No. 783,385. PATENTED FEB. 21, 1905.

H. M. RAMSAY.

STREET SWEEPER.

APPLICATION FILED OCT. 15, 1903. RENEWED JAN. 26, 1905.

4 SHEETS—SHEET 1.

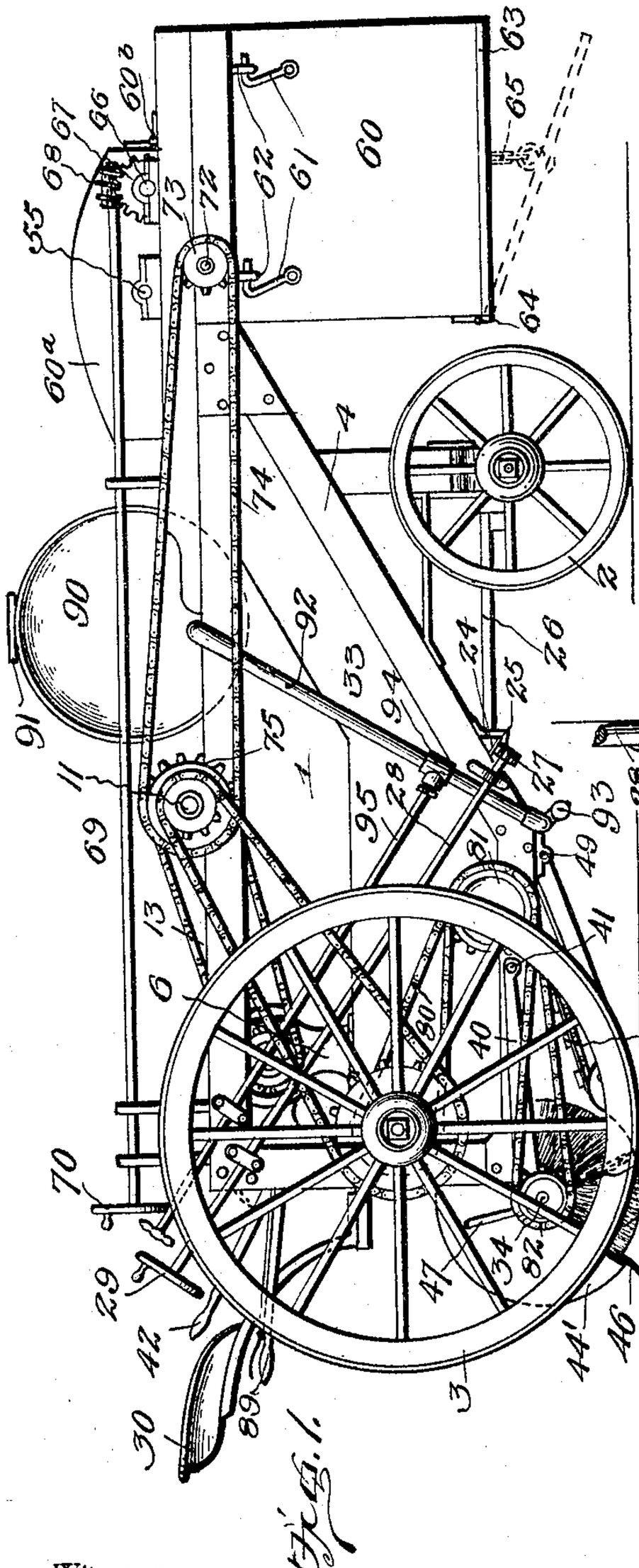

Fig. 1.

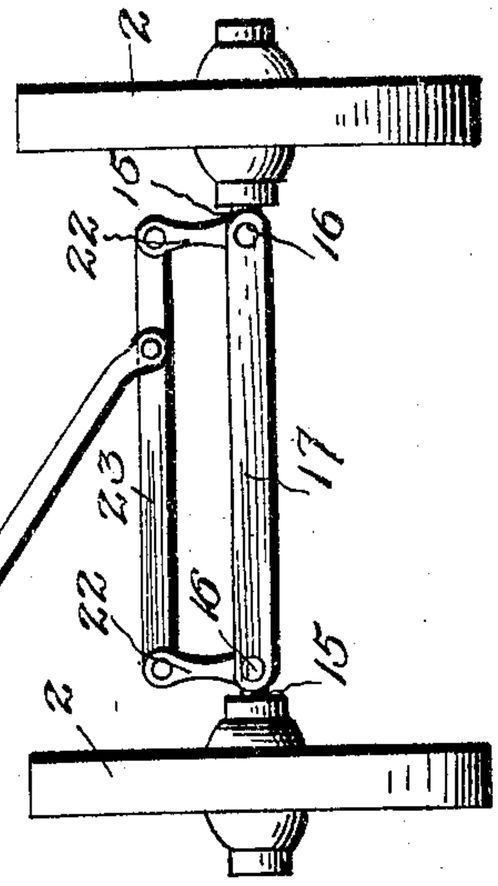

Fig. 10.

Fig. 7.

Witnesses

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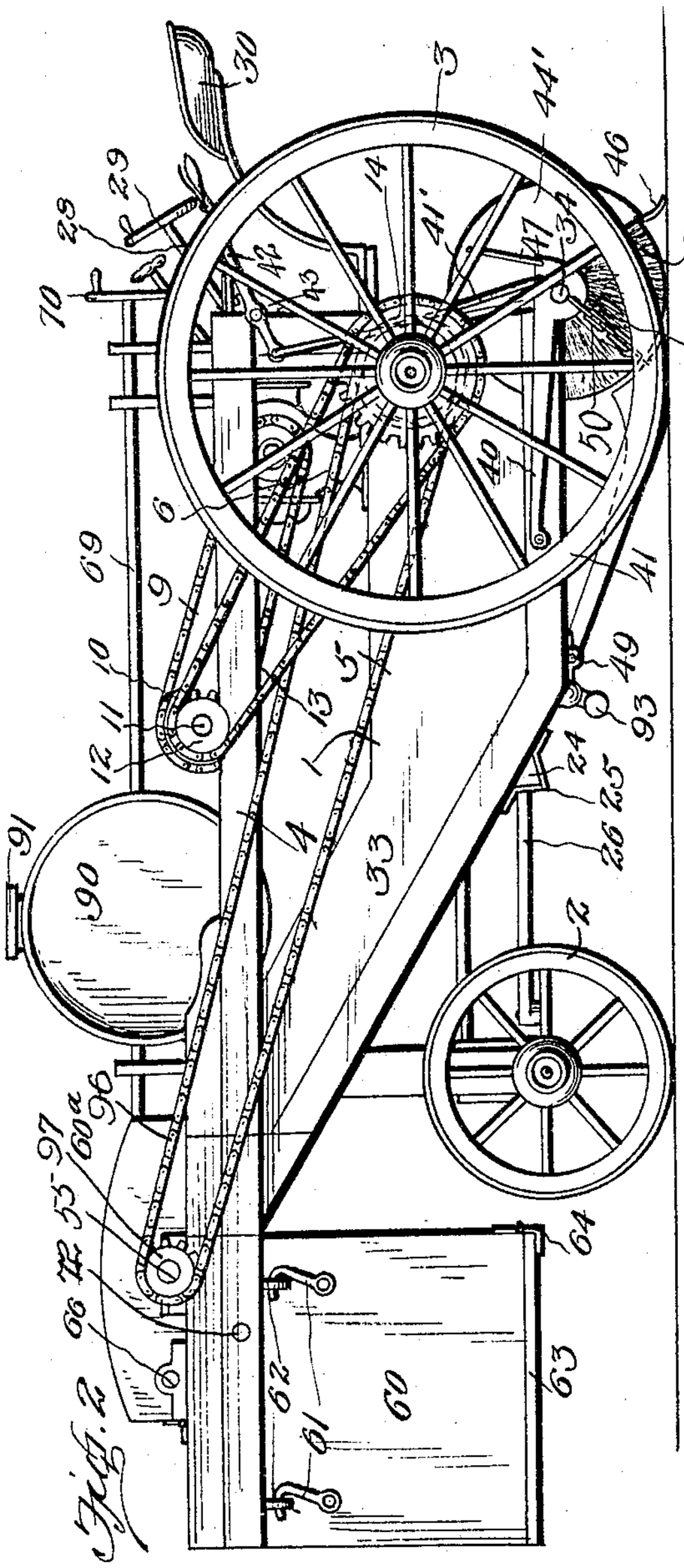
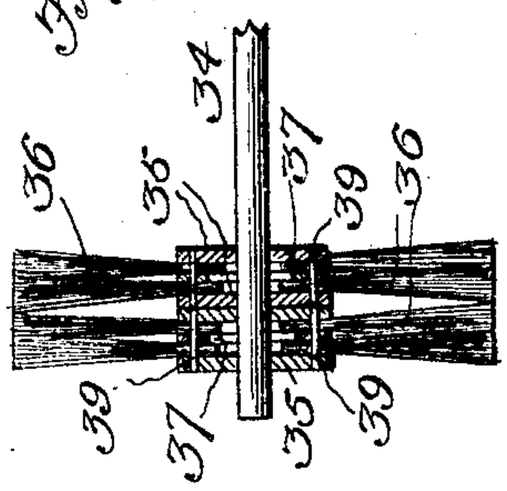


Fig. 2.



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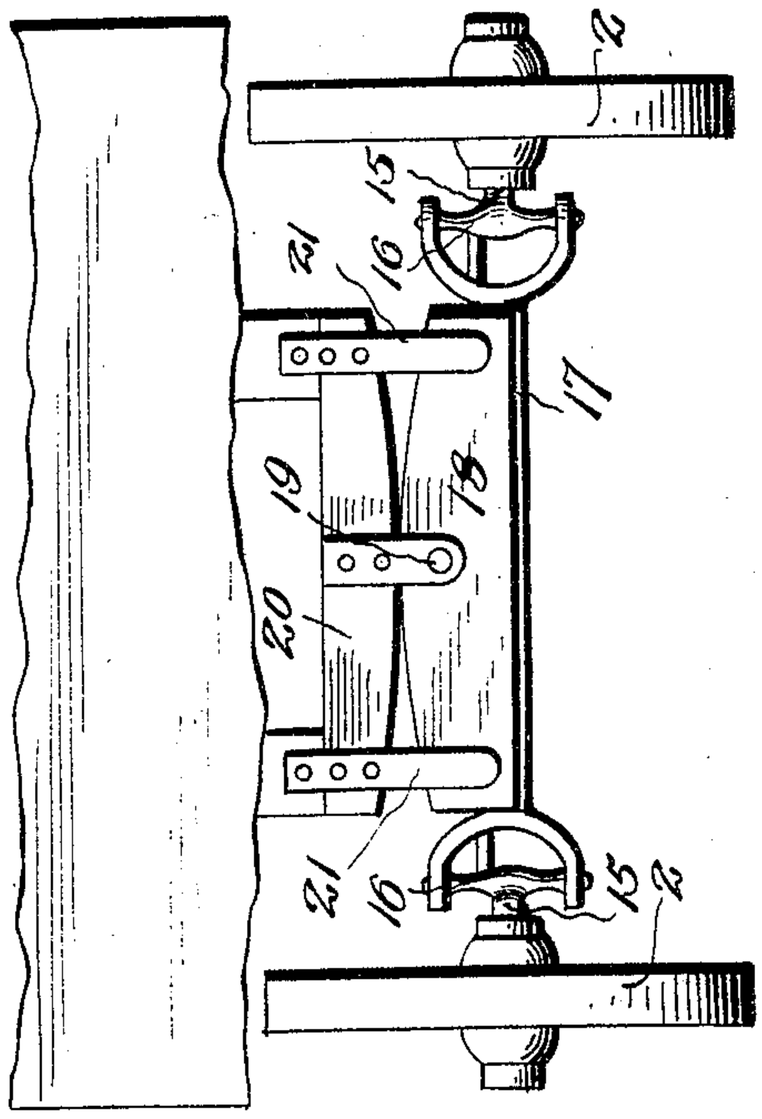

Fig. 3.

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4 SHEETS—SHEET 3.

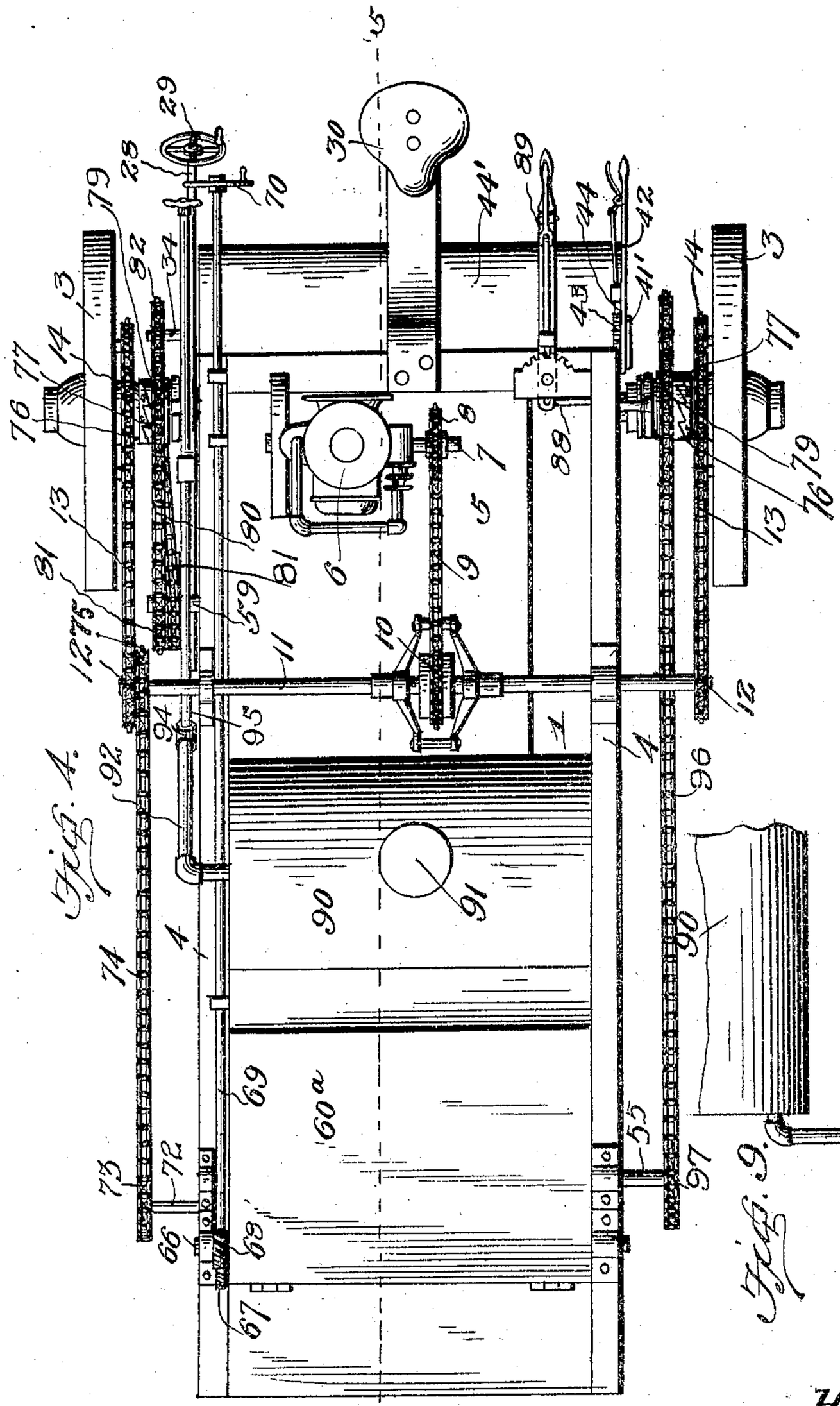

Fig. 4.

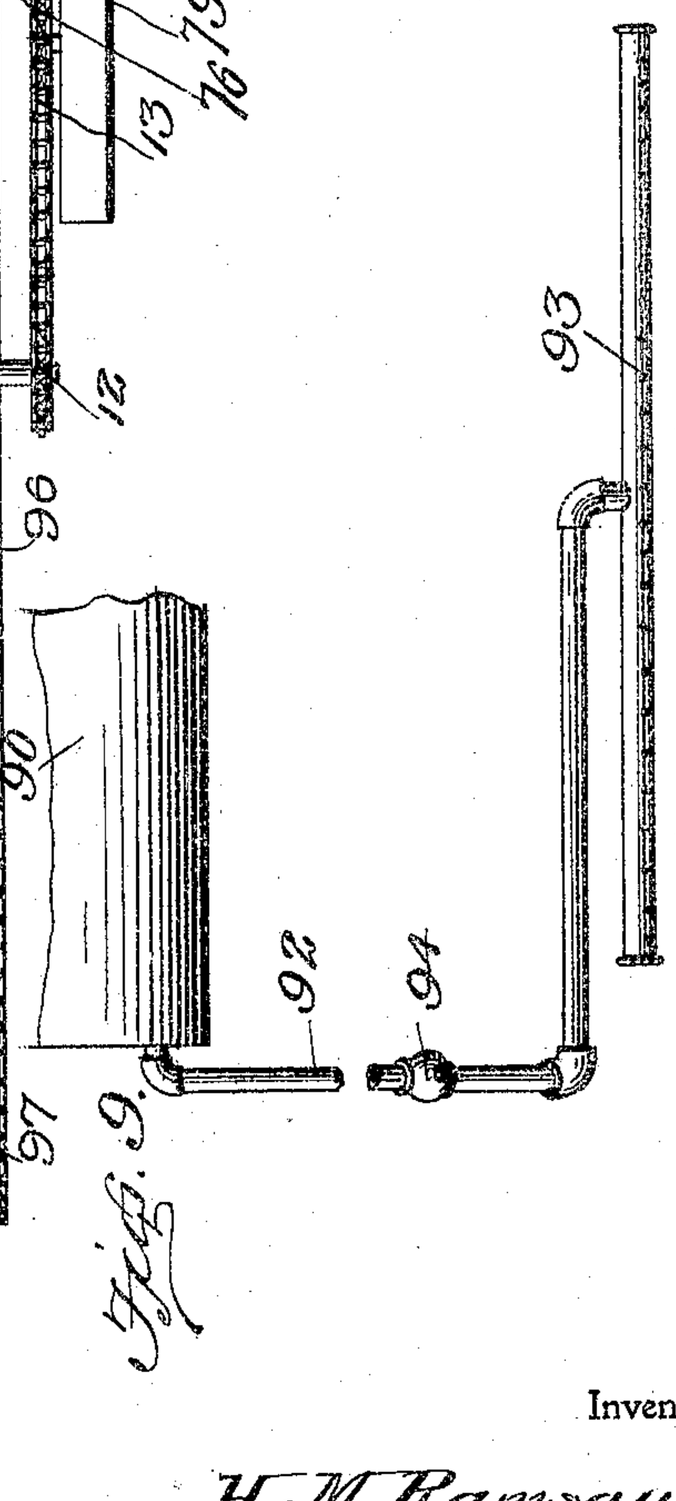

Fig. 9.

Witnesses

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No. 783,385. PATENTED FEB. 21, 1905.

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Fig. 5.

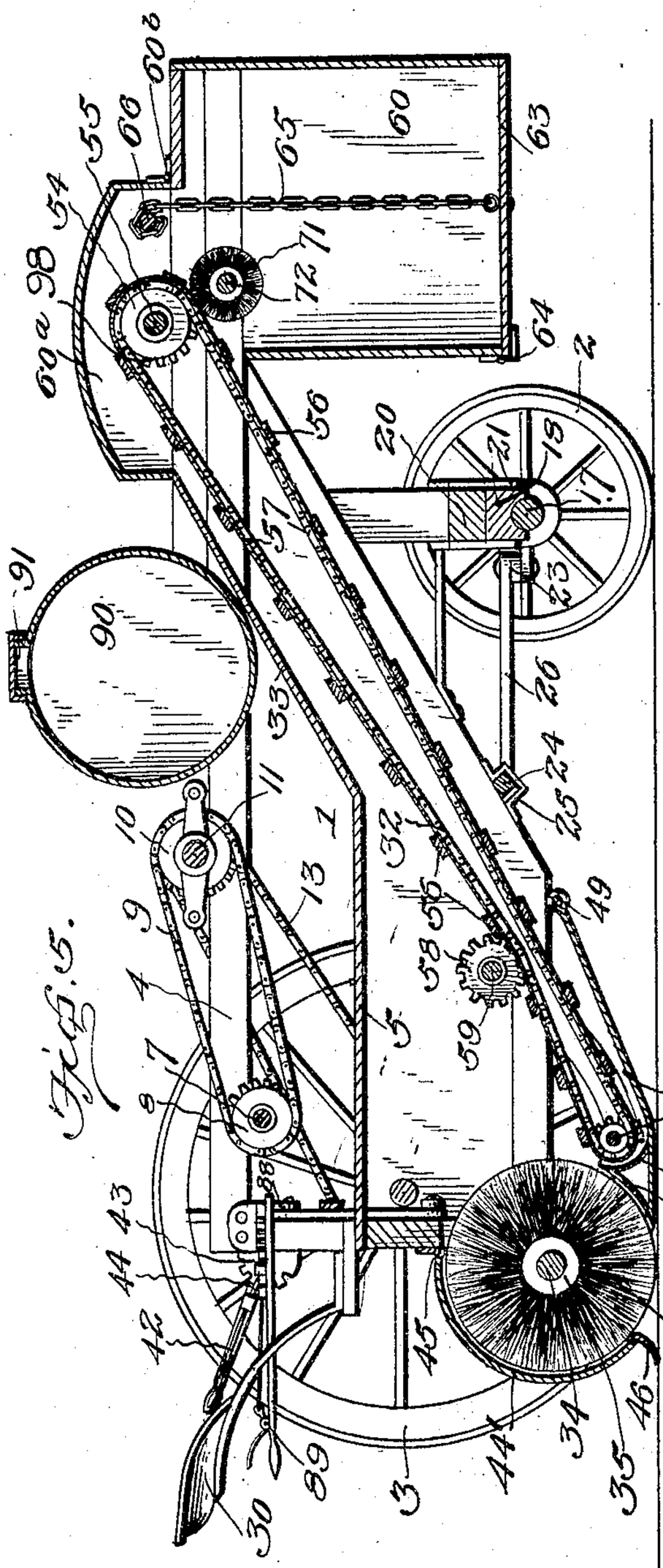
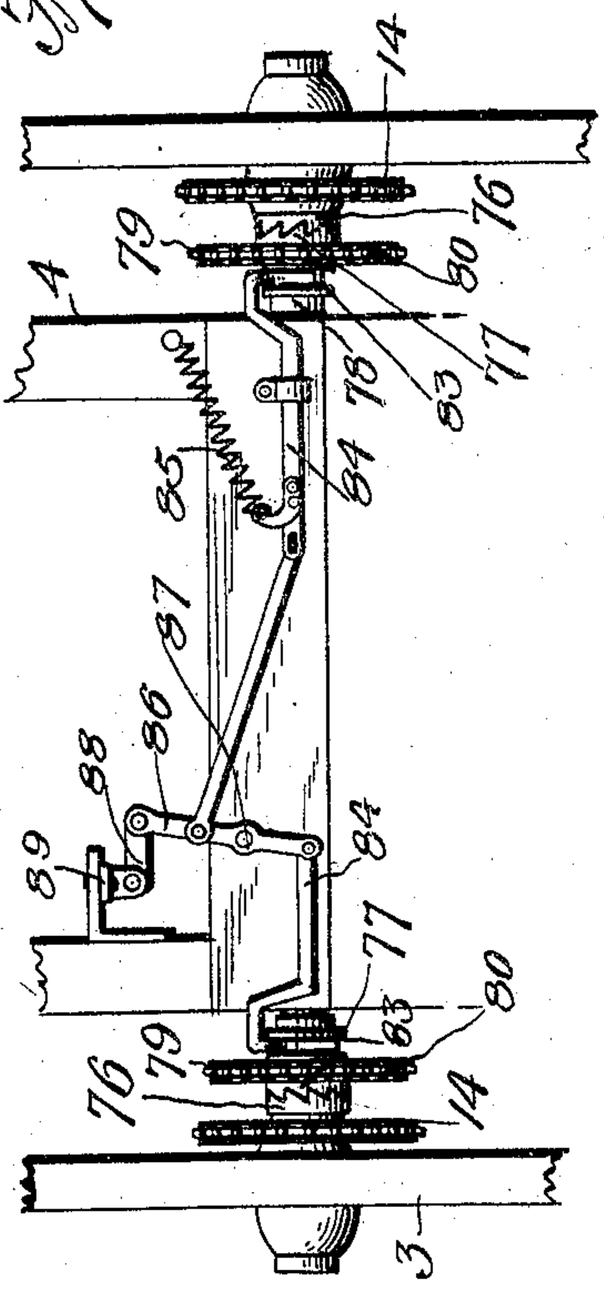


Fig. 6.



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No. 783,385. Patented February 21, 1905.

UNITED STATES PATENT OFFICE.

HENRY M. RAMSAY, OF HOUSTON, TEXAS.

STREET-SWEEPER.

SPECIFICATION forming part of Letters Patent No. 783,385, dated February 21, 1905.

Application filed October 15, 1903. Renewed January 26, 1905. Serial No. 242,802.

To all whom it may concern:

Be it known that I, HENRY MINER RAMSAY, a citizen of the United States, residing at Houston, in the county of Harris and State of Texas, have invented certain new and useful Improvements in Street-Sweepers; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to a self-propelled machine for sprinkling, sweeping, and removing dirt, dust, &c. from streets and roads.

The object of my invention is to improve and simplify the construction and operation of street-cleaning machines of this character, and thereby render them more durable, efficient, and economical in use.

With this and other objects in view the invention consists of certain novel features of construction, combination, and arrangement of parts, as will be more fully described, and particularly pointed out in the appended claim.

In the accompanying drawings, Figure 1 is an elevation of the right-hand side of my improved machine. Fig. 2 is a similar view of the left-hand side of the same. Fig. 3 is an elevation of the front end of the machine. Fig. 4 is a top plan view. Fig. 5 is a vertical longitudinal sectional view taken on the line 5 5 of Fig. 4. Fig. 6 is a vertical transverse sectional view taken on the line 6 6 of Fig. 5. Fig. 7 is a detail view of one of the clutches for throwing the rotary brush and dirt-conveyer into and out of operation. Fig. 8 is a detail sectional view through the rotary sweeping-brush. Fig. 9 is a detail view of the water-sprinkling apparatus, and Fig. 10 is a detail view showing the steering mechanism for the front wheels.

Referring to the drawings more particularly, the numeral 1 denotes the body of the machine, which is supported upon the front steering-wheels 2 and the rear traction-wheels 3. Said body may be of any desired construction, but preferably comprises two side frames 4, composed of longitudinal and vertical timbers, as shown, and united by cross-timbers to form a rigid body upon which the operating parts are mounted.

Supported at the rear of the machine between the two side frames is a platform 5, upon which a gas-engine or a motor 6 of any desired type is mounted. The fly-wheel shaft 7 of said motor is provided with a transmission sprocket-gear 8, which is connected by a sprocket-chain 9 to a differential gear 10, which may be of any desired construction, secured upon a counter-shaft 11, journaled in bearings secured to the body of the machine. Said counter-shaft is provided adjacent to each end with sprocket-gears 12, which are connected by sprocket-chains 13 to sprocket-gears 14, secured to the rear traction or drive wheels 3. By means of this gearing power is applied to the rear wheels to propel the machine.

In order to steer the machine, the front wheels 2 are mounted on stub-spindles 15, having a pivotal connection 16, so as to swing in a horizontal plane, with an axle 17, secured to a supporting-bar 18, which is pivoted at its center, as at 19, between depending plates secured upon each side of the front bolster 20. The contacting faces of the bolster and supporting-bar are curved in opposite directions, as shown, to permit the body of the machine to have a slight oscillating or rocking movement in a vertical plane, and guides 21 are provided adjacent to each end of the bolster to keep said bolster and supporting-bar in alinement and to strengthen their connection. Projecting rearwardly from the inner ends of the stub-spindles 15 and at right angles thereto are arms 22, which are pivotally connected by a rod 23. A rack-bar 24 is slidably mounted in guide-brackets 25 upon the under side of the body of the machine and has its bent end 26 pivotally connected to said rod 23. A pinion 27 on one end of an operating-rod 28 meshes with said rack and is adapted to reciprocate the same and thereby swing the spindles 15 to steer the machine, as will be readily understood upon reference to Fig. 10. Said operating-rod 28 is mounted in brackets on one side of the body of the machine and has its rear end provided with a hand-operating wheel 29, which is within convenient reach of the operator, who is seated on a seat 30, secured to the platform 5.

Mounted transversely at the rear of the machine is a rotary sweeping-brush 31, which

as it is rotated sweeps the dirt and dust from the street upon an endless conveyer or elevator 32, disposed within the closed casing 33, which forms the body of the machine. Said rotary brush may be of any desired construction, but preferably consists of a shaft 34, upon which a number of brush-sections are secured. Each of said sections, as shown in Fig. 8, comprises two disks 35, between which two layers of bamboo or some fibrous material 36 are clamped. A metal ring 37 separates said layers of bamboo, and screws or other fastening means 39 are used to bind said disks together. The shaft 34 is mounted in the outer or rear ends of arms 40, which are pivoted at 41 to the sides of the body of the machine, so as to permit said brush to be adjusted vertically. In order to raise and lower the brush, and thus regulate its pressure upon the ground, a link 41′ has one end pivotally connected to one of the arms 40 and its other end similarly attached to the short arm of an operating-lever 42, pivoted to a rack-plate 43 and carrying a hand-actuated pawl 44, which coacts with said rack-plate to lock said lever in an adjusted position. The top and rear portions of the brush are inclosed in a semicylindrical dust-hood 44′, which has its upper edge or side hinged, as at 45, to the body of the machine, and its lower or bottom edge is provided with a flexible guard 46, preferably constructed of rubber, which prevents the dust from flying rearwardly. Links or arms 47 pivotally connect the ends of arms 40 and the ends of the hood 44 and are adapted to swing said hood up when the arms 40 are raised, as will be readily understood.

Immediately in front of the rotary brush is a hinged dust-tray in the form of a metal plate 48, which supports and protects the lower end of the elevator or conveyer 32. Said plate has its upper end pivotally connected to a transverse rod or shaft 49, secured to the under side of the machine, and its lower end is supported slightly above the ground by chains or other flexible connections 50, which connect it to the ends of arms 40. The lower end of said plate 48 has a slightly concave portion 51 and a curved portion 52, above which is disposed a roller 53, having its shaft or ends journaled in the side flanges of the plate 48. The endless conveyer or elevator 32 passes about said roller 53 and about another roller, 54, secured to a shaft 55, mounted upon the upper side of the front end of the machine. Said conveyer or elevator may be of any desired construction, but preferably comprises an endless belt, of canvas or similar material, having transverse slats 56 secured to it at intervals and sprocket-chains 57 at each side. Idler sprocket-wheels 58, loosely mounted on a transverse shaft 59, engage said chains 57 to hold down the upper stretch of the endless conveyer when its lower end is elevated.

The dirt and dust swept upon the lower portion of the conveyer by the rotary brush is carried upwardly to the front end of the machine, where it is discharged into a receptacle or box 60. Said receptacle is preferably rectangular in form and is detachably secured to the body of the machine, under the front end of the conveyer, by means of hooks 61, pivoted to the receptacle and engaging eyes 62, secured to the body of the machine. The bottom 63 of said receptacle is hinged, as shown at 64, and is held in its closed position by a chain or other flexible connection 65, which has one of its ends wound upon a transverse shaft 66, journaled upon the front end of the machine. One of the outer ends of said shaft carries a worm-gear 67, which meshes with a worm 68 upon the front end of an operating rod or shaft 69, the rear end of which is provided with a hand-wheel 70 and is within convenient reach of the operator. It will be seen that by operating said hand-wheel the chain 65 may be wound or unwound to open or close the bottom of the dust and dirt receptacle. The open portion of the body of the machine above the upper end of the conveyer is closed by a cover 60^a, which is hinged at 60^b, so as to be swung back to expose the interior of the receptacle 60.

In order to remove all dirt from the conveyer, I provide a small rotary brush 71 beneath the lower stretch of the conveyer, within its closed casing. Said brush is secured to a transverse shaft 72, upon one of the ends of which is a sprocket-wheel 73, which is connected by a sprocket-chain 74 to a sprocket-wheel 75 upon the counter-shaft 11. By means of this gearing said brush will be rotated to clean the conveyer-belt and brush all adhering dirt into the receptacle 60.

In order to drive the rotary brush and the endless conveyer, the inner faces of the hubs of the rear traction-wheels 3 are provided with clutch members 76, with which sliding clutch members 77 coact. As clearly shown in Fig. 7, the clutch members 77 are slidably mounted on sleeves 78 on each end of the axle of the rear wheels and are provided with sprocket-wheels 79. The endless conveyer is driven by a sprocket-chain 96 upon the left side of the machine, which is passed about one of said wheels 79 and then about a sprocket-wheel 97, secured upon the outer end of the transverse shaft 55, which also carries sprocket-wheels 98, about which the sprocket-chains on the endless conveyer are passed. The brush is driven by a sprocket-chain 80 upon the right side of the machine, which is passed about one of the sprocket-wheels 79, about two idler sprocket-wheels 81 81, secured upon the outer end of the transverse shaft 59, and about a sprocket-wheel 82, secured upon the outer end of the brush-

shaft 34. By gearing the brush to the clutch in this manner it will be permitted to rise and descend when the lever 42 is operated. It will be observed that when said clutch members 76 and 77 are engaged and the machine is in motion power will be transmitted, by means of this sprocket-gearing, to the brush and conveyer to drive the same. In order to readily throw the clutch members 77 into and out of engagement, the same are provided with annular grooves 83, into which the bent ends of sliding bars 84 project. Said bars, as shown in Figs. 6 and 7, are slidably mounted in brackets upon the supporting bar or bed of the rear axle and are forced outwardly by coil-springs 85 to hold the clutch members 77 in engagement with the members 76. The ends of said bars 84 are loosely or pivotally connected to a lever 86 upon opposite sides of its pivot 87, so that when said lever is operated the rods will be moved in opposite directions. Said lever 86 is operated, through a connection 88, by a hand-lever 89, which is provided with the usual rack-and-pawl lock to hold it in either of its two positions. The handle of said lever is within convenient reach of the operator, who may thus readily throw the brush and conveyer into and out of operation.

In order to sprinkle the street or road to allay the dust, a liquid-tank 90 is mounted upon the top of the body of the machine near its front end. A filling-opening 91 is provided in the top of the tank, and an outlet or discharge pipe 92 is tapped into one end of the same. Said discharge-pipe has its lower end connected to a sprinkler nozzle or head 93 in the form of a straight pipe perforated throughout its length and disposed transversely across the under side of the body of the machine in advance of the plate 48. Said pipe 92 is provided with a rotary cut-off valve 94, to which is attached an operating-rod 95, the end of which is provided with a handle and is within convenient reach of the operator.

The operation and advantages of my improved machine will be readily understood from the foregoing description, taken in connection with the accompanying drawings. It will be seen that when the power generated by the motor is applied to the drive-wheels the machine will be propelled, and by operating the hand-wheel 29 the same may be readily steered. When the lever 89 is properly operated, the brush and conveyer will be thrown into operation. By operating the lever 42 the brush may be readily adjusted, and owing to the link and the chain connections with the arms 40 the hood 44 and the plate 48 will be raised and lowered simultaneously with the brush. By operating the valve-rod 95 the amount of water sprinkled upon the street or road may be regulated. The receptacle 60 when filled may be removed and replaced by an empty one, or by operating the hand-wheel 70 the bottom of the receptacle may be lowered to discharge its contents.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

In a street-sweeping machine, the combination of traction-wheels, each having a sprocket-wheel 14, and a clutch, the loose member of the latter having a sprocket-wheel 79, a motor, a counter-shaft driven thereby and having sprocket-wheels, sprocket-chains connecting the sprocket-wheels of the counter-shaft to the sprocket-wheels 14, to rotate the traction-wheels, a revoluble brush having vertically-movable supports, and a sprocket-wheel, an endless sprocket-chain connecting said sprocket-wheel to one of the sprocket-wheels 79, direction sprocket-wheels engaged by said chain, an inclined endless flexible conveyer, having a driving-roller provided with a sprocket-wheel, a sprocket-chain connecting the latter to the sprocket-wheel 79 of the other traction-wheel, whereby the conveyer is driven, a pivoted tray under the lower portion of the latter, a roller for the lower portion of the conveyer, journaled in said tray, means to raise and lower the supports for the brush, and hence also the latter, and connections between said vertically-movable brush-supports and the tray, to raise and lower the latter simultaneously with the brush.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

HENRY M. RAMSAY.

Witnesses:
R. H. HANNA,
WM. MCCREA.