

(No Model.)

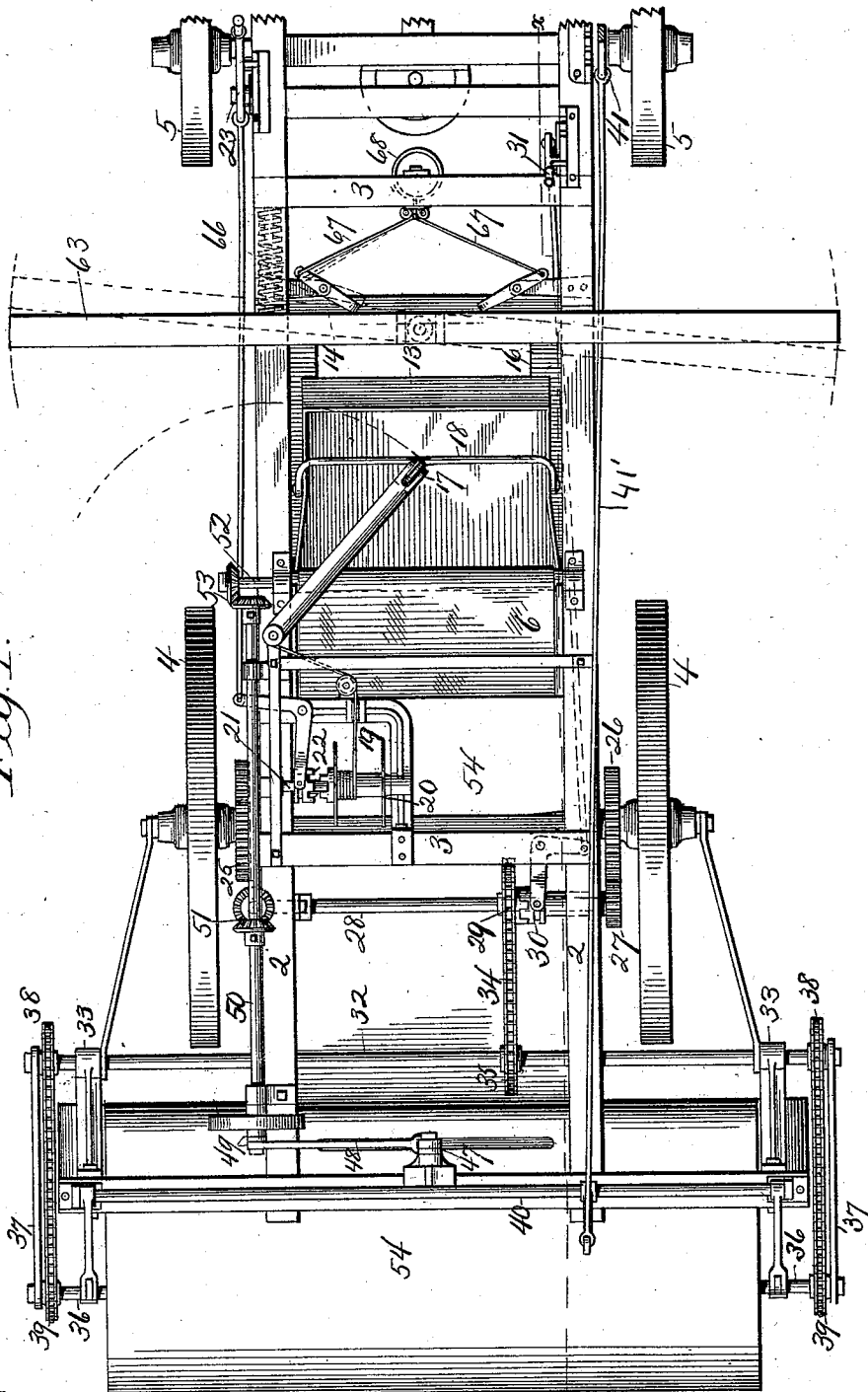
4 Sheets—Sheet 1.

# H. L. CARPENTER. STREET SWEEPER.

No. 555,473.

Patented Feb. 25, 1896.

*Fig. 1.*



Witnesses.

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(No Model.)

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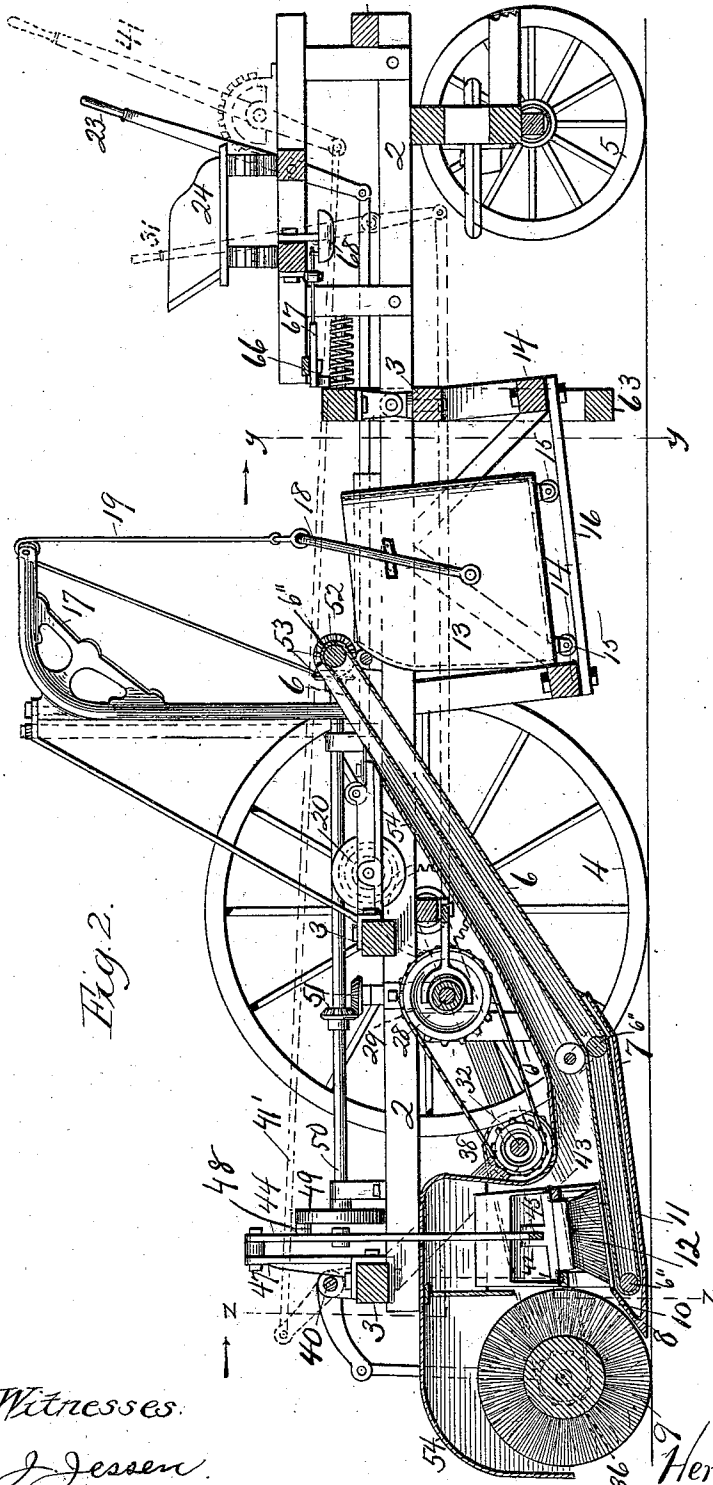


Fig. 2.

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Fig. 3.

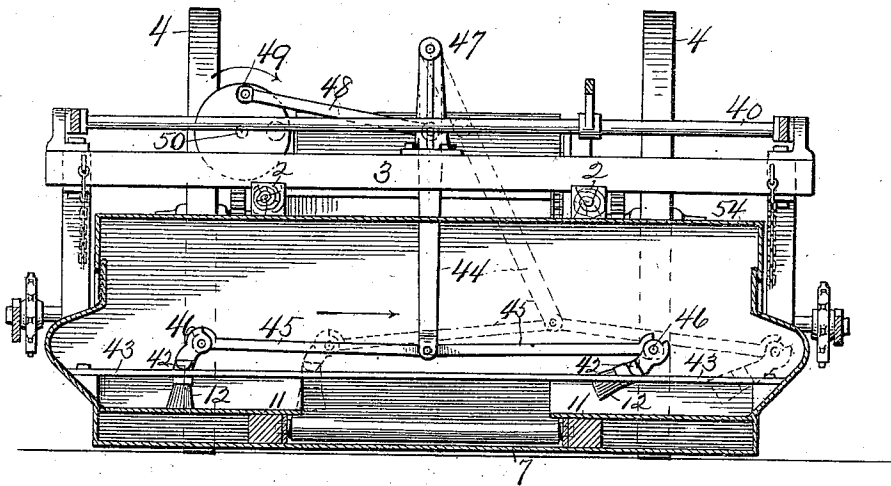
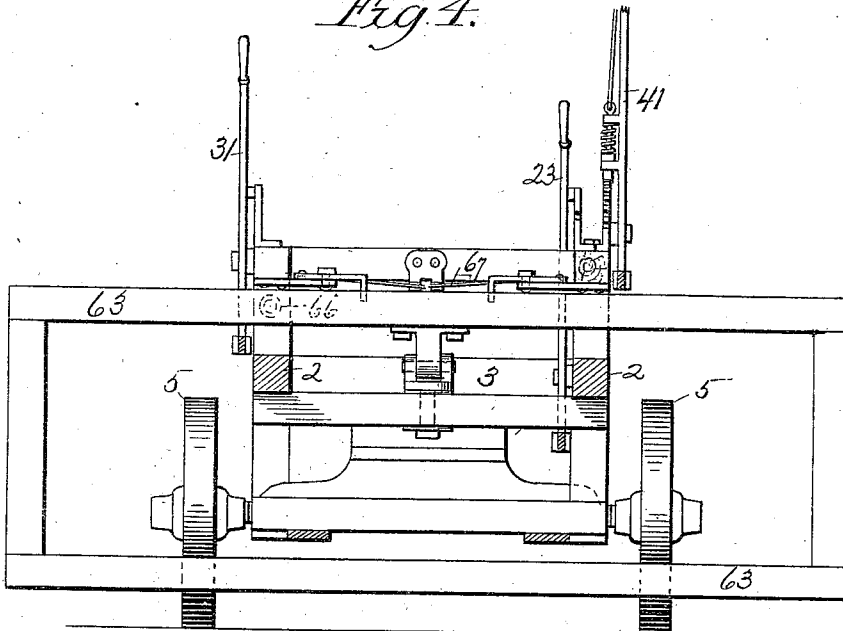


Fig. 4.



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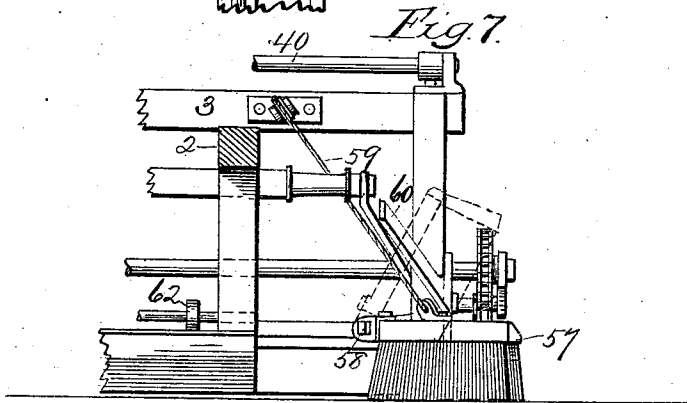
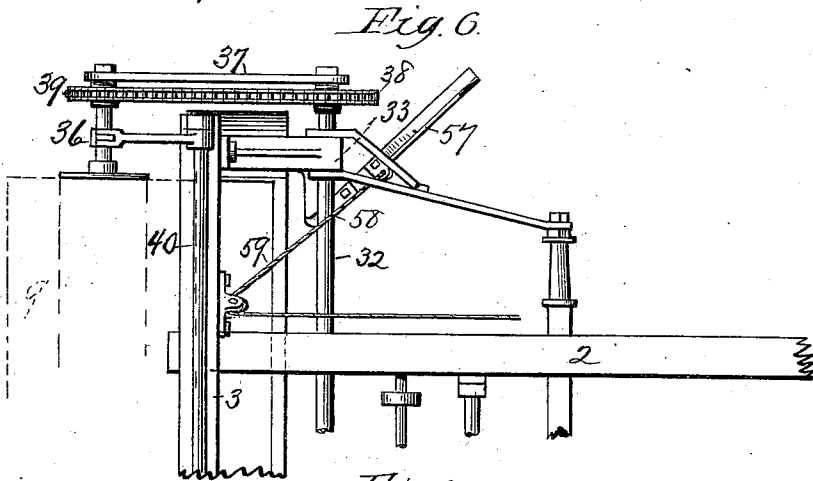
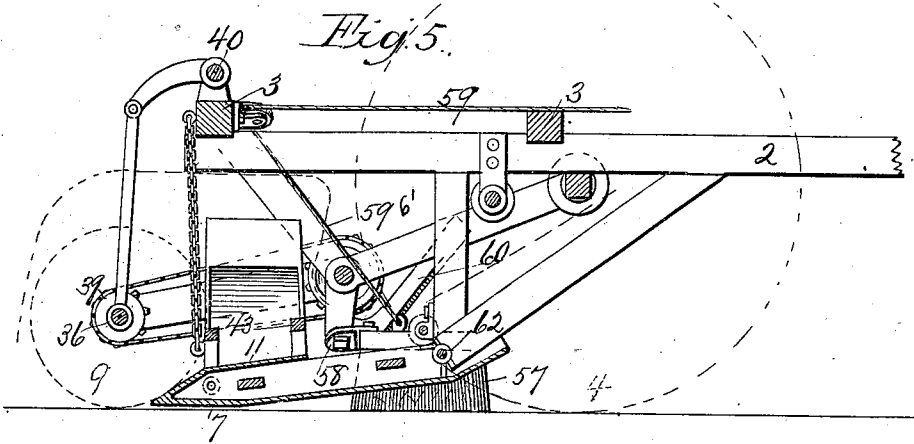
(No Model.)

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No. 555,473.

Patented Feb. 25, 1896.



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# UNITED STATES PATENT OFFICE.

HENRY L. CARPENTER, OF MINNEAPOLIS, MINNESOTA.

## STREET-SWEEPER.

SPECIFICATION forming part of Letters Patent No. 555,473, dated February 25, 1896.

Application filed November 30, 1894. Serial No. 530,626. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY L. CARPENTER, of Minneapolis, Hennepin county, State of Minnesota, have invented a certain new and Improved Street-Sweeper, of which the following is a specification.

My invention relates to street-sweepers and particularly to that class of street-sweepers which not only collects but carries away the dust and dirt.

The object of my invention is to provide a street-sweeper of this class which will have a very long brush capable of sweeping a wide strip or space, while the arrangement is such so as to permit the use of such a brush upon a narrow and light structure or wagon.

A further object of my invention is to provide a street-sweeper having a receptacle into which the dust and dirt are delivered and said receptacle arranged to be hoisted by the forward movement of the wagon and above the height of an ordinary dump cart or wagon, so that the contents of said receptacle may be dumped into such a cart or wagon; and, further, the object of my invention is to provide alarm means adapted to notify the driver of any large obstacle in the path or road.

My invention consists generally in a street-sweeper of the construction and combination of parts, all as hereinafter described and particularly pointed out in the claims.

The invention will be more readily understood by reference to the accompanying drawings, in which—

Figure 1 is a plan view of a street-sweeper embodying my invention, a portion of the front of the machine being broken away. Fig. 2 is a vertical and longitudinal section on the line  $xx$ , Fig. 1. Fig. 3 is a transverse vertical section on the line  $zz$  of Fig. 2. Fig. 4 is a similar section on the line  $yy$ , Fig. 2. Figs. 5 and 6 are respectively vertical section and plan views showing the detail construction of the rear part of the machine, and particularly the side or gutter brushes, one of which is attached to each side of the machine. Fig. 7 is a sectional view of the rear portion of the machine, showing the gutter-brush in position ready for use, the elevated position of the same being indicated by dotted lines.

As shown in the drawings, this machine is adapted to be drawn by horses and the truck

or wagon comprises a strong frame made up of longitudinal timbers 2 and cross-timbers 3, supported upon the large rear wheels, 4, the smaller forward wheels, 5, and their axles. The driving arrangement is such that neither of the axles need revolve.

The rear ends of the beams 2 project considerably beyond the rear driving-wheels, 4, and beneath them I provide a frame 6', which terminates at its lower end in a shoe 7, extending down to the ground and provided with a sharp-edged boot 8, which boot is of greater width than the carrier-frame. A series of rollers 6'' are arranged in the frame, over which a wide carrier-belt 6 passes in position to receive the material from the boot and convey it to a receptacle located between the forward and rear wheels of the machine.

The large revolving brush 9 is placed directly back of the boot, and both the brush and the boot are arranged straight across the rear end of the wagon and are of much greater length than the width of the wagon or truck. Owing to this means must be provided for conveying the dirt and dust collected at the ends of the brush to the foot of the comparatively narrow conveyer. The dirt is brushed up the inclined end 10 of the boot and at the middle drops directly onto the conveyer-belt. At the end plates 11 are provided, onto which the dust falls, there to be taken up by laterally-operating brushes or brooms 12, which are moved alternately toward and from the open space in the top of the boot, over which the conveyer dumps. The dust is elevated by this conveyer and falls into a large receptacle or bucket 13, which is carried in a strong bracket-frame 14 depending from the frame. Casters 15 are provided on the under side of the buckets and the bottom rails 16 of the frame 14 are inclined toward the rear, so that the bucket naturally slides down toward and beneath the forward end of the conveyer. At the same time space is allowed in the bracket-frame to permit the bucket to move forward, so that it may be raised past the end of the conveyer. The bucket is raised by the means of crane 17, erected on the wagon, and the bucket is provided with a locking-bail 18, which may be unlocked to permit the bucket to be dumped and raised above and swung out be-

yond the sides of the wagon. The rope 19, extending from the bail up over the pulley in the crane, is carried down beneath the pulley to the windlass 20, which may be connected with the shaft 21 by a clutch 22, operated by means of a rod or bar 22' and a lever 23, which is in easy reach from the driver's seat 24. The shaft is driven by a gear connection 25 with the left-hand wheel 4. The shaft 21 is operated from the gear 25 by means of a pinion 25', carried on the outer end of the shaft, while the gear 25 is carried by the wheel of the machine.

The remaining parts of the mechanism are driven from the opposite wheel 4, on the hub of which is a large gear-wheel 26, meshing with a smaller gear-wheel 27, fixed on the driving-shaft 28, extending across the frame and supported in suitable bearings thereon. On this shaft is a sprocket-wheel 29, connected therewith by means of a clutch 30, operated by a forward hand-lever 31 through a rod or bar 31'. The long cross-shaft 32 is supported in depending bearings 33 and is driven by a sprocket-belt 34, extending from the sprocket 29 over a sprocket 35 on said shaft 32.

The shaft 32 and the shaft 36 of the cylinder-brush are held in their relative position by tight links 37, and the shafts are provided with sprocket-wheels 38 39 preferably on both ends of the shaft and connected by sprocket-belts. The brush is thus pivoted upon the shaft 32, which is placed low down in order that the brush may be lifted upward and in nearly as straight a line as possible. The lifting is done by a rocking shaft 40 provided on the rear beam 3, having the backwardly-extending arms 40', from the outer end of which links 42' extend down to the transverse shaft 36. The shaft 40 is arranged to be operated through a long rod 41' by a hand-lever 41 placed near the driver's seat, and as the shafts 32 and 36 are always held in the same relative position by the tie-links 37 the brush may be raised or lowered without being stopped, which would be necessary if a single belt extended from the driving-shaft 28 to the brush-shaft.

The means for operating the lateral brushes 12 are best shown in Figs. 2 and 3. The backs of these brushes are provided with lugs 42, which ride upon the rails 43 placed just above the boot, and the connection of each brush with the upright operating-lever 44 is made through a link 45 and a knuckle-joint 46, which joint bends in one direction only—that is, when the brushes travel backward to the outer ends of the boot. At this time one brush is drawn forward and the knuckle holds the brush at substantially right angles to the link, so that the brush stands upright and upon the top of the boot. The other brush breaks at the joint and the brush drags back along the rail, the brush being raised out of contact with the boot to prevent moving the dust which is collected thereon the wrong way. The backward and forward movement of these

brushes may be very slow as compared with the speed at which the cylinder rotates. Means may be employed for swinging the lever 44 by the construction shown, wherein the lever is pivoted at its upper end to the standard 47 and a connecting-rod 48 joins the lever 44 with a crank 49 on the longitudinal shaft 50. A bevel-gear arrangement 51 is used to connect the shaft 50 with the driving-shaft 28, and the shaft 50 is extended forward through suitable bearings into position to be connected by the bevel-gears 53 with the shaft 52 of the upper conveyer-roll over which the carrier-belt 6 passes and by which it is operated.

A housing or cover 54 is arranged over the collecting-brushes and the conveyer.

In addition to the collecting means already described I may employ side or gutter brushes 57. (Shown in Figs. 5, 6, and 7.) These brushes are simple brooms set in an incline in the frame and pivoted thereto at their rear ends (see 58) and adapted to be raised or lowered by rope 59. The rope 59 passes over pulleys to the forward part of the machine, where it is connected to a lever within reach of the driver of the machine, so that whenever desired the gutter-brushes may be raised or lowered. The lever to which the rope 59 is attached is not shown in the drawings, but may be arranged at any convenient place on the forward part of the machine. To prevent these brushes being thrown against the sprocket-chain I preferably provide the guards 60, against which the brushes are arranged and held when not in use. As the machine is drawn along, these brushes gather the dust and dirt and move the same inward in front of the cylinder-brush to be taken up thereby.

With street-sweepers of this class—that is, with such as have a part corresponding to the boot described—it is necessary to observe care in order that stones, blocks, &c., be not driven over and beneath the boot, so as to raise the boot and break parts of the machine.

With my machine the boot will readily pass over small obstacles, as the whole shoe is pivoted upon the upper part of the conveyer-frame, as shown at 62 in Fig. 5. In order that the driver may be given warning of his approach to obstacles in the roadway I provide a low swinging bar 63 beneath the forward end of the machine. This bar may be made a part of a substantial frame pivoted upon the truck-frame, as shown in Figs. 1, 2, and 4, the pivot being preferably in the form of a universal joint. Buffer-springs 66 normally hold the frame at right angles to the truck-frame, and the bar 63 is so close to the ground that it will strike any object which is too large for the boot to pass over readily. Upon so striking an obstacle the bar will be swung in one direction or another and will operate an arm or leader 67 connected with the hammer of a suitable bell or gong 68 carried upon the truck. The alarm-bar is so far forward of the brush that the driver will have plenty of

time in which to stop before the machine has gone far enough ahead for the shoe or boot to strike the obstacle. Upon stopping, the driver is expected to get down and remove the obstacle, whatever it may be, and place the same, if not too heavy, in the bucket.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination in a street-sweeper of a suitable wheel-frame, a brush extending across the same, a boot of substantially the same width as the length of the brush, a conveyer extending forward of said boot and narrower than the same, and laterally-operating brushes to sweep from the outer ends of said boot to said conveyer, substantially as described.

2. The combination in a street-sweeper of the wagon, with the brush driven from the same, a low horizontal bar arranged transversely beneath the wagon in position to be struck by obstacles in the road, said bar being pivotally arranged upon the wagon or truck, and an alarm adapted to be actuated by the movement of said bar, substantially as described.

3. The combination in a street-sweeper of the truck or wagon, with a long rotating brush carried thereby and operated therefrom, an equally long boot or shoe arranged before said brush to receive the dirt therefrom, a narrow conveyer extending into said boot and adapted to receive a part of the dirt from the brush, laterally-movable brushes provided upon the ends of the boot, and means driven from the wagon for moving said brushes from and toward said conveyer, substantially as described.

4. The combination in a street-sweeper of the truck or wagon, the transversely-arranged cylinder-brush, the boot arranged before the same, a conveyer extending from said boot to a receptacle carried upon the wagon, transversely-movable brushes arranged upon the ends of said boot, and means upon the wagon for driving said brushes and said conveyer, substantially as described.

5. In a machine of the class described, the combination, of the wheel-frame, the main shaft driven by one of said wheels the con-

veyer arranged at the rear end of said frame, the transversely-arranged brush, the pivoted shoe or boot for receiving the material from said brush and delivering it to said conveyer, the brushes arranged to sweep the material toward the middle of said shoe or boot, and said brushes being connected with the main driving-shaft of the machine to be driven thereby, substantially as described.

6. The combination, in a machine of the class described, of the wheel-frame, the main driving-shaft 28, means for driving the same from said wheels, the conveyer arranged at the rear of said machine between said wheels, the long shoe or boot forming a guard for the lower end of said conveyer, the transverse brush arranged to deliver the material upon said boot, the laterally-operating brushes for sweeping the material toward the middle of said boot and delivering the same to said conveyer, the shaft 50 geared to said shaft 28, the crank upon the end of said shaft 50, means connecting said crank with said laterally-operating brushes, whereby when said shaft 50 is revolved said brushes will be moved back and forth over said boot, and said shaft 50 being also geared to the roller over which said conveyer passes, for the purpose set forth.

7. The combination, in a machine of the class described, of the frame, the transversely-arranged brush, the shoe or boot for receiving the material collected by said brush, a conveyer, means for operating said brush and conveyer, a sweeping mechanism for moving the material toward the middle of said boot and delivering the same to said conveyer, said mechanism comprising a shaft 50 provided with a crank, an upright swinging lever 44, a rod 48 connecting said crank and said lever, the link 45 carried by the lower end of said swinging lever, the brushes 12, the knuckle-joints between said brushes and the ends of said link, and means for revolving said shaft 50 and thereby operating said brushes, substantially as described.

In testimony whereof I have hereunto set my hand this 9th day of October, A. D. 1894.

HENRY L. CARPENTER.

In presence of—

C. G. HAWLEY,  
FREDERICK S. LYON.