(No Model.) 4 Sheets—Sheet 1.

M. T. GORDON.

STREET SWEEPER.

No. 451,723. Patented May 5, 1891.

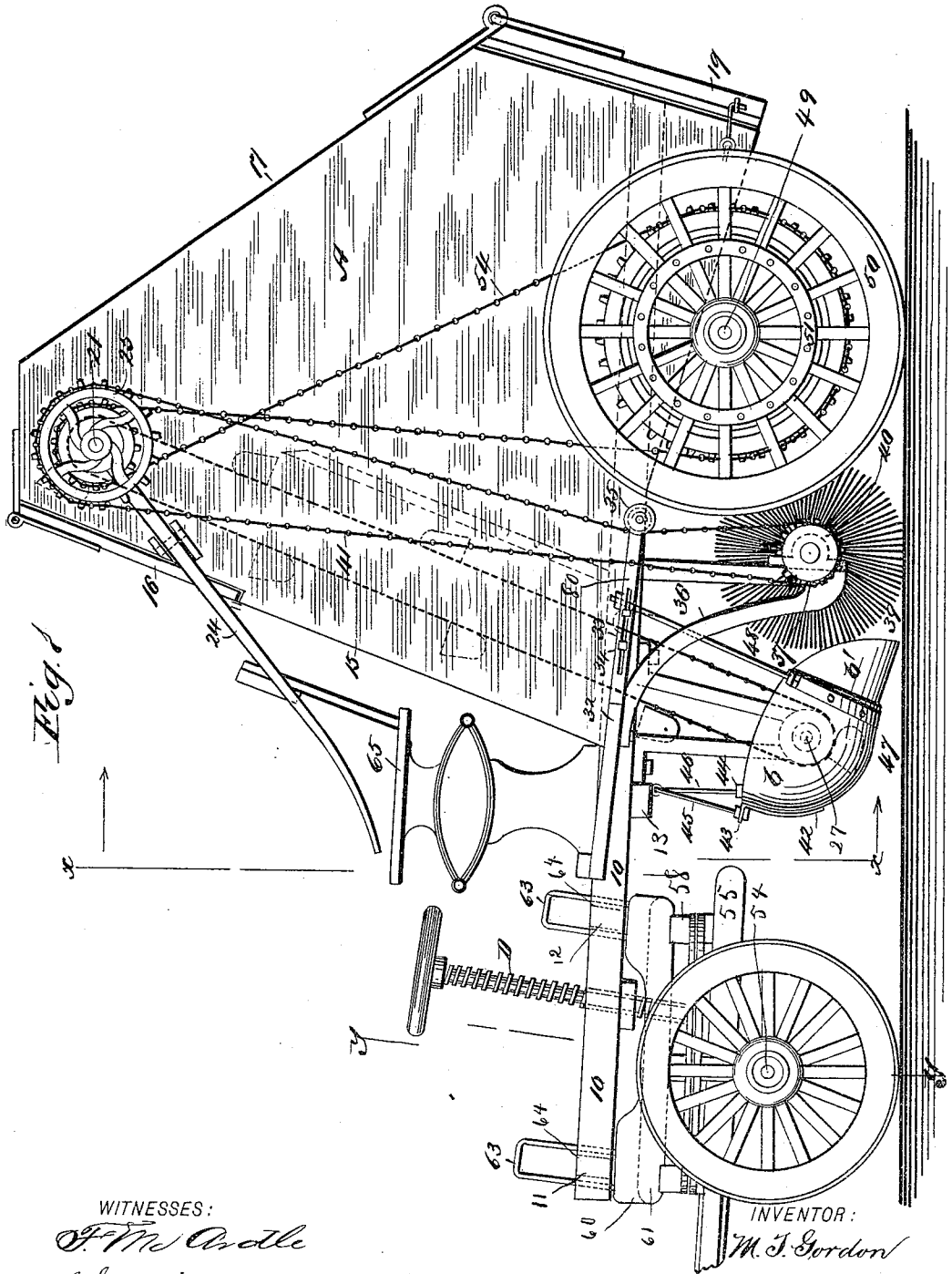


Fig. 1.

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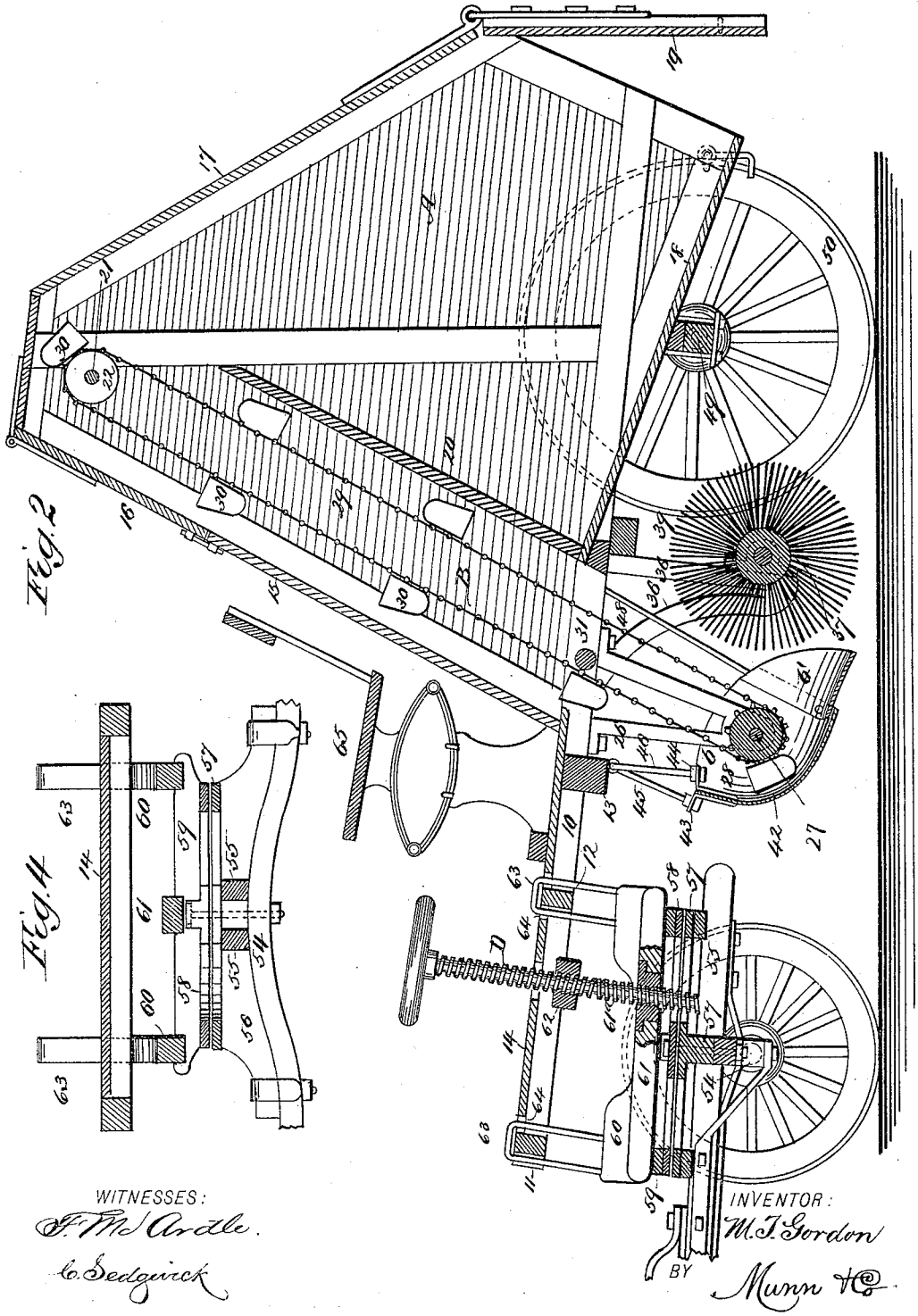


Fig. 2

Fig. 4

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Fig. 5

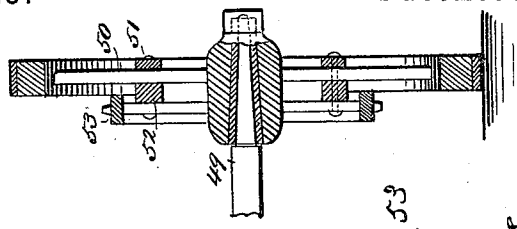


Fig. 3

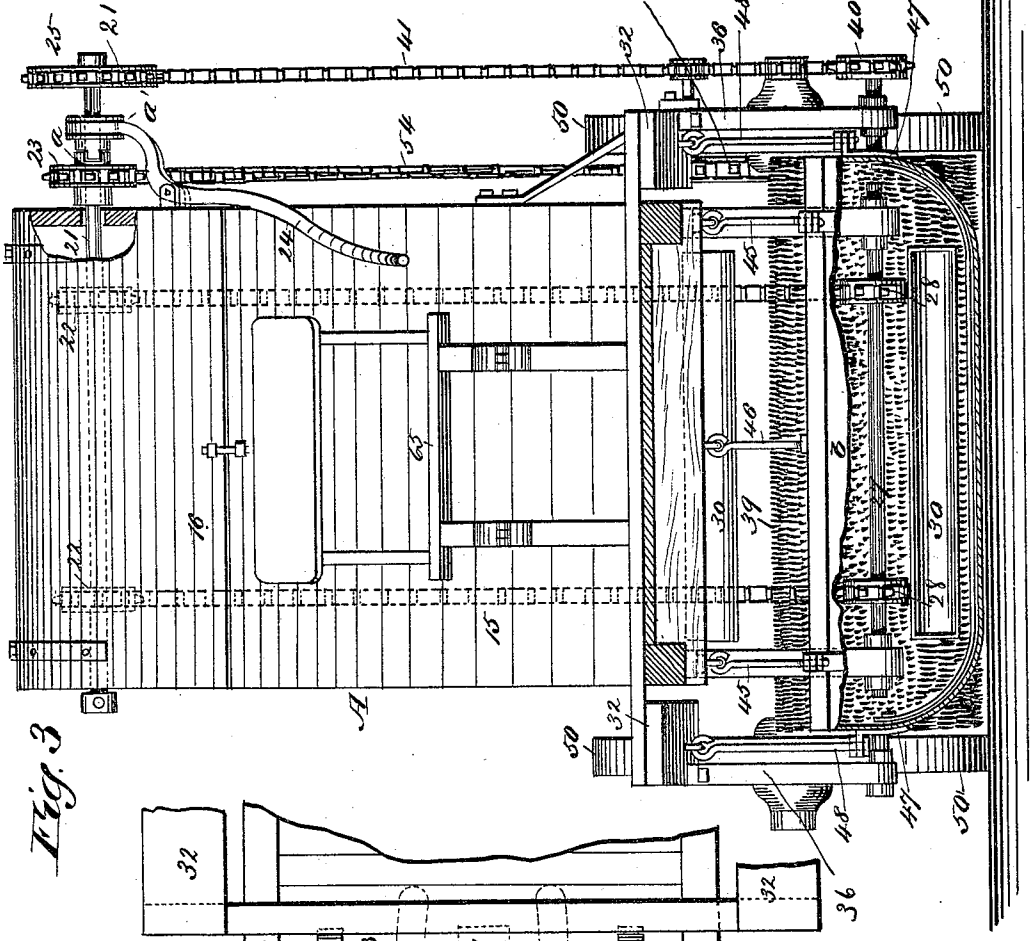
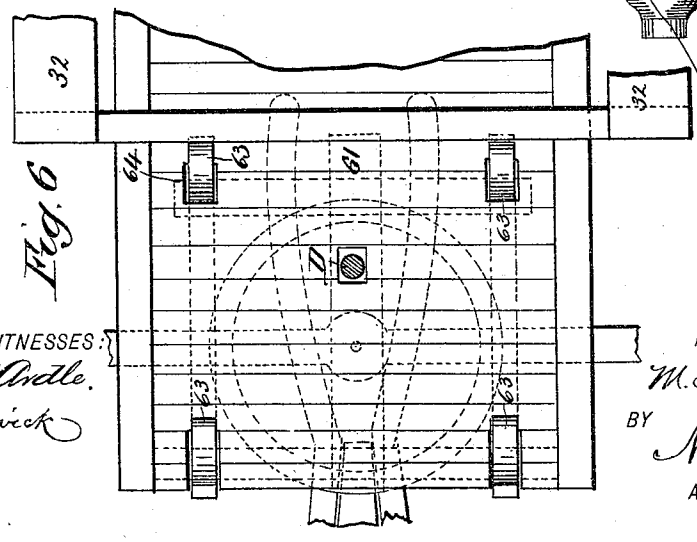


Fig. 6



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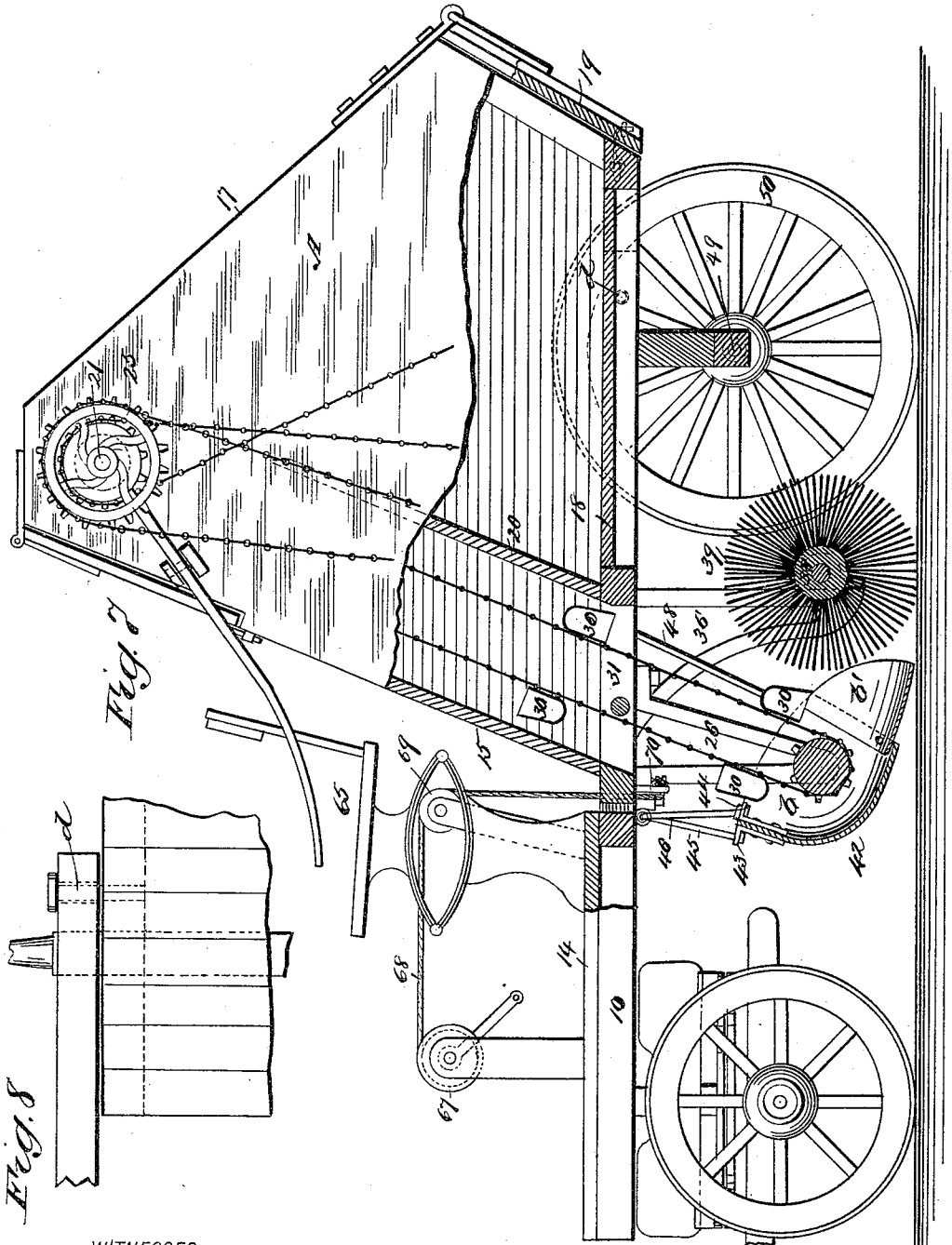


Fig. 7

Fig. 8

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UNITED STATES PATENT OFFICE.

MINTHORNE T. GORDON, OF STAPLETON, NEW YORK, ASSIGNOR TO HIMSELF, RAY T. GORDON, JAMES S. BODEN, AND MAURICE STACK, ALL OF SAME PLACE.

STREET-SWEEPER.

SPECIFICATION forming part of Letters Patent No. 451,723, dated May 5, 1891.

Application filed January 20, 1891. Serial No. 378,480. (No model.)

To all whom it may concern:

Be it known that I, MINTHORNE T. GORDON, a citizen of the United States, and a resident of Stapleton, in the county of Richmond and State of New York, have invented certain new and useful Improvements in Street-Sweeping Machines, of which the following is a full, clear, and exact description.

My invention relates to that class of street-sweeping machines which are provided with a suitable receptacle into which the dirt and refuse removed from the street or other surface by a rotating brush operated by the movement of the machine are automatically raised and deposited, and from which, when desired, they may be discharged or removed, its object being to provide a machine of this class which shall be simple in construction, efficient in operation, and not liable to get out of order.

To these ends the invention consists in certain novel constructions and combinations of parts, the nature and distinguishing characteristics of which will best appear by reference to the accompanying drawings, in which—

Figure 1 is a side elevation of a street-sweeping machine embodying my invention; Fig. 2, a longitudinal vertical section thereof; Fig. 3, a transverse vertical section of the same, taken in the line *x x* of Fig. 1 and looking in the direction of the arrows, the body and scoop being broken away to show parts beyond; Fig. 4, a transverse vertical section of the same in the line *y y* of Fig. 1 and looking toward the front of the machine; Fig. 5, a section through the rear wheel of the machine which carries the brush and elevator operating sprocket-wheel; Fig. 6, a partial plan of the front portion of the machine; Fig. 7, a side elevation, partly in section, of a modified form of the machine; and Fig. 8, a detail showing an arrangement whereby the dirt or refuse receptacle may be pivoted to the frame.

In all the figures like letters and numerals of reference are employed to designate corresponding parts.

The base of the machine is preferably constructed of two side pieces 10, which extend substantially the entire length of the machine, and are connected and held at the proper distance apart by a front transverse beam 11 and intermediate beams 12 and 13. Secured to the upper side of these side pieces 10 and extending from the beam 11 to a point slightly in rear of the beam 13 is a platform 14, upon which the driver's seat 65 may be mounted, while in rear of this platform is carried the dirt and refuse receptacle A. This receptacle may be constructed either integrally with the side pieces 10 or as a separate structure and pivoted thereto, as may be desired. In Figs. 1 to 6 I have shown it constructed as integral therewith, the frame-work in this example being framed into the side pieces or otherwise fixedly secured thereto, while in Figs 7 and 8 I have illustrated it constructed as a separate structure and pivoted between the side pieces 10. In the construction of this dirt and refuse receptacle various forms may be adopted, it only being essential that it shall possess as large a holding capacity as is possible. I prefer, however, to construct it with its front 15 inclined upwardly and rearwardly from its lower edge and with its back 17 similarly inclined downwardly and rearwardly from its upper edge, the bottom 18 being either made level or parallel to the side pieces 10, as shown in Fig. 7, or inclined downwardly and rearwardly from its forward edge, as indicated in Figs. 1 and 2, forming in either case a structure that is considerably longer at its bottom than at its top. The back 17 and bottom 18, instead of being prolonged until they meet and forming an acute angle at the lower rear portion of the receptacle, are terminated some distance from such point of meeting and form an opening between them, through which the contents of the receptacle may be dumped when desired. To close this opening the gate or door 19 is employed, which is hinged at its upper edge to the back 17 and engages at its lower edge with suitable hasps or fastening devices secured to the sides of the receptacle, as shown in Figs. 1 and 2, a similar gate or door 16, hinged above the front 15, affording a convenient means whereby access to the receptacle at that point may be had. The bottom 18 does not extend to the front of the receptacle, but is terminated some distance from the same, and upon its forward end a trans-

verse partition 20 is supported, which extends upwardly and rearwardly to a point some distance above the center of the receptacle, as is best shown in Fig. 2. Thus between the partition 20 and the front 15 of the receptacle a chamber B is formed, which I denominate the "elevator-chamber," as within it an elevator is located. The bottom of this chamber is open, and in the upper end of the chamber, immediately below the top of the receptacle, a transverse drive-shaft 21 is journaled, one end of which shaft extends some distance beyond the side of the receptacle. Upon the shaft 21 within the chamber B two or more (preferably two) sprocket-wheels 22 are secured, while upon the outer or projecting end of the shaft a sprocket-wheel 23 is keyed or otherwise fastened and provided with a clutch-section *a* integral with its hub, which is adapted to be engaged by a clutch-section *a'*, splined upon the shaft, and made movable laterally thereon through the medium of a shifting-lever 24, which is preferably fulcrumed upon the side of the receptacle A, with its long arm arranged in convenient relation to the seat 65, whereby the operation of the lever and of the clutch may be readily accomplished by the hand of the driver. In addition to the sprocket-wheels before mentioned, this shaft is also provided with a larger sprocket-wheel 25, which in my preferred form of construction is fixedly secured near the outer extremity of the projecting portion thereof, the object and purpose of which wheel will presently appear.

Journaled in suitable hangers 26 below the open bottom of the elevator-chamber in proper relation thereto is a lower shaft 27, which is provided with sprocket-wheels 28, corresponding in number to the sprocket-wheels upon the upper shaft 21 within the chamber B. Over the upper and lower sprocket-wheels 22 and 28 endless chains are made to pass, which endless chains have secured thereto transversely of the chamber B a series of buckets 30, the said buckets being so located upon the chains that their mouths upon the ascending strands face upward and those upon the descending strands face downward, as illustrated in Fig. 2, and in order to prevent vibration in the ascending strands during the operation of the machine I find it advantageous to employ the roll 31, which is journaled in such relation to the strands as to permit of the rear surfaces bearing against it as they are moved upwardly by their operating-wheels.

Projecting outward laterally on each side of the machine at its base are extension side pieces 32, to the under side of which are secured hangers 36. These hangers are provided on their rear sides, at or near their lower ends, with suitable boxes 37, in which are journaled a shaft 38, having secured thereto or constructed thereon a cylindrical or other approved form of brush 39. The shaft 38 at one of its ends projects slightly beyond its hanger and is provided with a sprocket-wheel 40, which is fixedly secured thereto and is connected to the sprocket-wheel 25, carried by the upper shaft 21 by an endless chain 41, whereby its rotation is effected therefrom. To provide for maintaining the proper tension upon this chain at all times, I employ the roll 35, which, bearing against the outer side of the descending strand, is made adjustable toward and away from the same, as may be required. The means whereby this roll is supported and made adjustable may be modified in various ways. I prefer, however, to journal it to the rear end of a suitable bar or support 80, which is secured to the edge of one of the side pieces 32 by bolts 34, passing through a longitudinal slot 33, formed through the bar or support and entering the side piece, as shown in Fig. 1. By these means, as will be seen, not only is the roll supported in proper position with respect to the chain, but by loosening the bolts 34 and moving its bar or support toward the front or rear of the machine the roll may be moved toward or away from the chain, as may be desired. The required adjustments of the roll having been thus effected, its retention in place is accomplished by simply tightening the screws 34.

Supported beneath the shaft 27 and hanger 26 is the scoop 42, which consists of a body-section *b* and a mouth-section *b'* and extends entirely across the machine. The body-section is constructed with its rear and end portions bent upwardly around the shaft 27 and hangers 28, as shown in Figs. 2, 3, and 7, and has pivoted to its open front portion the mouth-section, whereby to permit of such mouth section swinging upward when meeting with any obstruction without in any way interferring with the body-section. The rear bent-up portion of the scoop faces the front of the machine and the mouth of the scoop faces the rear, being located immediately in front of the brush 39, with the free edge of the mouth-section in close relation to the ground or other surface over which the machine may be passed. The upper edge of the bent-up portion of the body-section *b* of the scoop is provided with forwardly and rearwardly extending flanges 43 and 44, (best shown in Figs. 1 and 2,) and the scoop is mainly supported through the medium of links 45 and 46, depending from the beam 13 and engaging with the flanges 43 and 44, respectively. In addition to these links, I find it advantageous to further support the scoop by a strap 47, which is supported from above by means of rods 48, secured to and extending downward from the side pieces 10.

When the machine is constructed with the dirt and refuse receptacle A integral with the base of the machine, the extension side pieces 32 and hangers 26 will be secured to the side pieces 10, as best illustrated in Fig. 2. When, however, the machine is constructed with the dirt and refuse receptacle as a separate structure, such receptacle will be pivoted between the side pieces 10, as shown at *d* in Figs. 7

and 8, and the extension side pieces 32 and the hangers 26 will be secured to the base of the receptacle, whereby the brush and the shaft 27 may be moved with the receptacle as the same is tilted upon its pivots to dump its load. In whichever of the two ways specified the machine is constructed its rear portion is supported upon an axle 49, having wheels 50 loosely mounted thereon. One of these wheels 50 has secured to the outer face of the spokes a metal ring 51, and to the inner face of the spokes a correspondingly-located ring 52 is fastened, while to the inner face of the ring 52, or that toward the machine, is secured a sprocket-wheel 53 by bolting its spokes to the rings 51 and 52, as best shown in Fig. 5. As thus arranged, this sprocket-wheel is connected by an endless chain belt 54 to the smaller sprocket-wheel 23 upon the shaft 21, and through this connection motion is communicated to the shaft 21 from the wheel 53 and through such shaft to the elevator and brush, when the clutch member a' is thrown into engagement with its fellow member a on the sprocket-wheel 23, as illustrated in Fig. 3.

The front axle 54 of the machine is located below the table or platform 14 and has the usual hounds 55 attached for the reception of the pole. Upon the bolsters the lower section 57 of the fifth-wheel is secured, the upper section 58 being pivoted to the axle by a king-bolt or its equivalent. Transverse bars 59 are attached to the upper section of the fifth-wheel, and to these bars are secured longitudinal sand-bolsters 60, which are preferably made thicker at their ends for contact with the transverse beams 11 and 12, which rest thereon, the attachment of the base of the machine to the bolsters being effected by the staple 63, which, passing downward through openings 64 and over the transverse beams 11 and 12, are fastened in the ends of the bolsters, as shown.

To provide for tilting the dirt and refuse receptacle to effect the dumping of its load, either a screw or a windlass may be employed. In Figs. 1, 2, and 6 I have shown a screw employed for this purpose, and this is the form of device I prefer when the receptacle is made integrally with the base of the machine, while in Fig. 7 I have illustrated a windlass as made use of in place thereof, the same being more conveniently applied in connection with that form of machine in which the receptacle is pivotally mounted between the side pieces 10. When the screw is employed, I secure to the upper side of the bars 59 a beam 61, which is provided at the appropriate point with a nut 61^a, having a left-hand thread formed therein, and above this beam, to the under side of the platform 14, I secure a second nut 62, which is provided on its interior with a right-hand thread. As thus constructed and arranged, a right and left hand threaded screw D is passed down through an opening in the platform 14 and down through the nuts 62 and 61^a, the left-hand thread engaging with the nut 61^a and the right-hand thread engaging with the nut 62, while to the upper end of the screw is secured a hand-wheel or other equivalent means whereby its rotation may be effected. By this arrangement, as will be seen, the tilting of the receptacle to effect its dumping is accomplished by simply rotating the screw through the hand-wheel in the proper direction, the return of the receptacle to its original position after such tilting being accomplished by rotating the screw in the opposite direction.

When the dirt or refuse receptacle is made separate from the base of the machine and a windlass 67 is employed for effecting the tilting thereof, I preferably locate the windlass in front of the driver's seat on the platform 14 and connect it to the receptacle by means of ropes or chains 68, which, passing over guide-pulleys 69, suitably located, are secured to the front of the receptacle by staples 70, all as shown in Fig. 7.

The machine being constructed and adjusted as shown in Figs. 1 and 7, its operation is as follows: Upon moving the machine forward by horse or other suitable power the wheel 50, carrying the sprocket-wheel 53, with the other supporting-wheels, will be rotated, and through the endless chains, shafts, and other sprocket-wheels cause the brush to revolve, sweeping the dirt and refuse from the street and other surface over which it is passed and depositing them in the scoop, from which they are taken by the elevator-buckets and delivered to the receptacle A. The receptacle being filled, the clutch member a' will, through the lever 24, be removed from engagement with the clutch member a, and the movements of the brush and elevator thereby arrested, after which the machine may be drawn to the dumping-ground, the gate or door 19 released, and the dumping of the load from its rear effected by tilting the receptacle, which may be accomplished by operating the screw or the windlass, as the case may be.

It will thus be seen that I produce a machine which, while effecting the thorough sweeping of the streets and gathering up of all dirt and refuse over which the machine is passed, permits not only of the location of the brush and other sweeping devices beneath the machine, where they are removed from injury by contact or collision with other vehicles or bodies, but also of its load being dumped from its rear, whereby its discharge may be either down over an embankment or from the end of a pier or wharf into a scow.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The combination, with the base of a street-sweeping machine, a dirt and refuse receptacle pivotally mounted thereon, a plurality of chains provided with buckets, and a rotating brush and a scoop located beneath such re-

ceptacle and carried thereby, of means whereby said receptacle may be tilted toward its rear to cause it to dump or discharge its load at that end, substantially as described.

2. The combination, with the base of a street-sweeping machine, a dirt and refuse receptacle pivotally mounted thereon, a plurality of chains provided with buckets, and a rotating brush and a scoop located beneath such receptacle and carried thereby, of a windlass and connecting ropes or chains, whereby the receptacle may be tilted toward its rear to cause its load to be dumped or discharged at that end, substantially as described.

3. The combination, with the base of a street-sweeping machine, a dirt and refuse receptacle mounted thereon and provided in its front with an elevator-well and in its rear with a gate or door, a rotating brush, a scoop, and a plurality of chains arranged to move in such elevator-well and descend into the scoop, of means whereby the brush and chains are operated and the tilting of the dirt and refuse receptacle toward its rear may be effected, substantially as described.

4. The combination, with the base of a street-sweeping machine, a dirt and refuse receptacle mounted thereon and provided in its front with an open-bottom elevator-chamber and in its rear with a gate or door, a rotating brush, a scoop, a plurality of chains provided with buckets, upper and under sprocket-wheels and shafts over which the chains are passed, and means whereby the brush and chains are operated, of hangers, links, straps, and rods in which the under shaft, brush, and scoop are respectively supported from the under side of the machine, and means whereby the tilting of the dirt and refuse receptacle may be effected toward its rear to dump or discharge its load at that end, substantially as described.

5. The scoop 42, consisting of the body-section *b* and mouth-section *b'*, the body-section having its rear portion and ends bent upward and provided with the inwardly and outwardly projecting flanges 43 and 44 and the mouth-section being pivoted in its open front edge, substantially as described.

6. The combination, with the base of a street-sweeping machine and a dirt and refuse receptacle A mounted thereon, of a scoop 42, consisting of the body-section *b* and pivoted mouth-section *b'*, the body-section having its rear portion bent upward and provided with the inwardly and outwardly projecting flanges 43 and 44, and the links, straps, and rods 45, 46, 47, and 48, respectively, by which it is supported and held beneath the base, substantially as described.

MINTHORNE T. GORDON.

Witnesses:
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C. SEDGWICK.