

(No Model.)

3 Sheets—Sheet 1.

H. BROOMELL.
STREET SWEEPER.

No. 550,014.

Patented Nov. 19, 1895.

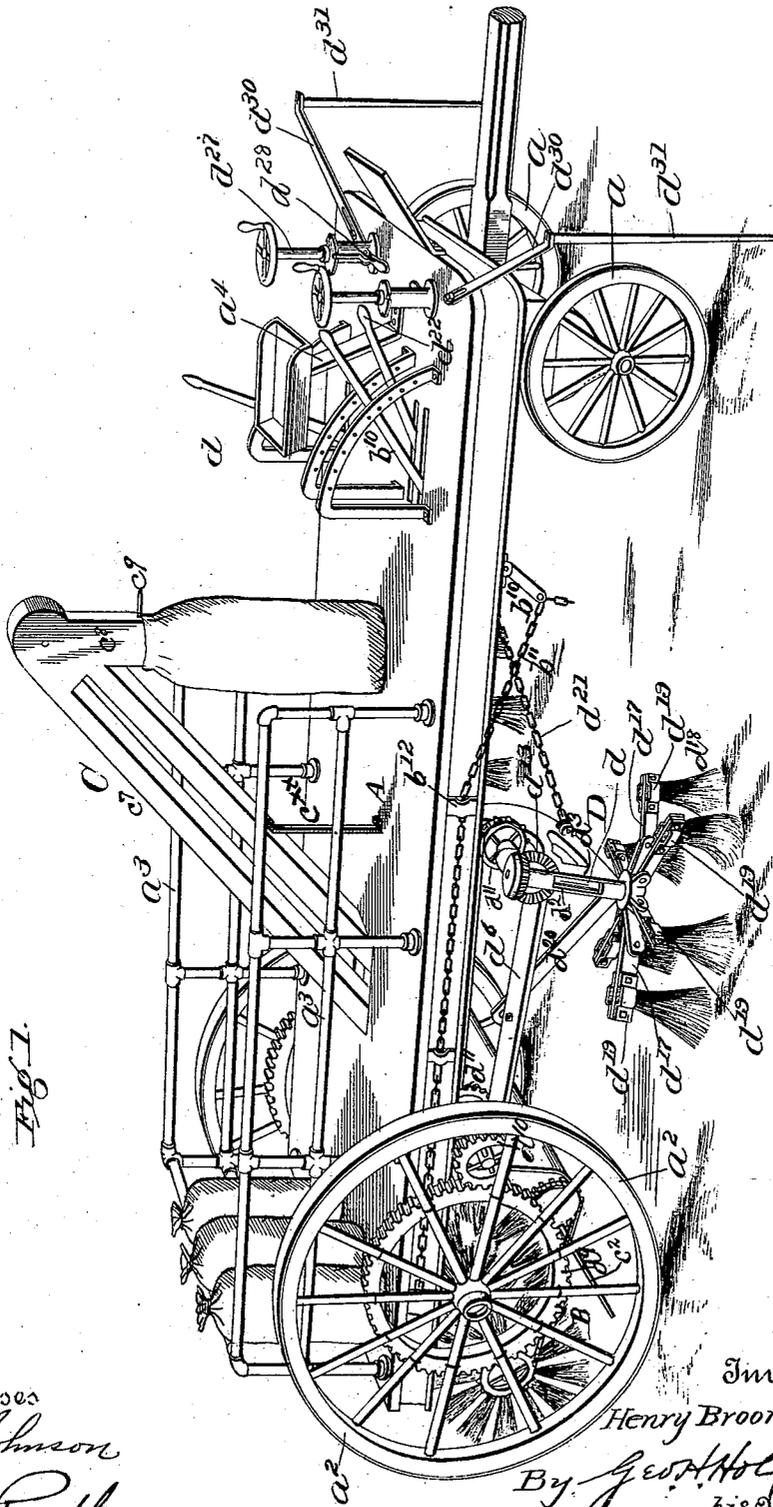


Fig. 1.

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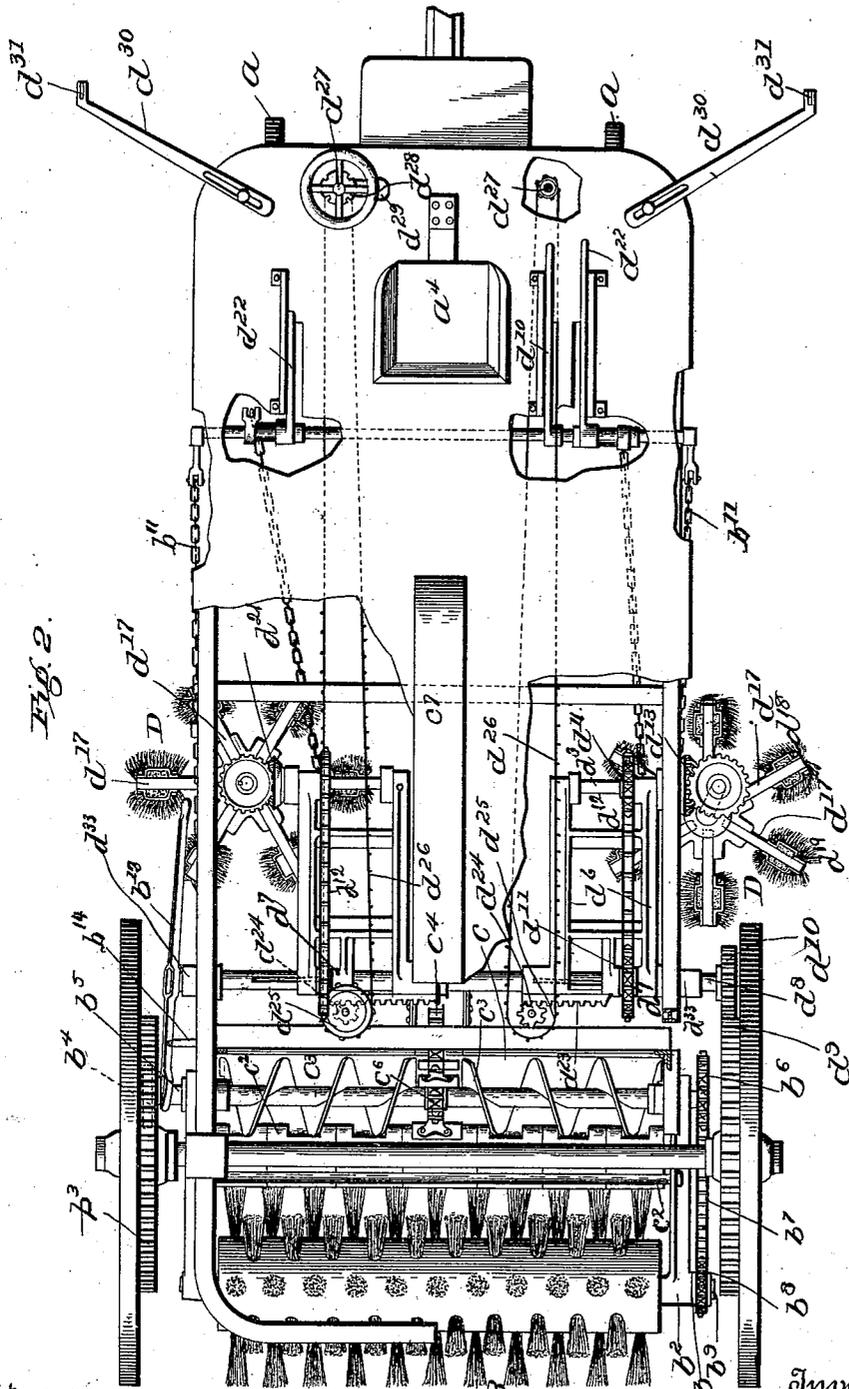


Fig. 2.

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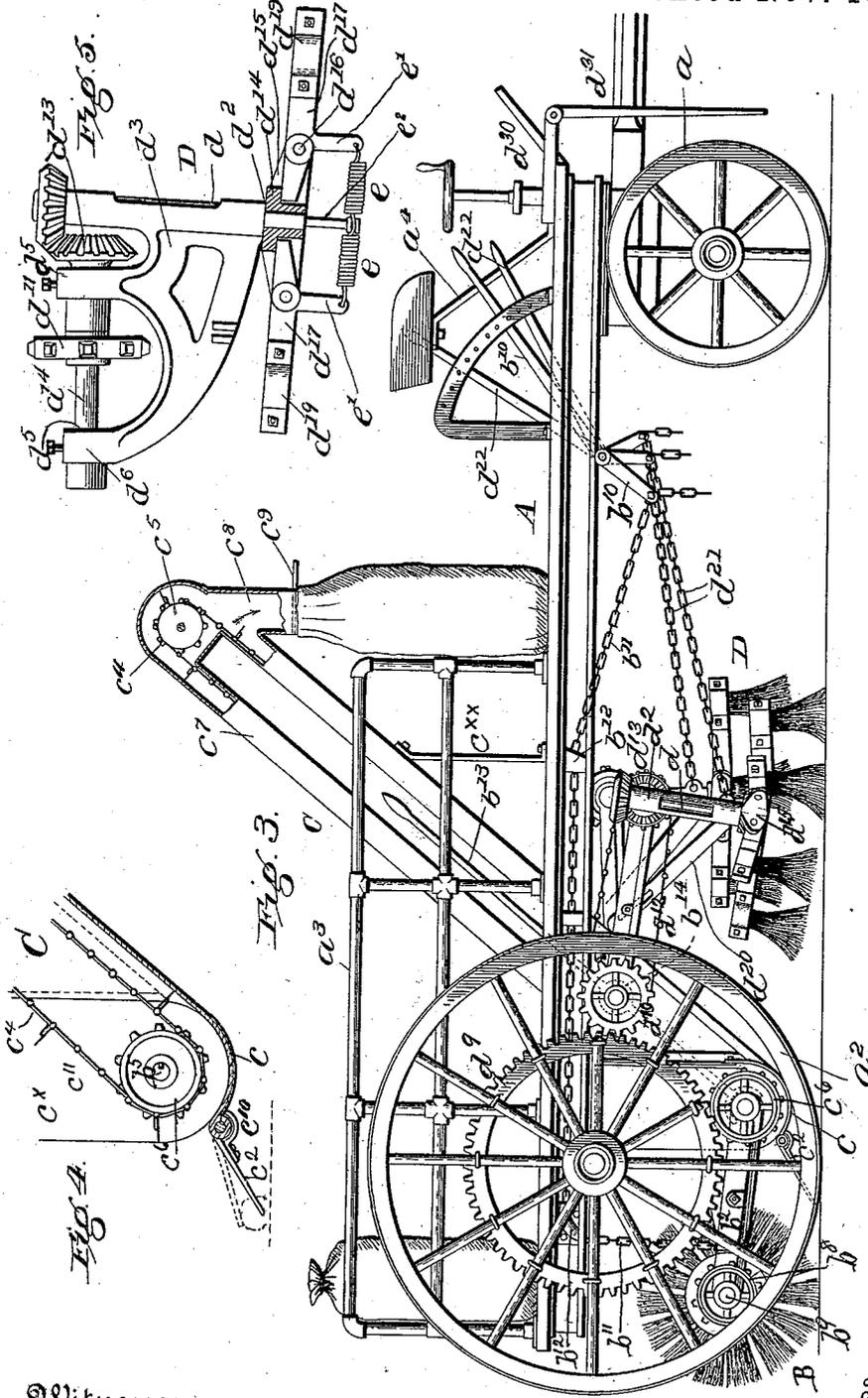
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3 Sheets—Sheet 3.

H. BROOMELL. STREET SWEEPER.

No. 550,014.

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UNITED STATES PATENT OFFICE.

HENRY BROOMELL, OF PHILADELPHIA, ASSIGNOR OF ONE-HALF TO E. G. BROOMELL, OF CHRISTIANA, PENNSYLVANIA.

STREET-SWEEPER.

SPECIFICATION forming part of Letters Patent No. 550,014, dated November 19, 1895.

Application filed February 6, 1895. Serial No. 537,465. (No model.)

To all whom it may concern:

Be it known that I, HENRY BROOMELL, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Pick-Up Street-Sweepers, of which the following is a specification.

The invention relates to street-sweeping machines of the "pick-up" class.

The object is to produce such a machine, which shall possess advantages in point of simplicity, convenience in handling, durability, and general efficiency.

With this object in view the invention consists in an improved construction and certain novel combinations and arrangements of parts, which will be hereinafter described and claimed.

In the accompanying drawings, forming part of this specification, similar letters of reference indicate corresponding parts in the several views.

Figure 1 is a view in perspective of one embodiment of the invention applied. Figs. 2 and 3 are a plan and a side view thereof, respectively, parts in each of these figures being broken away. Fig. 4 is a sectional view in detail of the catch-trough, the action of the apron being indicated by dotted lines; and Fig. 5 is a similar view of the brush-shaft hanger.

A represents the platform of the machine, which is suitably supported above the axles of front and rear wheels a a^2 . Partially inclosing the rear portion of the platform is a guard-rail a^3 , which extends across the end and forward along each side to a point about midway of the length thereof. This inclosure is designed for the storage of bagged sweepings. At the forward end of the platform a driver's seat a^4 is arranged to be within convenient reach of levers controlling the main parts of the machine.

B represents the rear brush, which is rotatably mounted in bearings b of arms b^2 , the latter being pivoted upon the bearings of a screw-conveyer shaft, to be hereinafter described. This brush is driven from one of the rear wheels of the machine through the gear b^3 , which is secured to rotate with one

wheel, and meshing with this gear is a pinion b^4 , carried by a shaft b^5 , which also carries at its opposite end a sprocket-wheel b^6 , over which passes a drive-chain b^7 from a sprocket-wheel b^8 upon the brush-spindle b^9 . The vertical adjustment of this brush is controlled by a lever b^{10} , movable over a segment adjacent to the driver's seat through connecting-chains b^{11} , which are suitably supported, as by brackets b^{12} , and attached to the brush-carrying arms. Power to the brush is controlled by a shifting-lever b^{13} , pivoted in a bracket b^{14} and having its lower forked extremity lying in engagement with a grooved collar of the pinion b^4 upon the end of the shaft b^5 , the pinion being movable lengthwise of the same.

C represents the pick-up and conveying mechanism comprising a catch-trough c , depending from and secured by pendant c^x to the platform, slightly in advance of the rear brush and provided with an apron c^2 , which is formed in sections, each pivoted to the rear open side of the trough to have independent movement—that is, to yield vertically upon striking an obstruction. Each of these sections of the apron c^2 has secured to it a bracket or stop c^{10} , adapted to engage the trough c , and thus hold the apron-sections normally just out of contact with the ground when the machine is moving over a level surface. Working in this trough are right and left hand conveyer-screws c^3 , which are carried by the shaft b^5 above referred to. This conveyer is so arranged as to feed the sweepings caught in the trough toward the center, where they are taken up by scrapers or buckets attached to an elevator-chain c^4 , running over sprockets c^5 c^6 , the latter being adapted to revolve with the shaft and so impart motion to the elevator. This elevator works in a trunk or casing c^7 , which is secured by a standard or support c^{xx} to the platform A and is provided at or near its upper end with a chute c^8 , through which the sweepings are discharged into a bag or other receptacle placed beneath the open end thereof, a damper-valve c^9 being employed for convenience in operating.

D represents side brushes, each of which comprises a shaft d , rotatably mounted in

bearings d^2 of a hanger d^3 , which latter swings and is supported from the bearings of a horizontally-disposed shaft d^4 , mounted to rotate loosely in bearings d^5 , formed on the forward end of the horizontal frame d^6 . This frame d^6 terminates at its rear end in sleeves d^7 , through which loosely passes a shaft d^8 , supported by the frame of the machine, the forward end of said frame d^6 , in connection with the brush, hanger, and buckets, being suspended by a chain hereinafter described. The shaft d^8 carries a pinion d^{10} , gearing with and driven by a gear-wheel d^9 on one of the rear carrying-wheels a^2 . Power is transmitted from the drive-shaft d^8 to the shafts d^4 , carried by the frames d^6 , through sprocket-wheels d^{11} and chains d^{12} and from the last-mentioned shafts to the shafts d of the brushes by bevel-gears d^{13} . Secured upon each of the brush-shafts below the hanger-bearing is a flanged collar d^{14} , from which a series of integral radially-disposed lugs d^{15} project. These lugs are arranged in pairs and apertured to receive pins d^{16} , upon which the brush-carrying arms d^{17} are pivotally mounted. At the outer end upon opposite sides of these arms bunches of splints d^{18} are secured by clips d^{19} , which are bolted thereto. The inner ends of the arms d^{17} extend beyond the pivot to a point beneath the flange of the collar, which thereby serves as a stop in limiting the downward movement of the brush-arms. The brush-shaft d being held in a position inclined from the perpendicular, and the inner ends of the brush-arms d^{17} being in contact with the flange of the collar d^{14} , the brushes will be lifted from the ground on the rear or return side. In pivoting the arms d^{17} a greater arc of contact of the brushes with the ground is secured without unnecessary strain upon the splints. If the weight of the arms d^{17} , with their attached brushes, is not sufficient to cause the latter to impinge on the ground with sufficient force for clean sweeping, a series of coiled or helical springs $e e$, as shown in Fig. 5, is used, the springs being connected to downwardly-extending projections e' of the arms d^{17} and to a downward extension e^2 of the brush-shaft.

To adjust the brush-shaft and retain it at proper inclination, an arm d^{20} is pivotally attached to the hanger d^3 and extended upward and adjustably secured to the brush-shaft-supporting frame d^6 , and serves, further, to rigidly connect the frame, hanger, and brush-shaft and thereby causes them to move together when raised or lowered. These brushes are elevated or swung clear of the ground by chains d^{21} , the one thereof being attached to the brush-shaft hanger and the opposite end to the angular extremity of a controlling-lever d^{22} , which works over a segment adjacent to the driver's seat.

To render the machine more compact when the brushes are not in use, mechanism is provided for adjusting the side brushes laterally, and consists in forming a rack-bar d^{23} integral

with each of the sleeves d^7 of the frames d^6 , which support the brush-shaft hangers, and rotatably mounting in the rear of the racks vertically-disposed shafts carrying intermeshing pinions d^{24} and sprocket-wheels d^{25} . Endless chains d^{26} from these sprockets extend forward and pass around sprocket-wheels upon the lower end of hand-wheel shafts d^{27} , which latter are normally held against rotation by means of spring-actuated locking devices d^{28} , designed to be thrown out of engagement by means of foot-pieces d^{29} . To enable the driver to readily determine the distance to run the machine from the curb without the necessity of leaving his seat, gages are provided, and consist, respectively, in a slotted bar d^{30} , which is adjustably held by a bolt, so as to project outward from the side of the platform at the forward end of the machine, the bars being adjusted so that the depending rods d^{31} at its outer ends indicate the width of the surface swept by the side brushes and thus serve as a guide for the driver in keeping the machine at a proper distance from the curb. For convenience in operating, the driving-shaft d^8 of the side brushes is connected with the pinion-adjusting lever b^{13} of the conveyer-shaft, so as to be simultaneously thrown in and out of gear.

In use the rear and side brushes are lowered by means of the controlling-levers above described, and after the side-brush-supporting frames have been adjusted and secured so that the brush-shafts stand at the proper angle to insure clean sweeping, the gages are set and the brushes then thrown in gear. As the machine is drawn forward the sweepings from the rear brush, guided by the apron, will be caught in the trough and fed to the elevator by the screw-conveyer, then carried upward and discharged into a bag or other receptacle placed beneath the discharge end of the chute. By means of the side brushes the street will be swept to the curb, all gutter-sweepings, owing to the inclination of the brush-shafts and the brushes, being thrown under the machine in advance of the rear brush, where they are caught and thrown into the trough. As the bag or other receptacle becomes filled, the damper-valve in the chute is closed and another bag is placed in position.

Having thus fully described my invention, what I claim is—

1. In a street sweeper, the combination of a brush-shaft, a collar provided with lugs attached thereto, arms pivoted intermediate their length to said lugs, the inner ends of the arms being limited as to upward movement by striking said collar and springs connecting pendent projections to said inner ends and the lower end of the brush shaft, substantially as set forth.

2. In a streetsweeper, the combination of a side brush, a shaft carrying said brush, a swinging hanger having bearings for said shaft, a horizontal shaft whose bearings support the aforesaid hanger, an arm having bearings

within which said horizontal shaft is mounted to revolve loosely and terminating in a sleeve, said horizontal shaft being geared to the brush-shaft, a drive shaft geared to one of the carrying wheels and bearing in said sleeve, and a drive-chain compassing sprocket-wheels on said horizontal shaft and said drive shaft and means for shifting said brush in and out of operation, substantially as set forth.

3. In a street sweeper, the combination of a side-brush, a shaft hanger, an arm supporting said shaft hanger and having a sleeve provided with a rack, a shaft upon which said sleeve is adapted to slide laterally and through

which said side brush is operated, by a suitable train of gearing a vertical shaft carrying a pinion geared to said rack, a hand actuated shaft, and a chain-belt compassing sprocket-wheels on said pinion-carrying shaft, and said hand actuated shaft, respectively, substantially as set forth.

In testimony whereof I have hereunto affixed my signature in the presence of two subscribing witnesses.

HENRY BROOMELL.

Witnesses:

W. H. PUMPHREY,
F. M. JOHNSON.