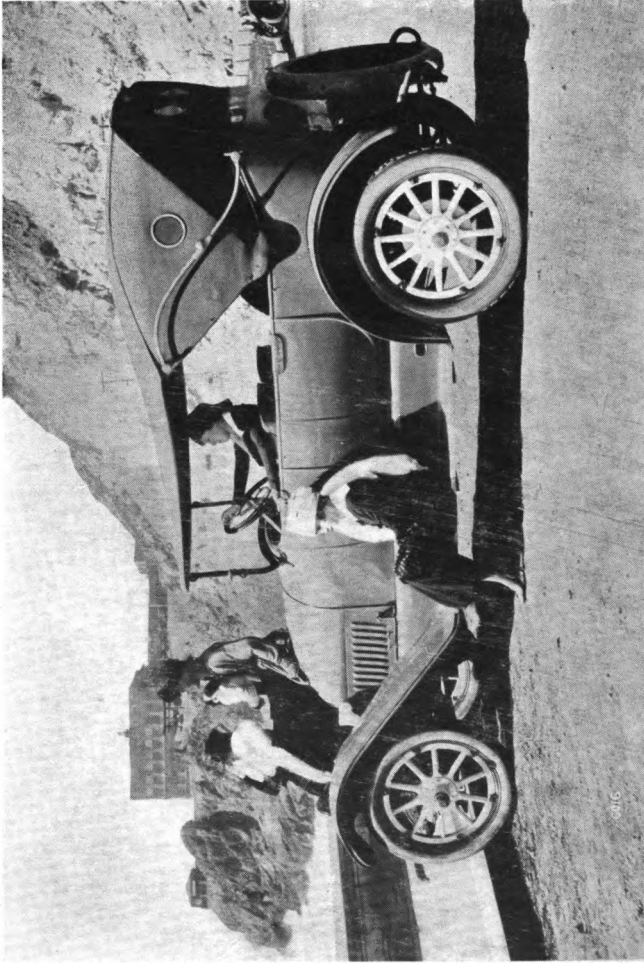
cutting off enough for all the pads needed. When all pieces are cut, lay the goods for first pad on the bench, then cut off enough hair felt or cotton wadding (whichever is used) for the filling of pads, the heavy hair felt being the best material to use for this purpose. When cut, lay on duck, fold the duck over on the hair felt, making ends even, also getting sides even, there being no turn in on sides, the selvage edge of the duck being used. When folded over and both sides are even, either baste or pin the pad together to hold while sewing. When all basted, mark the pad with chalk lines where it is intended to stitch for quilting the pad together. Now sew together on the sewing machine, the power machine being preferred, sewing crosswise and lengthwise, and all around edge, and pad is done. All the other pads are made in the same way.

When all the pads are finished on sewing machine, the hangers to hold up pads in van are placed on pads. There are different ways of placing the pads in van, the best method, in our estimation, being to take a  $\frac{3}{4}$ -inch japanned iron ring and cut a  $\frac{3}{4}$ -inch strap of good leather, about five inches long; blacken edges and run through ring and rivet fast to top edge of pad, placing four of these rings on each pad. Then get a small, strong hook for the pads to hang on and screw up in body. A good hook for these pads can be made by cutting a small piece out of a screw eye.

To place the pads up in job properly, hang each pad up and tack temporarily, seeing that they lap each other at least three inches and are two inches from the floor. When all tacked up and everything looks right, punch holes for the hooks, and screw hooks in place. Hang the pads on hooks and inside lining is complete.

When hanging pads on the doors a good idea is to place about eight patent curtain patches on each door pad, then place screw eyes on door to correspond with patches on pads and button the pads on doors. For the large outside pad cut six pieces of good leather four inches long, one inch wide, and punch a hole in one end for a knob; rivet these

## MOTOR CAR UPHOLSTERING



### THE POPULAR VICTORIA TOP

As a change from the regular Cape or "One-Man" Top, the Victoria is favored by many customers. An extension, reaching from the top to the windshield is shown on this car. It is usually made of khaki-colored material which is weatherproof.

## **MOTOR CAR UPHOLSTERING**

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straps on to top edge of pad and drive knobs in on top of drip molding over the doors. The straps on pad button on over the knobs in drip molding and hold pad up in place when in use.

### **The Cushion**

The best way to make a cushion for a large motor van like the one herein described would be to make a plain stuffed cushion, or as the seat on this van is very large (being large enough to hold four or five men) it is best to make the cushion in two parts, thus making it easier to handle them when it becomes necessary to take cushions off seat. Sometimes a spring cushion is made, but as the wear and tear on this class of work is very hard, the solid cushion will give the best satisfaction, both as to comfort and wear.

The cushion bottom and facings are made in one piece, sewing in a cord between bottom and facings, making the facing two and one-half inches wide and doing all the sewing on machine. Then when bottom and facings are ready, cut the piece for cushion top, cutting one inch longer and wider than bottom—that is, allowing one inch fullness both ways. Then sew in cushion top, either basting top in and sewing on machine, or top may be sewed in on machine without the basting. When all sewed, turn cushion right side out and stuff, using moss and stuffing smooth and solid. Tuft the cushion, and this part of the work is complete.

### **The Seat Back**

The seat back, while a very necessary part of this job, does not need to be elaborate, an eight-inch-wide board, well padded, being all that is necessary. Sometimes there is a back made to run up about twenty inches high, this being ordered by the customer, but this is not necessary on these jobs, as the chauffeur's back will only strike at one place, and there is just where the padding is required. To make a back rest for a large storage van, have the wood workers get out a board of hard wood about eight inches wide, one

inch thick, and to reach from side to side of front of van. Then cut a piece of goods with which to pad board to match cushion; cut the goods four and one-half inches wider than board; then turn down a half-inch hem on each side and stitch along edge. This leaves the goods three and one-half inches wider than the board, which is the fullness allowed as correct for a nice back. Then, having piece ready, tack on top and bottom edge of the board, using 10-ounce saddle nails, two inches apart.

Stuff up the back rest, using moss, and stuff smooth and solid. When all stuffed, fold in the ends, tack fast, and back is ready to be placed in job. The wood worker does this either by driving in three screws on each end of board or by screwing board fast from inside of van. It is necessary to get this back rest in just the proper place to give the support to chauffeur's back where most needed. This can be determined by sitting on seat cushion and marking just where back rest feels most comfortable.

### **Making the Front Curtain**

There are three curtains made to enclose the front of this van, that is, the storm front curtain and two side shield curtains. The storm front curtain is made to tack fast to a heavy curtain strip which is screwed up to the top, extending from side to side, the curtain being made to reach all the way out to edge of sides at top, and one inch outside of the dash at bottom, and to run down three or four inches below top of dash. This curtain is fastened down when in use by four straps riveted fast to curtain, to fasten into a buckle nailed fast to dash.

This curtain should be made of No. 10 black duck, and should have a wood frame and glass set into curtain just where it will be correct for clear vision. This can be determined by sitting in the seat on cushion while fitting, and making a mark on front just where the eye will strike, looking straight ahead. Then measure six inches above this mark for the top of frame. These frames are generally

## **MOTOR CAR UPHOLSTERING**

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made twenty-one inches deep, which is deep enough for any job. The frame is tacked fast to curtain and finished with a molding.

This is the best and most durable storm front for these large jobs, there being nothing to get out of order and the frame hanging in curtain does not get any shock or bump to break it. The curtain forms a shock absorber for the frame and glass. This storm front can be easily and quickly made.

### **The Side Shield Curtains**

The side shield curtains on a van of this description are made to run from the top of side opening down to about six inches below sill at bottom, and from storm front to front post, being made loose. That is, when not in use, curtains can be taken off job, rolled up and laid out of the way or they can be strapped up against inside of front. These curtains are held up at top with brass curtain fasteners, the fasteners being placed close together at the top. Then curtains are made to button down front post and to button on to storm front and dash, these curtains being made with large lights for clear vision. Riding in the front of this van is comfortable in the worst kind of weather.

The style of van we are considering, which is paneled up to the front of seat, with the large window in sides, is a great improvement and allows for making a good job of front curtains, the space to be enclosed with curtains being much smaller, making a smaller and more compact curtain.

The curtains are of course reinforced where necessary, and are made double at all fasteners, making a wide hem all around in which eyelets or clincher fasteners are placed.

In making these side shield curtains, the trimmer should finish the storm front and fasten it up in place, then measure the space between storm front and post and the depth from where curtain finishes at top down to six inches below sill. Then cut a piece of goods large enough and fit on to job, fit piece up carefully and drive tacks in where fasteners are to be placed.

## MOTOR CAR UPHOLSTERING

Mark for the lights that are to be placed in curtains, and for any cutouts that are to be made. When all marked, take off job and make up curtains, making a two-and-one-half-inch hem all around, which makes curtain double where the fasteners are to be placed. Turn down hem and sew curtains up on machine.

Then sew one-inch strips of the same goods on inside of curtains where the lights are to be placed; cut a piece of celluloid and place in under these strips sewed on curtain, and sew around edge, sewing in the celluloid. Take off machine and put all eyelets in curtains, trim off all excess goods and threads, cut out the material around the celluloid, and the side shield curtains are finished.

To place curtains on job, the storm front is sewed up at top and four buckles are fastened on to dash to hold fast at bottom when in use. Then there are two straps and buckles screwed fast at top to hold storm front up against top when not in use.

The fasteners for side shields are placed on job, and two buckles and straps are tacked up against front, at top, to hold side shield curtains up when not in use.

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### **Repairing an Old Truck Cushion**

In the commercial motor trimming shop, where repair work is done, there is often an old spring cushion which seems to be beyond all repair, brought into the shop to be repaired and recovered. At first sight the trimmer feels like throwing this dilapidated-looking cushion out of the window, but at second thought there is always a way of handling this kind of a job.

A good and quick way to fix up this cushion, a way that will be comparatively cheap and satisfactory, would be to cut open cushion and get the spring frame out, when it will

## MOTOR CAR UPHOLSTERING

be found that spring frame is in bad condition, there always being springs and wires broken. Just lay this spring frame to one side; do no repairing whatever to springs, as this will not pay.

Then take the hair or moss, whichever is used for stuffing, out of old cushion, to be used again. Get a piece of No. 6 duck large enough to make the cushion top on, and to go down on sides of spring frame. Mark the size of cushion top on this piece of duck; then draw a line the length of cushion top, five inches from front of cushion, to form a roll on front of cushion top, the cushion top being made plain, with a five-inch roll at front. When all marks are on duck, cut goods for cushion top and facings, using some kind of fabric that will give good service and is not too expensive.

Cut the piece to form the roll along front about eight inches wide, thus giving three inches fullness in roll. The piece back of roll is cut one and one-half inches wider and allows three inches over on each end. Then the pieces for facings are cut, two inches wider than the height of spring frame. Cut pieces for cord around top of cushion, cutting this  $1\frac{1}{8}$  inches.

All pieces are then sewed fast to canvas, the work being done on the sewing machine. First blind sew the piece that is to form the roll on top of the piece composing the cushion top in back of roll, sewing in a cord, holding goods up even with the mark made on duck. When sewed the length of cushion, sew front of cushion top down, sewing the facing in at the same time on machine. Then sew down along back edge, sewing the facing in, leaving ends open. Now, tack on to a frame temporarily and stuff up cushion top smooth and firm, using moss. Sew down ends by hand, then sew end facings in place while on frame and join ends and facings. When all sewed, turn right side out and cushion is ready for the spring frame.

To replace the spring frame, which is as a rule much out of repair, have the woodworker get out a panel of  $\frac{5}{8}$ -inch

## MOTOR CAR UPHOLSTERING

poplar, just the size of spring frame. Place the frame in cushion, the best side up. When in place, lay the poplar board on the spring and have some one to stand on board so as to press spring down. Draw the canvas and facings around on bottom of board and tack fast all around. Tack a piece of goods to cover board, and cushion is complete, and practically as good as new. The heavy duck and poplar board hold spring frame together, and you get almost as good results as you would from a new spring, except that it is a trifle stiffer.

In repairing a spring cushion in the above manner, you save the cost of a new spring, and the work is done almost as quick as it takes to write about it. Such a job always gives satisfaction, wearing as long as a new cushion, at one-half the cost.

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### **Storm Front With Searchlight Opening**

There are a number of commercial motor vehicles that use the large searchlight in the middle of the dash, the lamp having a handle at the back with which the light is regulated. This style of light makes the use of an ordinary storm front curtain somewhat unhandy.

In making the storm front curtain for a job with this style of light on the dash, the curtain is either made to fit in front of light, when it becomes necessary to cut a large round hole in the front for the light to shine through, or to fit the storm front back of lamp, when it becomes necessary to place a large lining piece in storm front to keep the lamp from wearing through the curtain. The latter method also forms an unpleasant fullness in the bottom of storm front.

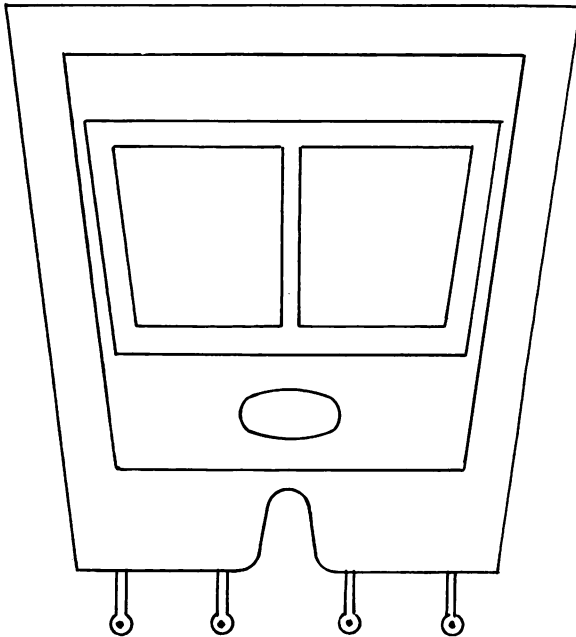
So when a curtain is to be made for a front of this description, a good way is to sew a piece of leather on under side of storm front curtain, making this piece about four inches wide and nine inches long. Mark on curtain where the handle will strike, sew the leather patch on under side of curtain, and when sewed fast cut a hole just large enough for the handle



## MOTOR CAR UPHOLSTERING

of the lamp to pass through, thus allowing the curtains to hang smooth and reducing the wear on them.

With this small hole in curtain for lamp handle, the curtain hangs close to back of lamp so that no wind or rain can get through, as is the case when the large hole is cut in front of lamp.



Storm Front, With Searchlight Opening

When the curtain hangs back of lamp there must also be a cut made at bottom for the small gas hose that feeds the lamp, if the lamp is of the gas-burning variety.

### **Rules and Measurements**

There are certain rules and measurements that can be followed in making these cut-outs on this style of job. The trimmer must accustom himself to the different cars using these lamps and get to know the heights and other measure-

## MOTOR CAR UPHOLSTERING

ments. When a storm front is to be made for a car, measure the length and width that front is to be made; make a five-inch turn-up on the bottom of curtain and a three-inch turn-in at each side; then get the middle of curtain; make a mark nine inches up from bottom and mark for a five-inch cut-out, then lay the leather patch, which has been cut on inside of curtain at mark, and sew fast. Turn curtain right side out and stitch close to where it is to be cut out for handle. When stitched cut out the required area.

Sew a piece of leather on the bottom at middle where the curtain is to be cut out for gas hose; make this piece about six inches square; cut the top corners round and sew on under side of curtain. Turn curtain over and sew close to where the cut-out at bottom is to be, so that in following certain rules and measurements it is not necessary to fit the curtain on to job. When curtain is made, place it correctly at the bottom, work up in place and tack fast at top, using sixteen-ounce saddle nails.

The curtain will hang nice and smooth, allowing the searchlight to be entirely outside of storm front, and yet under the control of chauffeur sitting on the seat.

This storm front, of course, can be fitted up with celluloid, or a wood frame and glass can be set in, whichever is ordered, the wood frame and glass, of course, being preferred, as shown in the diagram on page 140.

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### **A Useful Truck Wind Shield**

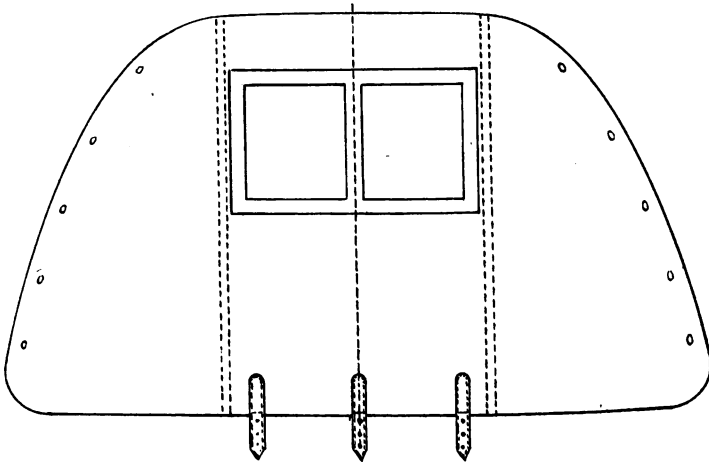
The wind shield on a motor truck is a very necessary part of the equipment. There are very many different kinds and styles being used at the present time. We will describe a meritorious and popular wind shield.

This wind shield has a wood frame, fitted with glass, and has flaps, which take the place of the "ham" curtain on sides. This is the curtain which fits in between the wind shield curtain and the side curtains, the flaps being made large enough to go around on side to reach side curtain and

## MOTOR CAR UPHOLSTERING

cover in the entire open space. These flaps can be folded in neatly and the whole storm front will fold up against top when not in use.

To make this wind shield, first cut a piece of goods large enough to go across dash and around on sides. This will take a piece of material about eight or nine feet long, using goods wide enough to reach from bow at top down to bottom of dash. The best goods to use would be No. 10 black duck. When piece is cut for this front, fit it on job.



A Useful Truck Windshield

Find the center of goods and tack to center of bow temporarily. Work out so that the goods will hang smooth and properly, and tack in place temporarily while fitting on to job. When goods for storm front are in place make all necessary marks on the material. First mark the bottom of bow, so as to get a straight line to work by, then sit on the seat and mark on goods where the glass frame is to be placed.

### **The Glass Frame**

This glass frame should be about twenty-two inches deep, and the width should be determined according to how the front "lines up" with the seat, and so that front will fold up

## MOTOR CAR UPHOLSTERING

against top of job when finished. The glass frame should not be made any larger than necessary. The glass frame should be placed in front, the top being about five inches above the direct line of vision, which gives about fourteen inches below line of vision and allows the chauffeur to see directly over engine hood, which is required when running up close to any object or close to the curb.

Having all marks on the material in proper place and for glass and frame, get on the outside of job and make marks. First see that the curtain hangs smooth, and mark down along the sides so that the side flaps on the storm front will lap over the side curtains on top about two or three inches. Mark along the bottom at sides, so that side flaps will finish at the bottom of sill. Then mark across the front where it is best to finish curtain. The front corners should be folded in and marked, as these corners must be sewed together, so that the storm front will fit around front of dash.

Then mark for the fasteners. There should be about four fasteners across front, and the best thing to use for a fastener is a good strap about six inches long, riveted on curtain, with a buckle fastened on to front of job. Then on sides, where the side flaps on the storm front lap over on side curtains, there should be a couple of clincher fasteners placed on flaps, with eyelets in side curtains, so that they may be fastened from the inside.

Other fasteners should be placed where they are needed, according to the orders of the customer or the shop foreman.

### **Making Up the Storm Front**

To make up the storm front, cut close to the marks, cutting off all material possible, so there will be no unnecessary material. Turn down a hem and sew all around on machine; then set in a piece of the same goods for a lining piece at corners of dash to strengthen at weak point. Then all the straps and fasteners are placed on curtain, and it is ready for the frame and glass. This frame, of course, is

## MOTOR CAR UPHOLSTERING

made by the wood worker, the trimmer furnishing him the size of frame required.

To place the frame in curtain first sew a piece across the outside of curtain, just above where glass and frame fit in. This strip should be hemmed all around, and then sewed fast to curtain. Lay the frame on curtain, sliding top of frame under the strip sewed to outside, so as to get in proper place, and tack fast, using 6-ounce lining nails. This strip keeps the water from running in back of frame and holds the frame in place.

Turn curtain over and tack fast all around on inside, using 3-ounce tacks, close together. When all tacked fast, cut out goods close to tacks and hand front over to the wood worker to place glass in frame and molding over tacks, for a finish. When this is done the storm front is ready to be placed on job.

Straps and buckles are used to fold up this front. Take a strip of good harness leather one and one-quarter inches wide, cut about four inches long and punch for buckles. Screw two of these buckles on to outside of top of frame, four inches in from each end. Then cut a strap long enough to reach from bow and to fasten into buckle on top of frame.

There are two straps screwed to the bottom of frame, four inches in from end, long enough to reach from bottom of frame and to fasten into a buckle screwed on to front of dash. While these straps are needed for folding up the front when the latter is not in use, they also strengthen the whole storm front when it is in use.

To fold up the front, the buckle and strap at top of frame are drawn up tight and fastened. Then all the goods are folded in over glass and frame, and the strap at bottom of frame is fastened to a buckle screwed to a top curve directly in rear of frame when folded.

This makes a good storm front on any kind of a commercial vehicle job, especially on a bow top job, as with these flaps on the sides of storm front the whole front can be closed in a few minutes. It is only necessary to unbuckle a few straps and the whole thing can be let down for use or

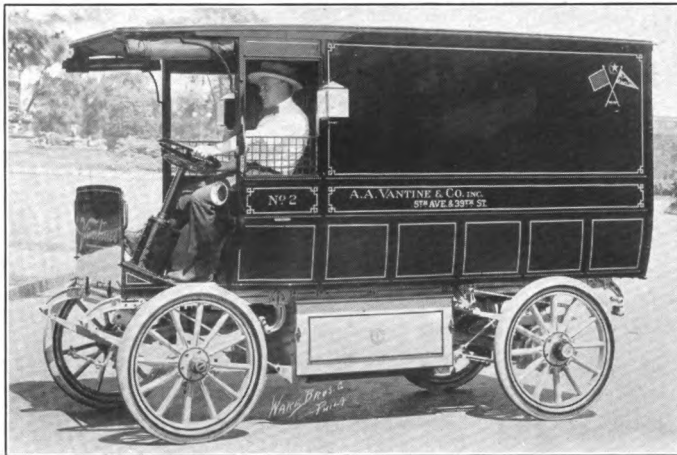
# MOTOR CAR UPHOLSTERING

## TYPES OF COMMERCIAL BODIES



A LARGE STORAGE AND MOVING VAN

Many moving vans are padded by the vehicle trimmer to prevent damage to goods in transit.



AN ELECTRIC PANEL-SIDE DELIVERY CAR

Front Curtains, Seat and Seat Back and a Storm Front comprise the trimmer's work on this car.

## MOTOR CAR UPHOLSTERING

can be folded up just as easy when not needed. By using a few clincher fasteners and eyelets the side flaps can be folded in and held fast when front is to be used without the side flaps.

The above method is ideal when a storm-top style is to be used on a large commercial motor truck. This storm front can either be tacked fast to the front bow or can be placed on with curtain fasteners on bow and eyelets in curtain. When not in use curtain may either be taken off job altogether or folded up against top, whichever is preferred.

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### **Making a Soft-Edge Truck Cushion**

There are several different kinds of soft-edge spring cushions and there are various methods used in making them. There is the soft-edge cushion without a spring and the soft-edge cushion with a spring frame.

To make the soft-edge cushion in which the spring frame is used, or, as it is called, "a couch front cushion," first cut piece for cushion bottom, which is generally made of oil-back duck, and fit piece into seat to get the size and shape of cushion.

Then order the spring frame, the specification being one inch smaller each way than cushion bottom. Regulate the height of spring frame according to the job, these frames running from three to ten inches high. Of course, the higher the frame is, the softer the cushion will be when finished. Next get out the top and facings for cushion.

To make the cushion facings, cut pieces for back and the two end facings, cutting them the exact length and width of cushion bottom and one-half inch deeper than height of the spring. Paste on to a piece of No. 10 duck to stiffen facings.

Then get the cushion top ready. To make the cushion top, cut a piece of No. 10 duck of sufficient size, with enough extra allowed to tack to frame on which cushion top is made.

## MOTOR CAR UPHOLSTERING

Lap this piece of duck on spring frame and mark around top edge of frame and down on bottom edge of front. Lay piece of duck on bench and mark out cushion top, laying out in diamonds, this being the style most popular for this kind of work. Make the size of diamonds according to size of cushion.

When all marked, cut the piece for cushion top, allowing one inch in width of diamonds and about one-quarter inch in length of diamonds for the fullness. Sew a piece of duck the length of cushion to the duck foundation piece, sewing along the mark where duck was marked for top front of the spring frame, allowing about one inch fullness in this piece. Stuff solid with hair, then assemble the cushion top and stuff.

### **Stuffing and Sewing Cushion**

Sometimes the hair is piled on, but as a rule the buttons are put in and top of cushion is stuffed. When all stuffed the cushion top and facings are sewed together, first stitching the facings together with a welt at back corners. Cut top front corner of facing round, to form the soft, round effect on front of cushion. When sewing top and facings together, sew both ends towards the front, so as to work out all fullness around front ends of cushion. The cushion bottom is now sewed in across the front.

Cushion is then turned right side out, the spring is put in place, a layer of wadding is placed on bottom of spring, the cushion bottom is pulled over bottom of spring and blind-sewed fast. This finishes the cushion.

When laying out this cushion top, make the first row of buttons come in about the middle of height of spring frame, so there will be a row of buttons along the front of cushion. When stuffing cushion top there should be only a thin layer of hair stuffed in along the front of cushion. The small piece of duck, which is placed along the front edge of cushion and stuffed, holds up the top edge of cushion and forms a spring edge that will hold its place as long as the cushion lasts.

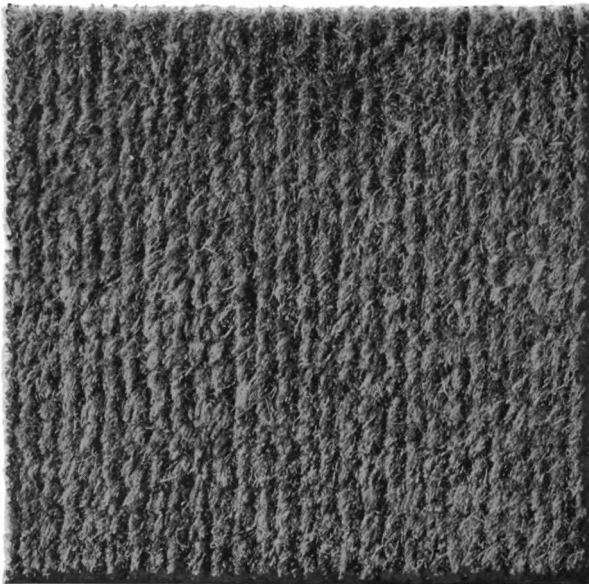


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To make a soft-edge cushion without the spring frame, practically the same methods are followed, but instead of placing the frame in cushion, the cushion is sewed up solid with the exception of about twelve inches, which space is left open for stuffing. Cushion bottom is stuffed solid, filling cushion bottom with moss through this opening. When stuffed solid sew opening and tuft cushion, tufting through and through.

**MOTOR CAR UPHOLSTERING**

**Non-Shrinkable, Durable Carpets  
Manufactured Especially  
for Automobiles**



**We Make Carpet to Match  
Any Color Trimming**

**HIRST-ROGER COMPANY, PHILADELPHIA**

# MOTOR CAR UPHOLSTERING

## **CARPETS AND CARPET MANUFACTURE**

**With Special Reference to the Non-Shrinkable, Durable  
Carpets Made Especially for Automobiles by  
The Hirst-Roger Company, of Philadelphia**

The place in which an article is made has for many centuries been a "hall-mark" indicating its quality, and much stress has always been placed on the location of manufacture.

Time was when the gentleman warrior, the knight errant of the olden time, was not satisfied with a sword other than one from the city of Damascus. Venice and certain parts of Bohemia have figured as the world's ideal sources of the best in manufactured glassware, and mankind has paid perpetual homage to silks, tea and pottery of Chinese origin.

In modern times a certain intoxicating beverage, now happily gone out of fashion, was said to have made the city of Milwaukee "famous." Pittsburgh is known as the "Steel City," and we look instinctively and according to tradition, upon Boston as the "City of Culture"—and baked beans.

Among all the cities of the world, Philadelphia is indisputably pre-eminent in the production of Textile Fabrics. It is the world's greatest producer of things that come from the spinning machine and the loom. Philadelphia might with propriety be named "The Textile City."

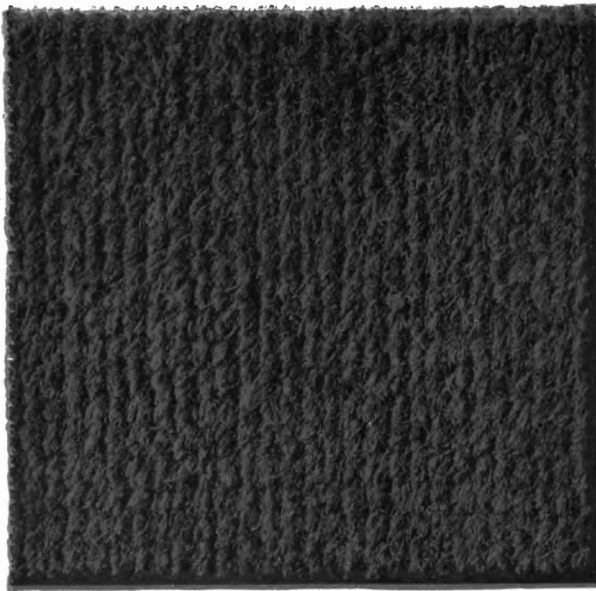
This city of nearly two million inhabitants produces more than one-tenth of all the textiles of the United States, and more than any other two American cities combined. The value of the product is greater than that of any other one city in the world.

Two wards, or municipal districts, out of a total of forty-eight, produce more Carpets than the whole of Great Britain and Ireland. Within a radius of ten miles of Philadelphia City Hall a large proportion of all the carpets woven in the United States are designed and manufactured.

Every variety of carpet is made in this city, from the cheapest rag carpet for the workingman's humble kitchen to the most exquisite fabric destined to grace the halls of

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**All Our Motor Carpet Colors are  
Fast, Beautiful and  
Enduring**



**We Make Carpet to Match  
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## MOTOR CAR UPHOLSTERING

the wealthy. Price for price, grade for grade, they are equal to the best made anywhere in America or abroad.

Besides its leadership as a manufacturer of carpets, it is pertinent to call attention to the fact that Philadelphia is one of the largest wool markets in the United States. Census reports indicate that about one-fifth of all the wool, both domestic and foreign, used in the manufacturing plants of the United States, is consumed in the State of Pennsylvania, and most of this consumption must be credited to the woolen and worsted mills of Philadelphia. About a score of factories in this city are engaged in the manufacture of carpet yarns alone.

Every branch of the textile industry is represented in Philadelphia. Virtually every textile fiber known to commerce, both animal and vegetable, is worked up in her factories from the raw, crude state into the finished product. Every material, from the finest silks and brocades to the coarsest burlap, from fur-felt hats to lace curtains, is made in Philadelphia factories.

### **Philadelphia's Carpet Industry**

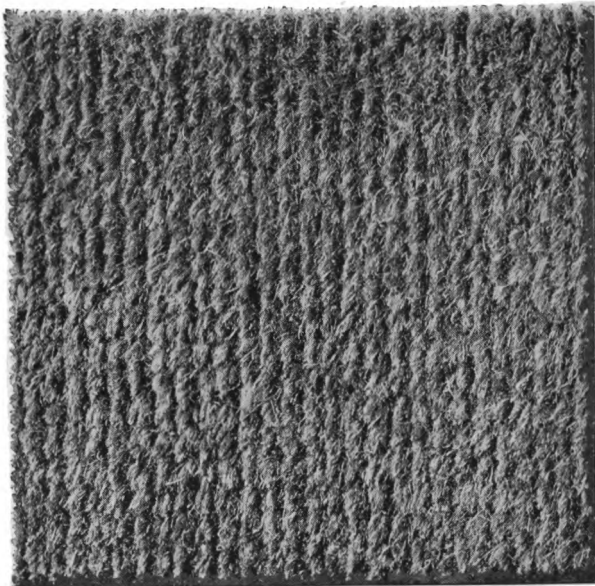
For many years the city of Philadelphia has enjoyed the distinction of being the world's most important center for the manufacture of floor coverings. Here are produced every grade from the lowest price rag carpet to the most expensive Royal-Wilton rugs. Carpet mills are so numerous in the Kensington district of Philadelphia that the visitor to this section is surprised at their close proximity to each other. There are avenues of carpet mills in this section.

While the Kensington district is comparatively distant from the center of the city, it is of easy access by several trolley lines, and the new elevated railway brings the district within a very few minutes of the business center of the municipality.

In order to demonstrate the variety in the lines of floor coverings made in Philadelphia, we will assume the risk of

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**Distinctive, Dependable  
Motor Car Floor  
Coverings**



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## MOTOR CAR UPHOLSTERING

being tedious and will enumerate the different lines made here. The order is haphazard, and does not necessarily indicate the relative importance or the amount of the product.

### **Many Kinds of Carpet**

Beginning with the first letter of the alphabet, we find the axminsters, then in order, body and wilton brussels, carpet lining, bath rugs in saxony and chenille, cocoa mats and mattings, hand-tufted rugs, ingrain carpets and squares, mattings of straw, grass and fiber, linoleum, oil cloths, both wood flour and cork foundations, rag carpets, tapestry and tapestry velvets.

The movement, which gave to Philadelphia its prominence in the carpet industry, came between 1840 and 1850, when there was a large immigration of weavers from England, Scotland and Ireland, most of whom settled in the Kensington district of Philadelphia, in which there was a large carpet industry, most of the mills specializing in ingrain.

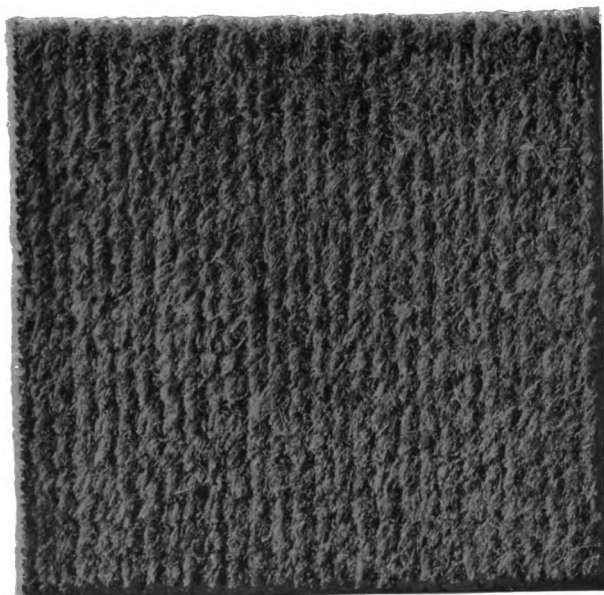
Up to that time Massachusetts had led in the industry, but that State now occupies second place. Philadelphia has ranked first in the value of carpet products in every census from that time to the present.

A comparison of British and American official statistics taken in 1907, the latest available, emphasizes the importance of Philadelphia as a carpet manufacturing center. According to the census reports of the two countries, in that year, the total output of carpet and rugs for Great Britain and Ireland was 30,000,000 square yards, valued at \$19,387,000. The product of Philadelphia, in the same year, as obtained by the United States census, was 32,000,000 square yards, valued at \$22,682,000. A present-day comparison would probably be still more favorable to the city of Philadelphia.

Within the last few years there has been a slight decrease in the quantity of ingrain carpet made in Philadelphia, but this has been more than balanced by the increase in the manufacture of other styles of floor coverings. The falling

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Quality and Honest  
Measure



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off in the production of ingrain carpets in Philadelphia was not a local tendency, but a general one, due to the preference of consumers for rugs over carpet, largely for hygienic reasons and because of the greater convenience of the rug at house-cleaning time.

In the higher grades of carpets and rugs, including such grades as wilton, brussels, velvet and tapestry carpets, there has been a decided increase in production in the last three decades. This tendency toward a higher grade has made the output, according to the 1909 census, though less in quantity, much more valuable than that of the previous ten-year period.

There are today about eighty-five mills in Philadelphia manufacturing carpets and rugs. These mills represent an investment of over \$25,000,000, and weave every year more than 45,000,000 yards of carpet. These goods would form a belt around the world at the equator and leave a strip long enough to reach from Philadelphia to Cincinnati. More than 10,000 people, mostly skilled men and women, turn out a product every year valued at from twenty-five to thirty million dollars.

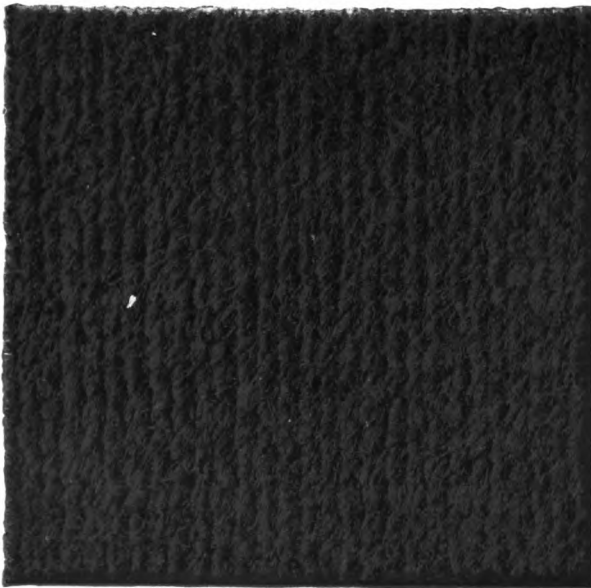
Inventive genius of Philadelphia manufacturers has developed many of the most remarkable improvements in the carpet industry, not only in the machinery and the methods of production, but in the products themselves. This application of inventive skill has resulted in a better product at a lower price.

It was a Philadelphia firm that first succeeded in making a seamed carpet rug. By the use of breadths so woven that when sewed together they would form a perfect rug without cross seams, the difficulty of designing and other mechanical details were largely overcome. The practicability of this method of large seamed rugs was first demonstrated by a Philadelphia manufacturer, and as a result of his pioneer work, the process is now generally employed throughout the United States.

Another remarkable achievement which has been attained

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**Made from 24 inches up to 54  
inches by inch or even  
half-inch gradations**



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## MOTOR CAR UPHOLSTERING

only within the last few years is a practical method for manufacturing room-sized rugs in oval shapes. Oval shape rugs are now made in all sizes and in most beautiful designs in, at least, one of the large mills of Philadelphia.

Twenty-five years ago it could be said with truth that although Philadelphia led the world in the manufacture of carpets, yet the very finest grades of axminsters, wilton and brussels were not produced here. This condition no longer exists. The highest grades and most expensive class of floor coverings made in the world are regularly produced in Philadelphia mills, and their excellence of design and exceeding durability are known far and wide.

An important branch of the manufacture of tapestry, brussels and velvet carpets and rugs in Philadelphia is manufactured by what is known as the drum printing method—a process which requires both art and science to produce a well-made and durable fabric. The process is a lengthy and intricate one, and extremely interesting, as well as mystifying to the novice. In the manufacture of these goods, the yarn passes through some fourteen different processes before it is converted into the finished carpets or rugs.

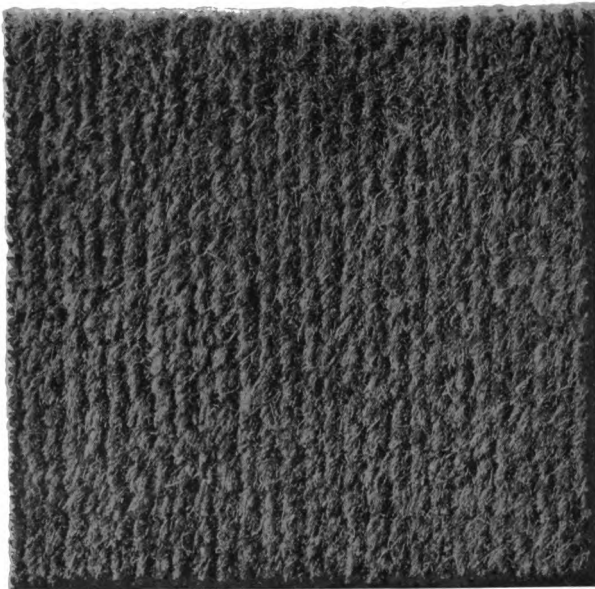
### **Specialists in Automobile Carpets**

One of the fundamental reasons why The Hirst-Roger Company, way back in 1884, established their factory in Philadelphia, was that of all cities of America, it was the greatest center for the manufacture, not only of carpets, but of all other kinds of textile products. A location in the world's greatest textile city, and in the very heart of the textile mill district of that city, gave at once the advantages of obtaining, close at hand, the widest range of materials, colorings, designs, and qualities, and the most highly skilled workpeople to be found anywhere on the face of the globe.

The present factory of The Hirst-Roger Company is conveniently located with relation to all railway and steamboat lines entering the city, and shipments can be made to all

**MOTOR CAR UPHOLSTERING**

**Automobile Carpets in Wools,  
Worstedes, Jutes and  
Horse Hairs**



**We Make Carpet to Match  
Any Color Trimming**

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## MOTOR CAR UPHOLSTERING

points with facility and promptness. This location is the same as that of 1884, but the original buildings have been enlarged as the growth of the business warranted.

### **Hirst-Roger Co. First to Make Motor Carpets**

The Hirst-Roger factory was the first of its kind, having been established, as mentioned above, in 1884, and supplied carpets to the carriage trade for many years before the automobile was invented. The large percentage of former carriage trimmers now engaged in trimming automobile bodies have carried their enthusiasm for Hirst-Roger carpets over into their newer field of endeavor, and this fact, coupled with the undoubted superiority of the goods, has made the "H-R" products as standard in the motor trade as they were, and in fact, still are, in the horse-drawn vehicle industry.

Probably as many as sixty per cent. of the automobile trimming establishments in this country are users of carpetings made by The Hirst-Roger Company of Philadelphia. Many of these manufacturers and trimmers specify Hirst-Roger goods exclusively because they have found that it always pays to please customers.

### **All Widths—Fast Colors**

One reason for the popularity of Hirst-Roger carpets among vehicle builders and trimmers is that the goods can be obtained in any width desired, so as to fit exactly any buggy, carriage or automobile. They are made in widths of from 24 up to 54 inches, by inch gradations. Even half-inch gradations can be supplied when wanted. Another valued feature is that Hirst-Roger carpets, because of their close, firm and compact texture, lay perfectly flat on the floor of the vehicle.

These carpets, especially made for carriages and automobiles, are designed to stand the hard wear to which a vehicle carpet is frequently subjected. They are, moreover, dyed with perfectly fast colors, and there is no danger, after a ride

## **MOTOR CAR UPHOLSTERING**

in a rainstorm, that any of the colors have become in the least way damaged. There is no possibility whatever that a lady occupant of the vehicle should stain her dress from the carpet dyes, as has often happened when inferior carpets have been supplied to vehicle users.

### **Wools, Worsteds, Jutes and Horse Hairs**

But there is something yet to be added to convenience in fitting and high quality. Nowhere else outside of the Hirst-Roger lines can the carriage and automobile trimmer obtain such a wide range of styles in vehicle carpets. He can specify wools, worsteds, jutes and horse hairs, and all of these can be had in plain, solid colors or in mixed weaves. It is important in these days of cultivated tastes that vehicle carpets harmonize in texture and color with the upholstery and trimmings of the car. As the Hirst-Roger carpets are furnished in so many grades, materials and colors, it is very easy to "match up" with any upholstery scheme that the designer may specify or the customer desire.

### **Largest Orders Quickly Filled**

The Hirst-Roger Company's plant, at Allegheny and Kensington Avenues, Philadelphia, is of such size that they can handle the largest orders with dispatch. The plant is entirely modern, and is equipped with the latest improved machinery to manufacture all forms of carpet required in the vehicle trades.

The entire factory is kept running on full time, turning out a product which is the result of long years of carpet experience on the part of the officials of the concern, combined with the skill of operatives, many of whom have spent years in the service of this company.

### **Officials of the Company**

All the officials of the company are practical carpet men of long experience. They are Richard Hirst, president; John T. Kommer, vice-president and treasurer; Walter

## MOTOR CAR UPHOLSTERING

Cowdrick, secretary. A branch house is maintained in Detroit, where a representative of the concern looks after customers in the "Automobile City." Among the traveling men none take a more prominent part or are more constantly on the road than Richard Hirst, president of the company.

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### **How Hirst-Roger Automobile Carpets Are Made**

The motor car carpets made by The Hirst-Roger Company are principally of two types or varieties, known in the textile trade as "tapestry" and "tapestry velvet."

Tapestry brings up suggestions of the ancient wall hangings, with their rather misty and romantic "lack-of-precision" effect; and, as a fact, the modern tapestry is capable of quite as artistic treatment as was possible to the weavers of the old-world fabrics of the same name. There is no limit to what may be done with the face side of such carpets in a well-equipped mill. It is possible to so combine the threads that not only all the solid colors, but mixtures of two, three and four colors may be obtained. No matter what color scheme may be decided upon for the painting and upholstery of an automobile, a Hirst-Roger carpet of an exactly harmonizing shade may be secured by the skilled manipulation of the colored yarns.

Wool velvet, another style of weave, has somewhat the appearance of velvet; therefore the trade name. "Velvet" carpets are in high favor with many motor car manufacturers and custom builders who cater to a discriminating public.

Both varieties are beautiful fabrics and especially adapted, above all other types of carpet, for the floor covering of the automobile. Indeed, many of the best motor car makers are using these carpets, not only on the floor, but for covering the lower parts of doors, the rockers, and the backs of the front seats. Such treatment most certainly enhances the appearance of the bodies to which it is applied, adding to the beauty and the atmosphere of luxury so much sought for by most persons who buy automobiles.

# MOTOR CAR UPHOLSTERING



**A SECTION OF THE DYE HOUSE IN THE HIRST-ROGER FACTORY**

Dyes and dyeing processes represent in their development one of the most important phases of Nineteenth Century research and invention. For the dyer a knowledge of chemistry is necessary, because he must know what chemical elements his textiles contain, and for what sort of dyes these textiles have affinities.



## **The Textile Fibers**

There are many "textiles," which name indicates all materials that can be spun into threads or yarns and then woven into a fabric. They are of both animal and vegetable origin. All of them are of fibrous or hair-like structure and are generally known as "textile fibers."

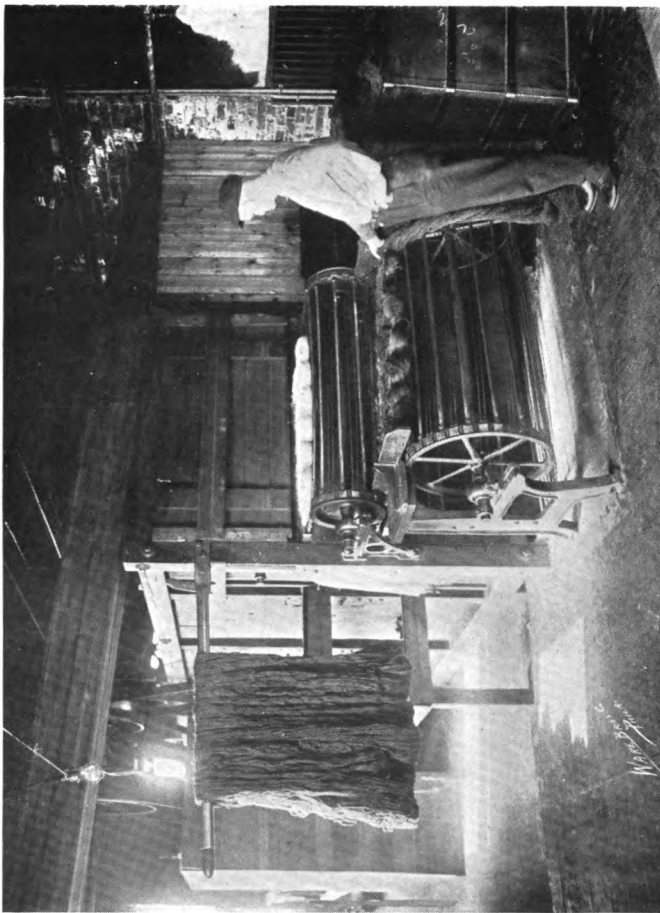
In the fabrication of Hirst-Roger motor carpets several of the textiles are used, according to the grade of the carpet and the uses to which the carpet is to be put. Wools, worsteds, jutes and horse-hairs all enter into the durable, fast-color, and unshrinkable "H-R" line.

**Carpet Wool** is the hair of the sheep, but it differs from ordinary hair in being wavy or "kinky," with sometimes as many as thirty waves to the inch. The fiber is covered with numerous minute scales, from 1,000 to 5,000 to a single inch. The waves cause the wool to be easily spun into yarn and the scales render it possible to make a very compact, close fabric in weaving, as is apparent to any one who inspects a sample of the firm, closely woven "H-R" motor carpets.

The wools used in carpet manufacture are somewhat coarser than the grades used in clothing, although cheviots and homespuns are sometimes made with a mixture of the finer fibers with a little carpet wool. Wools of almost identical texture and fineness as those used in carpets are appearing in blankets in increasing quantities. Carpet wools are gathered from all the sheep-raising lands of the world and are often mixed from the different varieties of widely separated countries.

The wool, after shearing, is washed, though the washing is sometimes done "on the hoof," that is, while the wool is still on the sheep. The first step in actual manufacture is the sorting or dividing into grades or qualities. Next comes the scouring or removal of grease and other impurities, through the use of solvents and mechanical processes. The wool now goes on a conveyor to the dryer, which forces

## MOTOR CAR UPHOLSTERING



### **DRYING THE YARN AFTER DYEING**

After the yarn has been thoroughly impregnated with the dye it is taken in large hanks or skeins to the drying room, where it is quickly dried by a mechanical dryer. The picture shows one of the machines with its attendant.

## MOTOR CAR UPHOLSTERING

warm, dry air through the wool, while at the same time tossing and agitating it, until the fibers contain only a small percentage of moisture, say, about 15 or 16 per cent. of the total weight. Other processes complete the cleaning of the wool, after which it is sprayed lightly with an oil to prevent the fibers flying off in the spinning and drawing stages. These processes are very similar to those employed in cotton preparation and will be explained further on in this article.

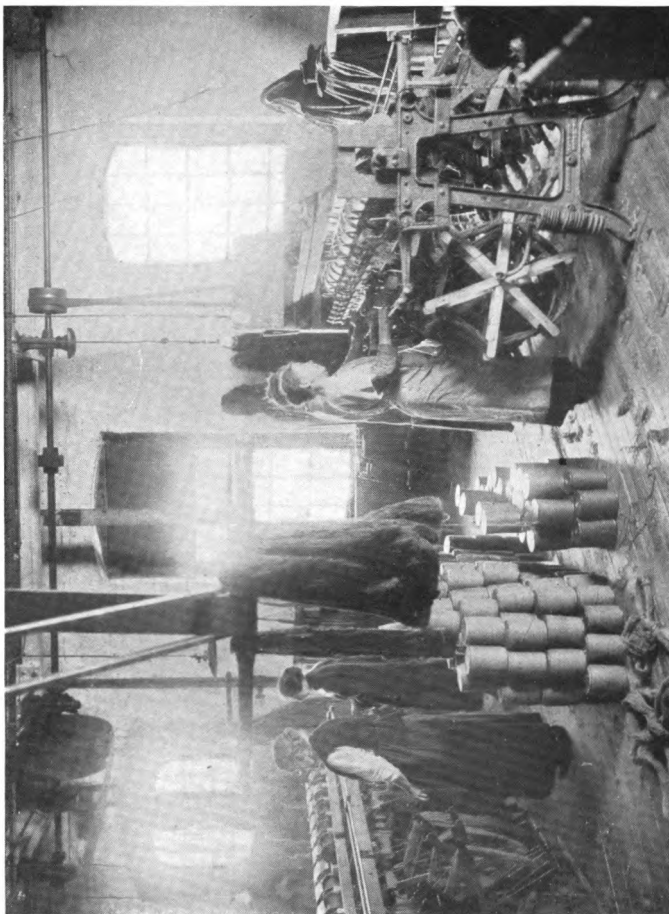
At this point the fibers may take a route that leads to "woolens" or another that brings about the "worsted" grade. The principal difference is that woolens are made from crossed or interlaced fibers, while in worsteds the yarn fibers lie virtually parallel to each other. Both woolen and worsted yarns are employed in the Hirst-Roger factory for different effects in motor carpet texture.

**Horse Hair** is, as its name indicates, a fiber of animal origin, strong, wiry and lustrous. The textile industries draw heavily upon both the vegetable and the animal kingdoms for their supplies. Examples of the many kinds of animals whose hairy coverings or fibrous products are utilized are: Sheep, goat, llama, vicuna, horse, cow and camel. All of these fibers are used in the manufacture of textile products.

**Jute** comes from India, where it grows as a tall, slender plant with a stalk somewhat like that of hemp, the fiber being taken from the inner bark. It is employed in the strong backing or base of carpet, and in some grades enters also into the face or surface of the carpet. In some carpets the entire face may be of jute fiber, but in these cases the jute is spun finer and is of a higher grade. In some varieties of motor carpets jute is used in the cross threads or weft, when it is twisted into an exceptionally strong and durable yarn.

**Cotton** fiber grows upon the seeds of the cotton plant and varies in length from one-half up to two and one-half inches or more. The average fiber length is about one inch. The United States produces more than one-half of all the cotton in the world, India and Egypt following next in order.

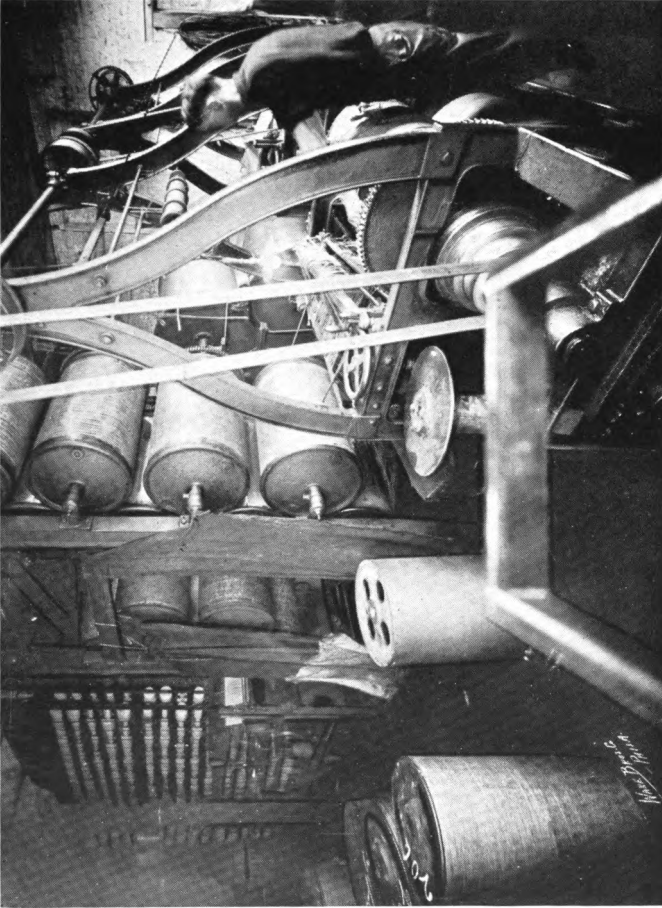
## MOTOR CAR UPHOLSTERING



A CORNER OF THE WINDING DEPARTMENT

The yarn is received in this department as it comes from the drying room in skeins. Women are employed to transfer the yarn from the skein to the spools or bobbins, when the material is ready to go to the beaming department.

## MOTOR CAR UPHOLSTERING



### STIFFENING AND BEAMING THE YARN

This impressive looking machine applies a sizing to the threads so they can be more readily worked on the loom. At the same time it arranges the separate threads in parallel rows on a mammoth spool or beam, the width of the carpet being made. The beams carry the warp or longitudinal threads of the carpet.

## MOTOR CAR UPHOLSTERING

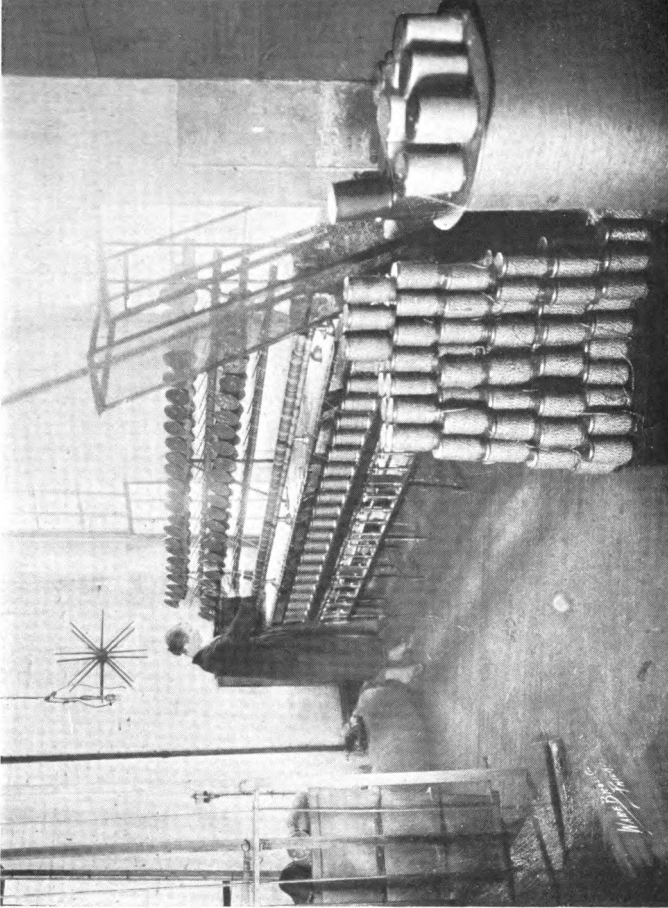
In August the cotton is picked, mostly by hand labor, though machines for this purpose are in an experimental stage. The cotton is sent to the ginnery, where the seeds are removed and the cotton compressed into bales of about 500 pounds each. It is next graded and sold, either to cotton dealers or direct to the spinning mills.

At the mill a "bale breaker" breaks the compressed, lumpy cotton into a loose, fluffy mass, after which a "picker" pulls the fibers apart and delivers them in a flat sheet, like cotton batting, which is technically known as the "lap." Another machine removes dirt and impurities from the lap by means of much shaking and beating. The cotton lap or sheet now goes to the carders, where the last trace of foreign matter is removed, the fibers disentangled and drawn into approximately parallel layers. The lap or sheet is at the same time drawn out in width to a thin, filmy layer of cotton, which is later contracted into a light, rope-like mass, about an inch in diameter, called the "card sliver."

The "card sliver" goes to the "drawing frame," the "fly frames" and the "roving frame" in successive order, emerging from these processes as a slightly twisted and much smaller rope of cotton fiber, which is wound on spools and taken to the spinning machines. Spinning completes the drawing out of the roving to the required size and gives the fibers the proper, final twist. It consists essentially of drawing out the roving, giving it the twist and winding the twisted yarn on a tube or "cop." These operations complete the process of making cotton yarn, and as mentioned under the heading "Wool" are, at least to a great degree, identical with the processes for that fiber.

In Hirst-Roger Motor Carpets the fibers described above, wool, worsted, horse hair, jute and cotton, form the longitudinal or warp threads. In other words, the longitudinal threads for the face of the carpet may be of any one of the first four fibers mentioned, with cotton for a binder. Or, if so ordered, the yarns may be mixed on the face. Jute is used as a backing on virtually all carpets, as it is the best possible material for this purpose.

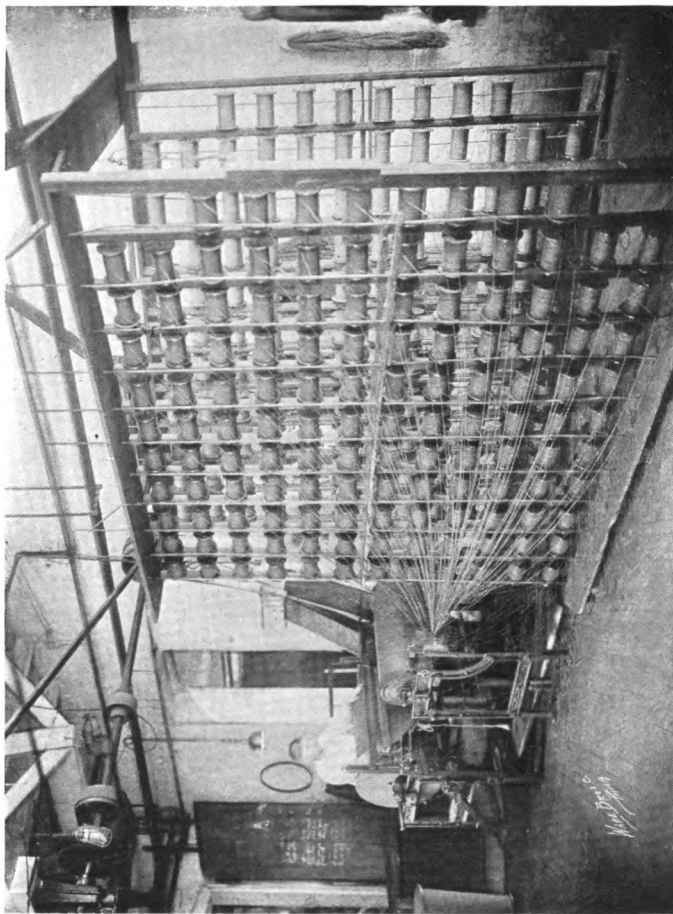
# MOTOR CAR UPHOLSTERING



## TWISTING THE YARNS FOR A MIXED WEAVE

Carpets for Motor Cars are frequently desired in a mixed weave, instead of in a solid color. The mixed effect is obtained by winding or twisting together into one thread yarns of the lighter and darker color. One young lady, like the one shown in the picture, can, with the aid of the machine, twist many spools of yarn simultaneously.

## MOTOR CAR UPHOLSTERING



BEAMING THE TWISTED YARNS

This large machine does work very similar to that performed by the one on page 168. This view, however, shows the other end of the machine, with its multitude of spools with the threads all leading to the one destination, the "beam," where they are deftly and automatically laid in parallel rows, with an equal tension on every thread.



## MOTOR CAR UPHOLSTERING

**Linen** is used for the cross-threads or the "weft." This textile has been known for thousands of years, and it will be recalled that "purple and fine linen" were synonymous with royal splendor in early Old Testament times. Frequent mention of linen is made in the Bible. It is made from the flax plant, which is grown in many parts of the world. It was said before the recent war that of flax Russia produced the most, and Belgium the best. A great deal of hand labor is necessary in the preparation of this fiber, which must be passed through many operations on its way to the yarn stage. So costly is its preparation that on a pre-war basis it was said that it cost about \$375 to work up \$500 worth of flax from the raw state into finished yarn.

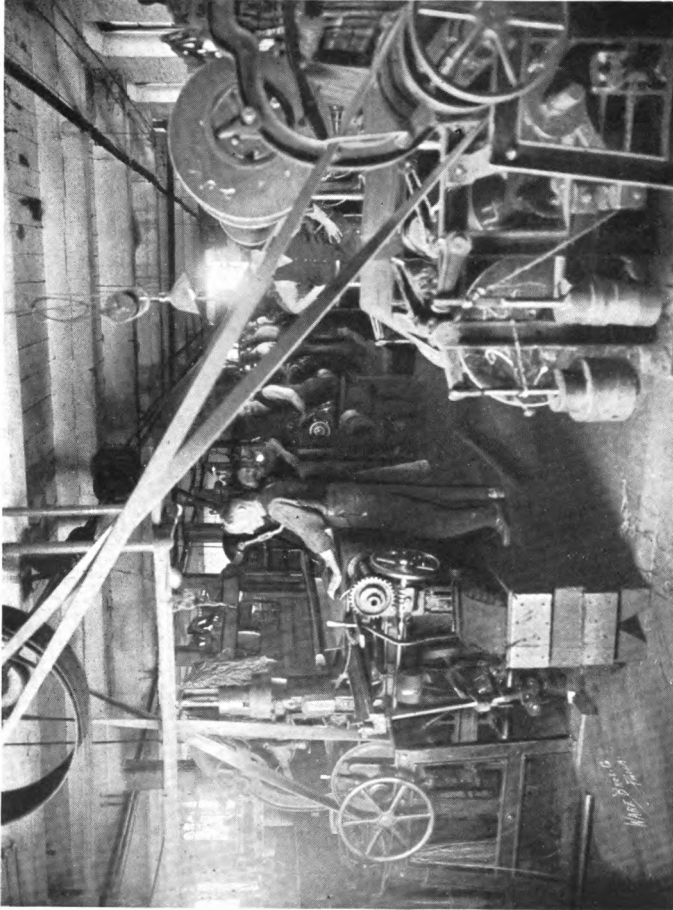
The linen spinning process is much like that described for cotton and wool. The finer grades must be spun wet with water, in rooms kept at a very high temperature. Linen yarns are very strong, and for that reason are chosen for the cross-yarn in "H-R" motor carpets. All the other yarns, in weaving, are fed to the loom from the beam, but the linen yarn is wound on a bobbin, which is placed in the transversely moving shuttle.

Most of the yarns used in textile products are dyed, and the dyeing is a very particular process. The dyer must have a considerable knowledge of chemistry, because he must know what chemical elements enter his textiles and for what sort of dyes these textiles have affinities. The dye-house is equipped with large vats which contain the dye in solution. The hanks or skeins of yarn are hung on racks which run them on roller tracks above the vats, and lowered by a mechanical device into the liquid.

When the dye has penetrated into the fibers thoroughly the yarn is taken, still in the skeins, to the dryer, a machine that quickly removes all the moisture remaining from the dyeing process.

From the dryer the skeins are transferred to the winding room, where women are employed to transfer the yarn from the skeins to spools or bobbins, when the material is ready for the beaming department.

## MOTOR CAR UPHOLSTERING



ONE END OF A LONG ROW OF CARPET LOOMS

The "beam," with the warp wound on it, is fixed in the loom and the ends of the threads, after passing through the comb-like reed are attached to the take-up roll on which the finished carpet will be wound. The alternate warp threads are raised and lower automatically, the flying shuttles darting swiftly back and forth between the warp threads, carrying with them the weft or cross threads from the bobbins. The reed automatically pushes the cross threads into place, leaving the finished carpet closely woven. Every few seconds the take-up roller pulls the carpet a fraction of an inch forward and winds it into a roll.

## MOTOR CAR UPHOLSTERING

The impressive-looking machine, shown on page 168, applies a sizing to the yarns so they can be more readily worked on the loom. At the same time it arranges the separate threads in parallel rows on a big spool or "beam," the width of the carpet to be made. These beams carry the warp or longitudinal threads of the carpet. The transverse threads (jute or linen) are carried in the shuttle.

Carpets for motor cars are often wanted in a mixed weave instead of a solid color. The mixed effect is produced by winding or twisting together into one thread, yarns of the lighter and darker colors. One girl, with the aid of a machine, can twist hundreds of spools simultaneously. These twisted threads must also be beamed the same as the single yarns, to prepare them for the weaving loom.

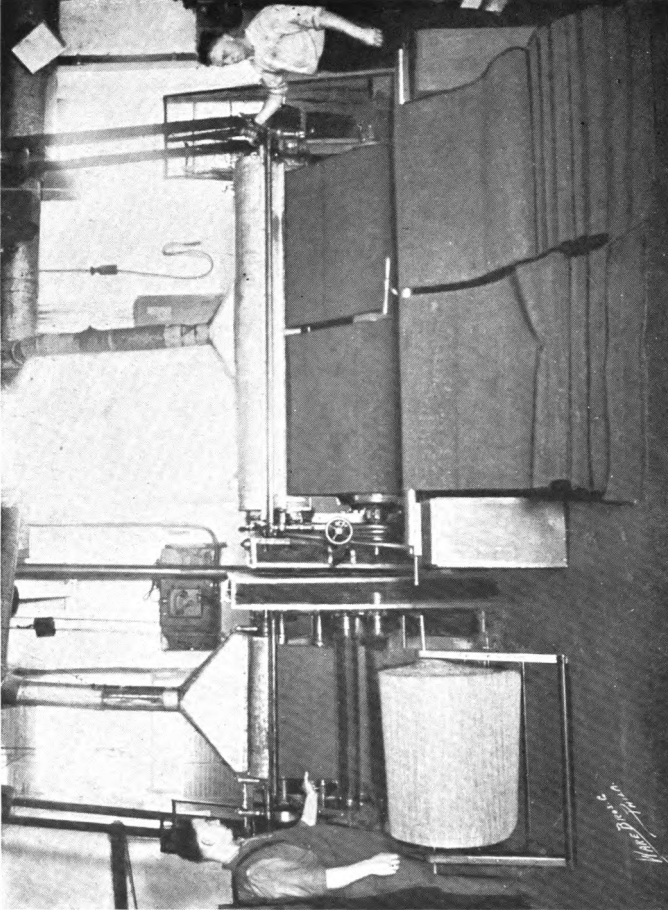
The "beam," with the warp wound on it, is fixed in the loom and the ends of the threads, after passing through the comb-like reed, are attached to the take-up roll on which the finished carpet will be wound. The alternate warp threads raise and lower automatically with the "heddles," the flying shuttles darting swiftly back and forth between the warp threads, carrying with them the weft or cross threads.

The reed then automatically pushes the cross threads into place, leaving the finished carpet closely woven. Every few seconds the take-up roller pulls the carpet a fraction of an inch forward and winds it into a roll.

The roll, when completed, is removed from the loom and taken to the finishing room, where the surface is "sheared." As the carpet comes from the loom the surface is not left as smooth and perfect as is desirable. The shearing machines, which contain a number of sharp knives revolving on a cylinder at tremendous speed, finish the surface to an exactly even height, producing the smooth effect so much admired on all Hirst-Roger Motor Carpets.

As a final process, a measuring machine, adjusted with great accuracy, checks up the yardage of each roll, which is now ready for shipment.

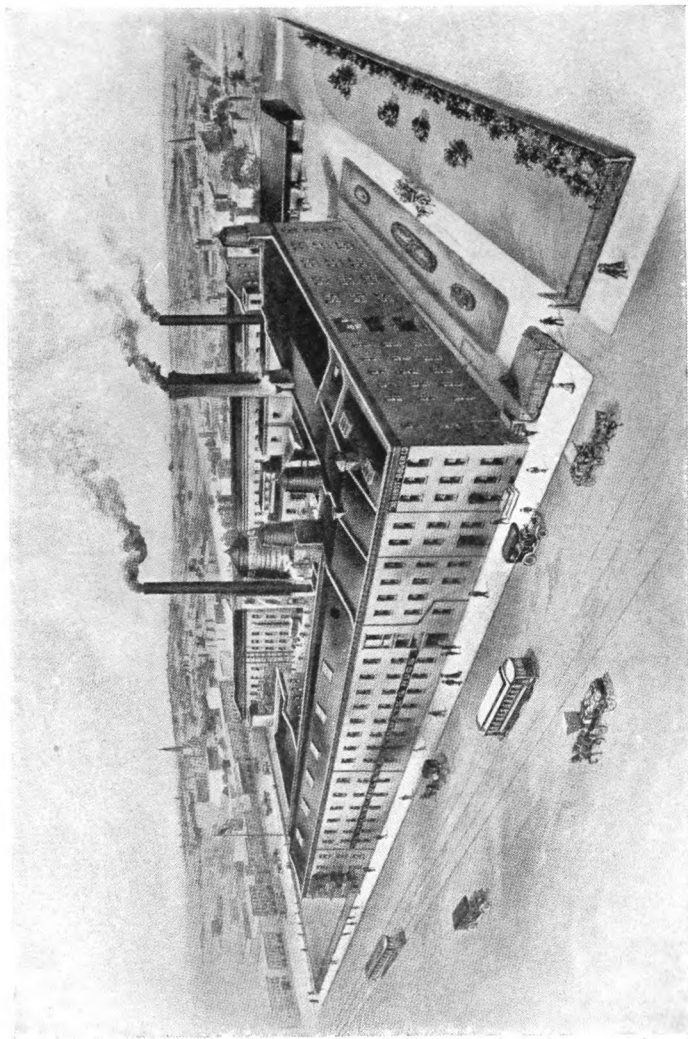
## MOTOR CAR UPHOLSTERING



### SHEARING OR SMOOTHING THE CARPET SURFACE

As the carpet is being woven on the loom the pile or nap is automatically cut, but the surface is not left as smooth and perfect as is desirable. The shearing machines, which contain a number of sharp knives revolving on a cylinder at tremendous speed, cut the pile to an exactly even height, producing the smooth, velvety effect so much admired in all Hirst-Roger Motor Carpets.

# MOTOR CAR UPHOLSTERING



PLANT OF THE HIRST-ROGER COMPANY  
Allegheny and Kensington Avenues, Philadelphia  
Established 1884

# MOTOR CAR UPHOLSTERING

## INDEX

- A**
- Accessories and Mountings... 28  
Accessories That Add to Beauty and Comfort..... 39  
Apprentice, Duties of..... 15  
Arm Rests, Upholstered..... 85  
Automobile Carpets .....150  
Automobile Carpets, Specialists in .....158
- B**
- Backs and Cushions, How to Cover ..... 55  
Backs, Foundations for..... 50  
Backs, Hanging .....55, 74  
Backs, Making Up in Negligee Style ..... 81  
Back, One Piece..... 75  
Backstay Strips.....100  
Bench Work Classified.....105  
Bindings, Laces and Cords.... 39  
Blanks, Requisition..... 21  
Bodies, Principal Types of..16, 24  
Body Trimming Operations Classified .....105  
Bows ..... 97  
Bow Setting .....58, 97  
Bows, Setting and Covering.. 99  
Buttons in Negligee Work... 81  
Buttons, Placing, in Tufted Work ..... 73  
Buckram and Its Uses..... 36  
Bucks, Use of, in Top Making.100
- C**
- Carpet for Rocker Covers.... 40  
Carpet for Sedan.....115  
Carpet Industry in Philadelphia .....152  
Carpet Linings ..... 40  
Carpet, Many Kinds of.....154  
Carpets and Carpet Manufacture .....150  
Carpets, Automobile .....39, 162  
Carpets, Binding Machine for. 40  
Carpets, Especially Made for Automobile .....115  
Carpets for Custom Work... 40  
Carpets, How Used..... 34  
Carpets in Motor Car Widths and All Colors.....160  
Carpets, New, in Repair Work.125  
Celluloid or "Pyralin"..... 37
- C—Continued**
- Cleaning and Repairs.....126  
Cleaning Upholstery Materials ..... 38  
Cloth and Other Materials, Cutting of ..... 84  
Cloths Used in Upholstering.. 37  
Commercial Bodies, Types of. 145  
Commercial Car Work.....129  
Cotton Batting ..... 54  
Cotton Batting in Seat Cushion.101  
Cotton and Hair for Filling.. 36  
Cotton Padding for Bow Tops. 99  
Cotton, Reasons for the Use of. 69  
Curtain, Front Curtain for Truck .....135  
Curtain Lights in Repair Work.125  
Curtains, Rear ..... 59  
Curtains, Side .....61, 100  
Curtains, Side Shield for Van.136  
Curtains for a Six-Post Commercial Body .....129  
Cushion, An Economical.....101  
Cushion Facing, Plain Style.. 90  
Cushion Filling Materials.... 34  
Cushion Foundations ..... 48  
Cushion for Large Van.....134  
Cushion, Providing Ventilation for ..... 72  
Cushion, Soft Edge, for Truck.146  
Cushion, Soft Edge, Without Spring Frame .....148  
Cushion Spring, Attaching Top to ..... 71  
Cushion Springs..... 47  
Cushion Spring Patterns..... 44  
Cushion Spring Patterns for Sedan .....109  
Cushion Top, Making Up the. 69  
Custom Trim Shop, Fitting Up a .....119  
Cushion, Truck, Stuffing and Sewing .....147  
Cushions, Ventilation of..... 55  
Cutting Room Operations....105
- D**
- Diamond and Half Diamond Style ..... 67  
Diamond Tufted Work..... 63  
Diamond Tufting, Fullness for. 63  
Diamond Tufting, Laying Out. 64  
Diamond Tufting, Pattern for. 66

# MOTOR CAR UPHOLSTERING

## INDEX—Continued

- D—Continued**
- Diamond Seat Back, Making  
Up a ..... 73
- Door to Door Trimming in One  
Piece ..... 57
- Door Checks, How to Make... 85
- Doors, Covering for..... 87
- Doors, Methods of Fitting.... 47
- Door Moldings ..... 88
- Doors, Touring Car..... 87
- Down and Feathers for Special  
Jobs ..... 34
- Drawings and Patterns, Cab-  
inet for Filing..... 17
- E**
- Education, Advantage of..... 14
- Environment, Effect of on Ap-  
prentices ..... 12
- Estimating, Importance of  
Careful ..... 126
- F**
- Finishing Around Front, Back  
and Sides..... 83
- Finishing of a Job..... 92
- Foundation Material for Plain  
Work ..... 89
- Foundation Patterns, French  
Plait Style ..... 51
- Foundations for Backs..... 50
- Foundations, Cushion ..... 48
- French Plait Style, a Sedan  
Body in ..... 106
- French Plaits, Width of..... 117
- Front, Back and Sides, Finish-  
ing of ..... 83
- Fullness and Foundation Pat-  
terns ..... 53
- Fullness, How to Determine.. 64
- G**
- Glass Frame for Truck Wind-  
shield ..... 142
- H**
- Hair for Cushions and Backs. 34
- Hair in Negligee Work..... 81
- Hair, Substitutes for..... 34
- Hair, Use of Too Much..... 77
- Head Lining, Fitting and Mak-  
ing Up ..... 83
- I**
- Individual vs. Quantity Pro-  
duction ..... 62
- L**
- Labor, Sub-Division of..... 105
- Laces, Bindings and Cords.... 39
- Laying Out the Work..... 41
- Leather and Its Substitutes... 38
- Leather, Harness and Dash... 39
- Lighting, Good, Is Essential.. 120
- Limousine, Parts of Trimming  
for ..... 25, 27
- M**
- Materials Used for Cushions.. 34
- Materials, Economy in Use of. 117
- Materials, Motor Car Uphol-  
stery ..... 31
- Materials, Storage of..... 120
- Materials Used in Sedan,  
French Plait Style..... 117
- Materials, Wonderful Selection  
of Top ..... 97
- Moldings of Various Kinds... 39
- Motor Carpets, First to Manu-  
facture ..... 160
- Motor Van or Truck, Work  
on a ..... 130
- Mountings and Accessories .28, 29
- Moving Van, Making Pads for. 132
- N**
- Negligee and Plain Styles..... 79
- O**
- Occupation, The Young Man's  
Choice of ..... 11
- One-piece Trimming, Door to  
Door ..... 57
- P**
- Pads for Motor Van..... 131
- Patterns for Carpet..... 115
- Patterns and Drawings, Index  
Card System for..... 19
- Patterns for Back Spring.... 46
- Patterns for Carpets and Rugs. 39
- Patterns for Diamond Tufting. 66
- Patterns for French Plait Style 51
- Patterns, Fullness and Founda-  
tion ..... 53
- Patterns, Laying Out and  
Making ..... 41

# MOTOR CAR UPHOLSTERING

## INDEX—Continued

### P—Continued

Patterns Made for Every Part	43
Patterns, Making	84
Patterns for Neglige Work..	79
Patterns for Slip Covers, Making	93
Patterns, How Stored and Filed	17
Patterns for Touring Car.....	41
Piping, Calculation for.....	73
Plain Style, Front Back in.....	91
Plain Style Upholstery.....	89

### Q

Quantity Production, Templates Used in	93
Quarters in Neglige Work...	82
Quarters for Sedan.....	114
Quarters, Top, for Touring Cars	99
Quarters, Upper, of a Limou- sine	84

### R

Repairing Cushions and Tops.	123
Repairing Seat Springs.....	124
Repairing a Truck Cushion...	137
Repair Work, How to Make it Pay	127
Repair Work, Notes on.....	102
Repairs and How to Make Them	123
Rests, Upholstered Arm.....	85
Robe Rails, How to Make.....	87
Rockers, Carpet Covered.....	40
Rug and Carpet Making.....	39

### S

Seat Back for Van.....	134
Seat, Trimming for Front— Plain Work	89
Seats, Slip Covers for.....	96
Sedan, Advantages of.....	106, 107
Sedan, Building Backs for....	111
Sedan, Head Lining and Quar- ters of	114
Sewing	54
Side Quarters, Repairing.....	125
Skill, Opportunity to Show Trimmer's	109
Slip Covers, Notes on.....	93
Spring Patterns for Backs....	46
Spring Patterns for Cushions.	44
Spring Patterns, Fitting.....	76

### S—Continued

Spring Problems Left to Manu- facturers	32
Spring, Sensible Construction of	76
Springs, Back	34
Springs, Back, for Sedan.....	111
Springs, Experience Needed in Making	32
Springs, Height of	33
Springs, the Different Kinds of.	32
Springs, Pitch of.....	44, 76
Springs, Seat and Cushion....	31
Springs, Seat Cushion, Covering for	49
Springs for Seat Cushion.....	47
Springs, Tires and Upholstery	31
Stock and Materials, Care of..	120
Storm Front with Searchlight Opening	139
Storm Front, Making Up, for Truck	143
Strainers and Pads for Tops..	59
Styles of the Past, Present and Future	41

### T

Tacks and Their Uses.....	36
Tacks, Removal of, in Repair Work	102
Templates, Use of, in Quantity Work	93
Time Cards	21
Tool and Instrument Kit, Indi- vidual	121
Tools, Trimmer's Individual, List of	23
Tools Used in Trimming Shop	23
Top, Cape Style, for Touring Car	97
Top, Method of Trimming a..	59
Top Making	58
Top Making in Quantity.....	100
Top Trimming	58
Touring Car, Parts of Trim- ming for	25, 26
Touring Car, Patterns for....	41
Touring Car, Setting Bows for	97
Two-Diamond Design, Correct Layout for	70
Two-Diamond Design, Incor- rect Layout for.....	71
Two-Diamond Style, Layout of	67
Trimmer's Trade for Ambitious Young Men	11



# MOTOR CAR UPHOLSTERING

## INDEX—Continued

T—Continued		T—Continued	
Trimmer's Prospects for the Future .....	12	Tufted Work, Diamond.....	63
Trimmer's Trade, Characteristics of .....	13	Tufting, Diamond, the Different Kinds of .....	74
Trimmer's Trade, One of Great Possibilities .....	13	U	
Trimming, the Different Styles of .....	41	Upholstery Materials, How to Clean .....	38
Trimming Methods in Large Shops .....	44	V	
Trimming Operations Classified	105	Ventilating of Cushions.....	55
Trimming, Principal Elements of .....	24	Victoria Top, Principal Elements of .....	28
Trim Shops, Conditions in...	12	W	
Trim Shop, Getting Acquainted with .....	15	Waste, Avoidance of.....	75
Truck Cushion, Repairing a...	137	Welts on Slip Cover Work...	96
Tufted Work, Characteristics of .....	63	Wind Shield for Motor Truck.	141
		Work, Incentives for Doing Good .....	61

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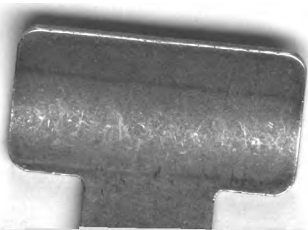
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