

No. 819,728.

PATENTED MAY 8, 1906.

J. P. CLARK.
STREET SWEEPING MACHINE.

APPLICATION FILED NOV. 15, 1904.

3 SHEETS—SHEET 1.

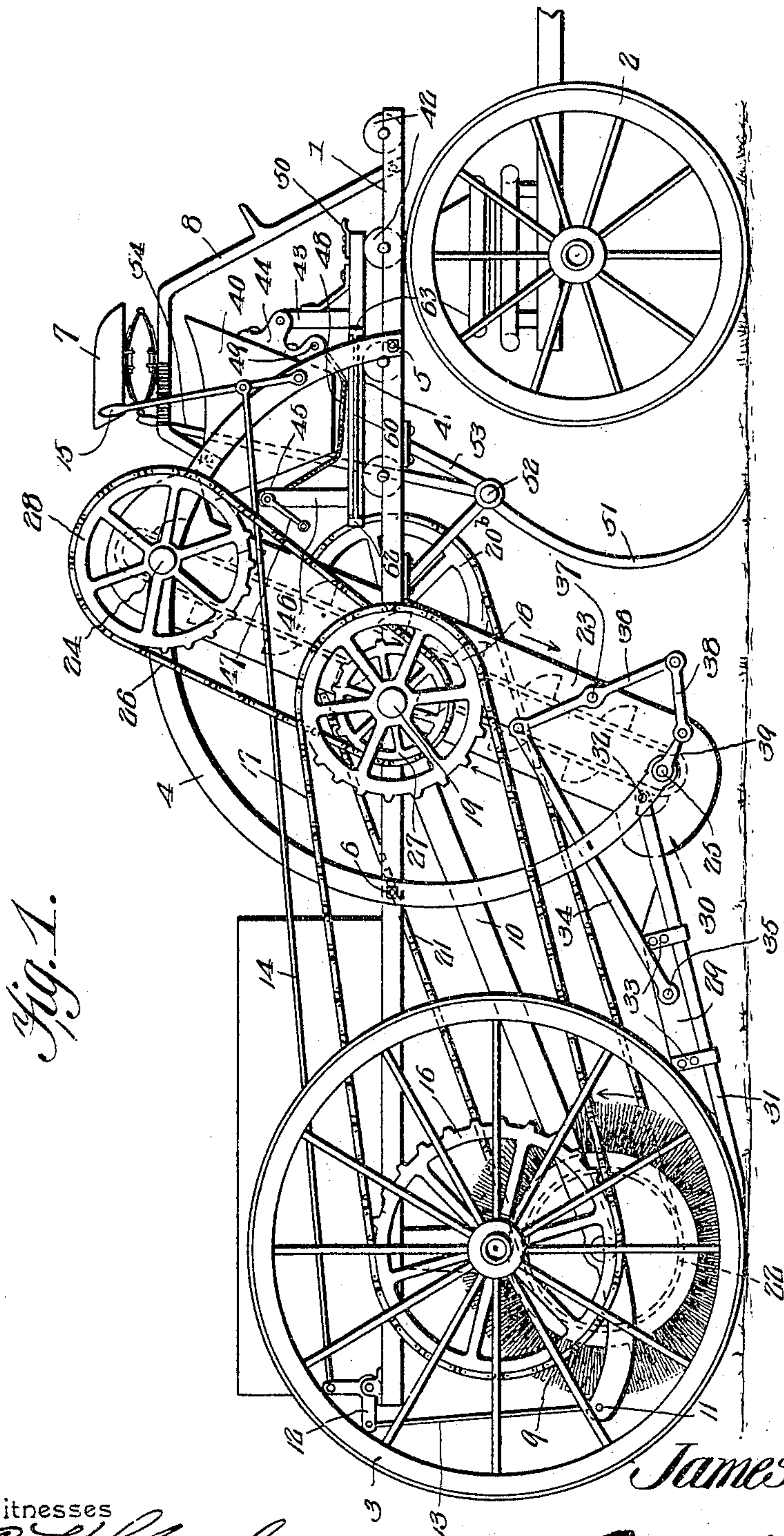


Fig. 1.

Witnesses

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by

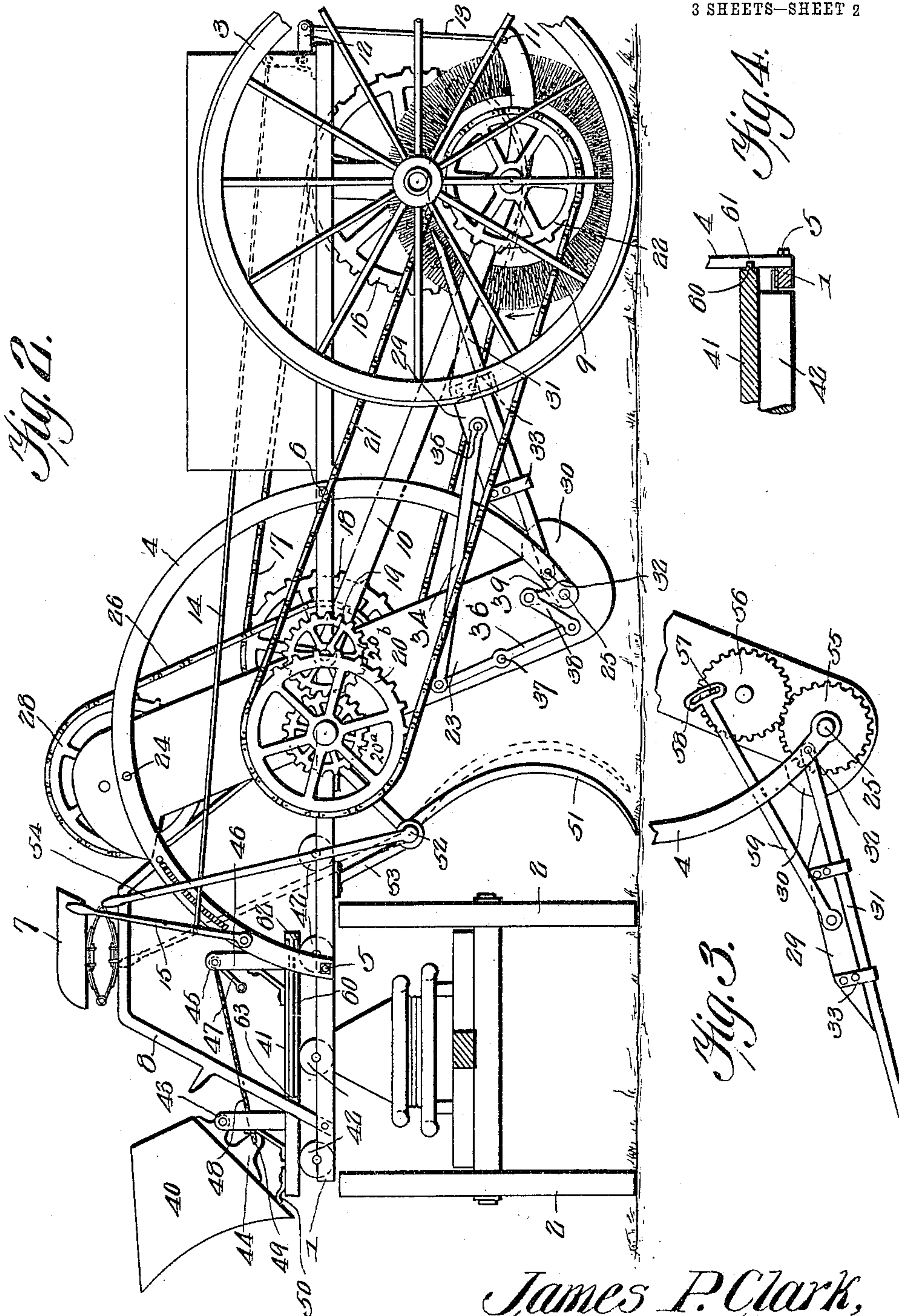
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3 SHEETS—SHEET 2



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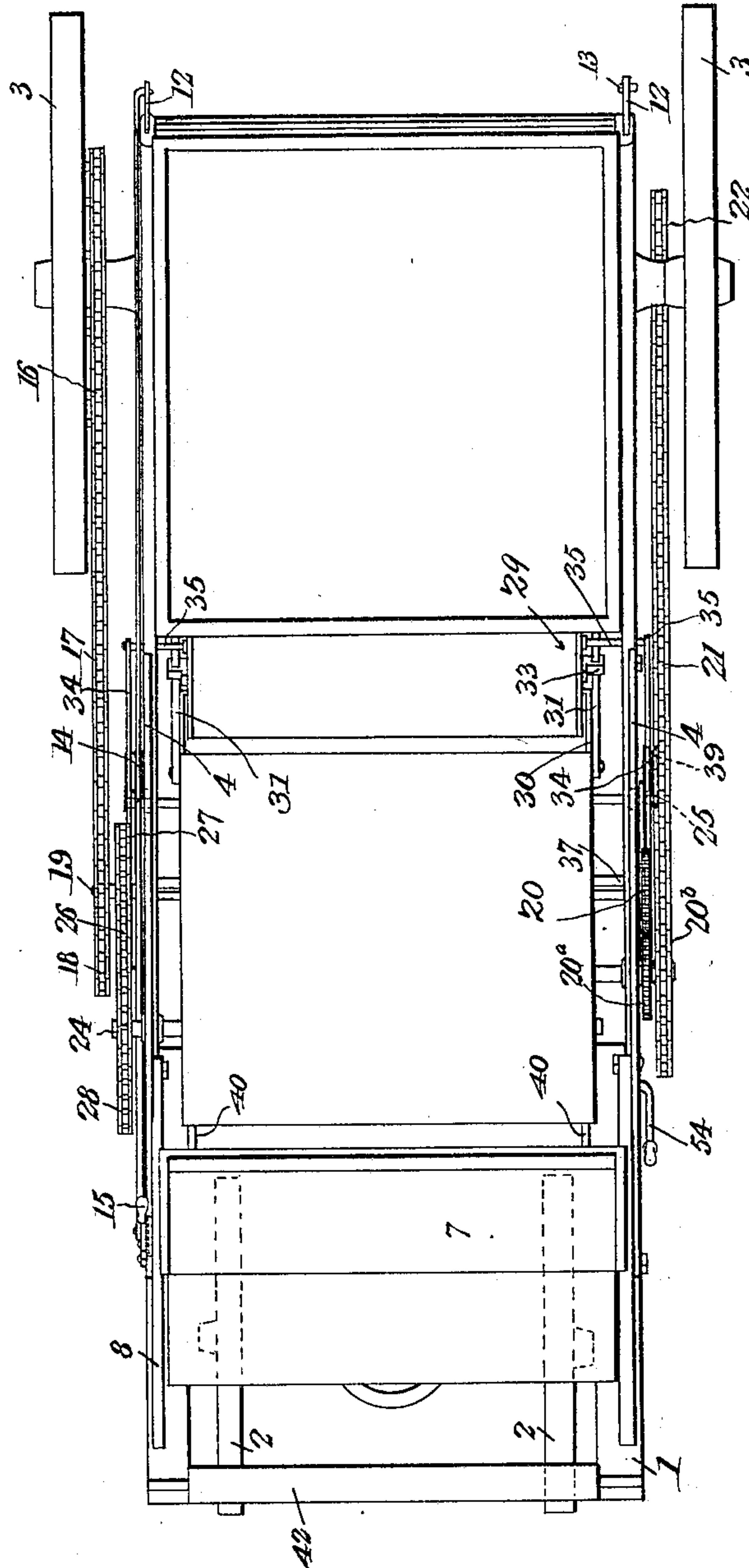
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3 SHEETS—SHEET 3.

Fig. 5.



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UNITED STATES PATENT OFFICE.

JAMES P. CLARK, OF DALLAS, TEXAS.

STREET-SWEEPING MACHINE.

No. 819,728.

Specification of Letters Patent.

Patented May 8, 1906.

Application filed November 15, 1904. Serial No. 232,882.

To all whom it may concern:

Be it known that I, JAMES P. CLARK, a citizen of the United States, residing at Dallas, in the county of Dallas and State of Texas, have invented a new and useful Street-Sweeping Machine, of which the following is a specification.

This invention relates to street-sweeping machines of that type including a rotary brush and a conveyer to carry the sweepings away from the brush, and has for its object to improve and simplify the means for picking up the sweepings and dumping the same into the conveyer.

Another object is to provide improvements in the means for receiving the sweepings from the conveyer and to effect the convenient dumping thereof whenever desired.

Another object of the invention is to provide for loosening material which has become hardened and adhered to the roadway, thereby to permit of such hardened material being properly swept by the brush and picked up by the trash-collecting shovel.

With these and other objects in view the present invention consists in the combination and arrangement of parts, as will be hereinafter more fully described, shown in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that changes in the form, proportion, size, and minor details may be made within the scope of the claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, Figure 1 is a side elevation of a street-sweeping machine embodying the features of the present invention with the trash-collecting shovel in position to receive the sweepings from the brush and the trash-collecting receptacle in position to receive trash from the elevator. Fig. 2 is a similar view of the opposite side of the machine with the shovel in position to deposit the trash or sweepings upon the elevator and showing the trash-receiving receptacle tilted so as to dump the sweepings therefrom. Fig. 3 is a detail side elevation of a modified arrangement for actuating the trash-collecting shovel. Fig. 4 is a detail sectional elevation illustrating the manner of guiding the truck for the support of the tiltable trash-receptacle. Fig. 5 is a top plan view of the improved street-sweeping machine.

Like characters of reference designate cor-

responding parts in each and every figure of the drawings.

For the support of the present machine there is provided a suitable wagon or running-gear, including a bed 1 and front and rear wheels 2 and 3, respectively. At each side of the bed and between the front and rear wheels is an arched frame-bar 4, having its forward end secured to the adjacent side of the bed, as at 5, with the intermediate portion connected to the bed, as at 6, and having the rear lower end portion of the frame-bar extending downwardly from the bed and forwardly between the front and rear wheels. A driver's seat 7 is supported at each end upon a suitable frame-bar 8, rising from the forward portion of the bed with its rear end connected to the adjacent arched frame-bar 4.

Between the rear wheels and beneath the axle thereof is a rotary brush 9, hung at each end from the body of the machine upon an arm 10, which inclines upwardly and forwardly from the brush and is projected in rear thereof. The forward end of each arm 10 is pivotally hung from the frame of the machine at a point as will be hereinafter indicated, and the rear ends of the opposite arms are connected by a cross-bar 11 in rear of the brush. To raise and lower the brush into and out of operative position, there is an angular or bell-crank lever 12, fulcrumed at the rear end of the bed of the machine and provided with a link 13, depending from the horizontal arm of the lever and connected to the cross-bar 11 of the arms 10. A connecting-rod 14 runs forwardly from the upright arm of the lever and is connected to a controlling ratchet-lever 15, fulcrumed upon the arched frame-bar 4 in position to be conveniently manipulated from the driver's seat.

As hereinbefore indicated, it is proposed to drive the brush from one of the supporting-wheels of the machine, and this object is carried out by rigidly mounting a sprocket-wheel 16 upon one of the supporting-wheels 3 and connecting the same by means of a sprocket chain or belt 17 with a sprocket or pulley 18, mounted upon a shaft 19, extending transversely across the bed of the machine and provided at its opposite end with a gear 20. (Shown in Fig. 2.) The gear 20 is in mesh with another gear 20^a, carried by the frame, and there is a sprocket 20^b mounted upon the shaft of the gear 20^a. From the sprocket 20^b a belt or chain 21 leads down-

wardly and rearwardly to a sprocket or pulley 22 upon the adjacent end of the brush, whereby the latter is driven in the direction indicated by the arrows, so as to brush the sweepings forwardly during the advance movement of the machine. It will here be explained that each of the hanger-arms 10 for the support of the brush is pivotally supported upon the shaft 19, so as to prevent binding of the drive connections therefor when the brush is elevated out of contact with the roadway.

Between the front and rear wheels and inclined upwardly and forwardly is an elevator 23, which rises above and projects below the bed of the frame and includes a conveyer of the bucket-and-chain type, having an upper shaft 24, journaled in and projected beyond each of the arched frame-bars 4, and a lower shaft 25, which is also journaled in the lower ends of the frame-bars 4. This conveyer or elevator is driven by a belt or chain 26, running over a sprocket or pulley 27 upon one end portion of the shaft 19 and a pulley or sprocket 28 upon one end of the upper shaft 24 of the conveyer, the latter of course working in the direction indicated by the arrow.

To collect the sweepings from the brush and deposit the same upon the elevator, there is a slidable and tiltable shovel 29 located between the brush and the lower boot portion 30 of the elevator. This shovel is open at opposite ends and is mounted to slide back and forth upon a track or guideway consisting of a pair of arms 31, each arm being pivotally supported at its forward end upon the adjacent arched frame-bar 4, as indicated at 32, while its free rear end is of a length to engage the roadway adjacent the front portion of the brush, so as to locate the shovel in position to receive the sweepings from the brush. Suitable clips or guide members 33 are carried by each side of the shovel and slidably engage the adjacent track member or arm 31, so as to prevent displacement of the shovel from the track. The shovel is slid back and forth between the brush and the conveyer through the medium of a connecting-rod 34, which is pivotally connected at its rear end to the shovel, as at 35, and has its forward end pivotally connected to the upper end of a lever 36, fulcrumed intermediate of its ends upon the frame of the conveyer, as at 37, there being a link 38 extending rearwardly from one end of the lever and connected to a crank 39 upon the adjacent end of the lower shaft 25 of the elevator. By this construction the lever 36 is rocked back and forth and the shovel 29 is of course slid back and forth upon the track-arms 31, and the latter are swung up and down upon their pivotal supports 32, so as to move the shovel from its receiving position, as shown in Fig. 1, to its dumping position, as shown in Fig. 2, from which it will be understood that the sweepings are received

through the rear open end of the shovel and discharged through the front open end thereof into the boot portion 30 of the elevator.

The sliding movement of the shovel 29 on the track-arms 31 and the pivotal movement of the track upon the pivot 32 is accomplished by the following parts and in the following manner: The shaft 25 being rotated by the endless conveyer-belt carries with it the crank 39. The crank 39 is by a link 38 connected to the pivotal lever 36, which moves angularly about the pivot-point 37 as a center. The end of the lever 36 opposite the link 38 is connected by link 34 with the shovel 29. With the parts assembled and disposed as in Fig. 1 the shovel is in position to receive sweepings from the brush. As the shaft 25 rotates the lever 36 is moved, which draws the shovel along the path of least resistance, which is slidably along the track 31. When, however, the shovel 29 contacts with the boot 30 of the conveyer, the sliding movement is thereby stopped, and the link 34 continuing to move and the force being above the pivot-point 32 the track 31 is moved angularly about the pivot-point 32 until the lip of the shovel 29 passes beyond the upper edge of the boot, when the line of least resistance is again along the track and the shovel slides to the extreme of its movement, and bringing the lip well over the opening in the boot, as shown in Fig. 2, the final impact dumps the contents therein. The return stroke of the link 34 slides the shovel first from over the boot, then permits the track to fall, and finally forces the shovel back to the position shown in Fig. 1, the operation being imparted at each revolution of shaft 25. This operation of the shovel is automatic and requires no attention whatsoever on the part of the driver of the machine.

For collecting the sweepings which are discharged from the top of the elevator there is a receptacle 40, located beneath the driver's seat and supported upon a slidable base or truck 41, which is capable of movement back and forth upon suitable antifriction-rollers 42, journaled in the bed or frame 1 of the machine. A suitable support 43 rises from the forward portion of the truck 41 in front of the receptacle 40, and the latter is provided upon its front side with a bracket or hinge member 44, pivotally connected with the upper portion of the support 43, so as to permit of a tilting movement of the receptacle. A windlass 45 is mounted in rear of the receptacle upon a support 46, rising from the truck 41 and provided with a crank-handle 47 in position for manipulation from the driver's seat or from one side of the machine. A cable 48 is connected to the windlass and leads forwardly beneath the bottom of the receptacle with its forward end connected to the front of the receptacle, as at 49, whereby upon winding the cable upon the windlass

the receptacle will be tilted forward upon its pivotal support into the position shown in Fig. 2, so as to dump the trash or sweepings therefrom into a collecting-wagon, which may be driven across the front of the machine when the tongue and front wheels thereof have been turned to one side. There is a suitable stop 50 upon the front of the truck 41 to engage the receptacle and limit the forward tilting movement thereof. After the receptacle has been emptied it is of course returned by hand to its original position, so as to receive the discharge from the elevator, and in this connection it will of course be understood that the machine is at rest when the receptacle 40 is being dumped.

A scraping device 51 is located between the elevator and the front wheels and is in the nature of a rake having its teeth engaging the roadway with sufficient force to loosen up any accumulations which may have become hardened upon the roadway, so as to enable the brush to properly sweep up the same into the shovel. The teeth of this scraper are carried by a cross-head 52, having each end mounted to rock in a suitable bracket 53, hung from the frame of the machine, there being a suitable controlling ratchet-lever 54 connected to one end of the cross-head, with its upper end in position for manipulation from the driver's seat, so as to bring the scraper into contact with the roadway whenever desired, it of course being understood that the scraper is ordinarily supported in an inoperative position.

A modified arrangement of the means for actuating the shovel 29 has been shown in Fig. 3 of the drawings, wherein it will be seen that a gear 55 is provided upon one end of the lower elevator-shaft 25 and in mesh with a pinion 56, mounted upon the exterior of the elevator-frame and having a wrist-pin 57 working in the slotted cross-head 58 of a connecting-rod or pitman 59, pivotally connected at its forward end to the shovel 29, whereby the proper slidable and tilting movements of the shovel are obtained.

To prevent tilting of the truck 41 under the weight of the trash-receptacle 40 when run out in position to dump the latter, each longitudinal edge of the truck is provided with a flange or rib 60, working in a guide-way or groove 61, formed in the adjacent

face of the arched frame-bar 4, there being a suitable stop 62 at the rear of the track for engagement with the frame-bar 4 to limit the forward movement of the truck, and another stop-shoulder 63 is provided for engagement with the front edge of the frame-bar 4 to limit rearward movement of the truck.

Although not illustrated in the drawings, it will of course be understood that the brush and the shovel may be suitably inclosed, so as to prevent the escape of dust occasioned by the sweeping operation of the brush and the travel of the shovel back and forth between the brush and the elevator.

Having fully described the invention, what is claimed is—

1. In a street-sweeping machine, a rotatable brush, a conveyer, a reciprocating shovel working between the brush and the conveyer, a tiltable track, and means for reciprocating the shovel upon the track and tilting the latter at the forward limit of the shovel to dump the sweepings into the conveyer.

2. In a street-sweeping machine, a rotary brush, a conveyer, a shovel working between the brush and the conveyer, track-arms pivotally supported at their forward ends and upon which the shovel slides, connections carried by the shovel and slidably engaging the track-arms, and means to slide the shovel upon the track-arms and to tilt the latter upon their pivotal supports to dump the sweepings from the shovel into the conveyer.

3. In a street-sweeping machine a rotary brush, an elevating-conveyer, a shovel working between the brush and the conveyer, track-arms pivotally supported at their forward ends and upon which the shovel slides, means to slide the shovel upon the track-arms and to tilt the latter upon their pivotal support to dump the sweepings from the shovel into the conveyer, and a receptacle disposed to receive the sweepings from the conveyer.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JAMES P. CLARK.

Witnesses:

J. F. THOMAS,
T. A. CLARK.