N. M. MILLER.

STREET SWEEPER.

APPLICATION FILED MAR. 27, 1911.

1,003,937.

Patented Sept. 19, 1911.

4 SHEETS—SHEET 1.

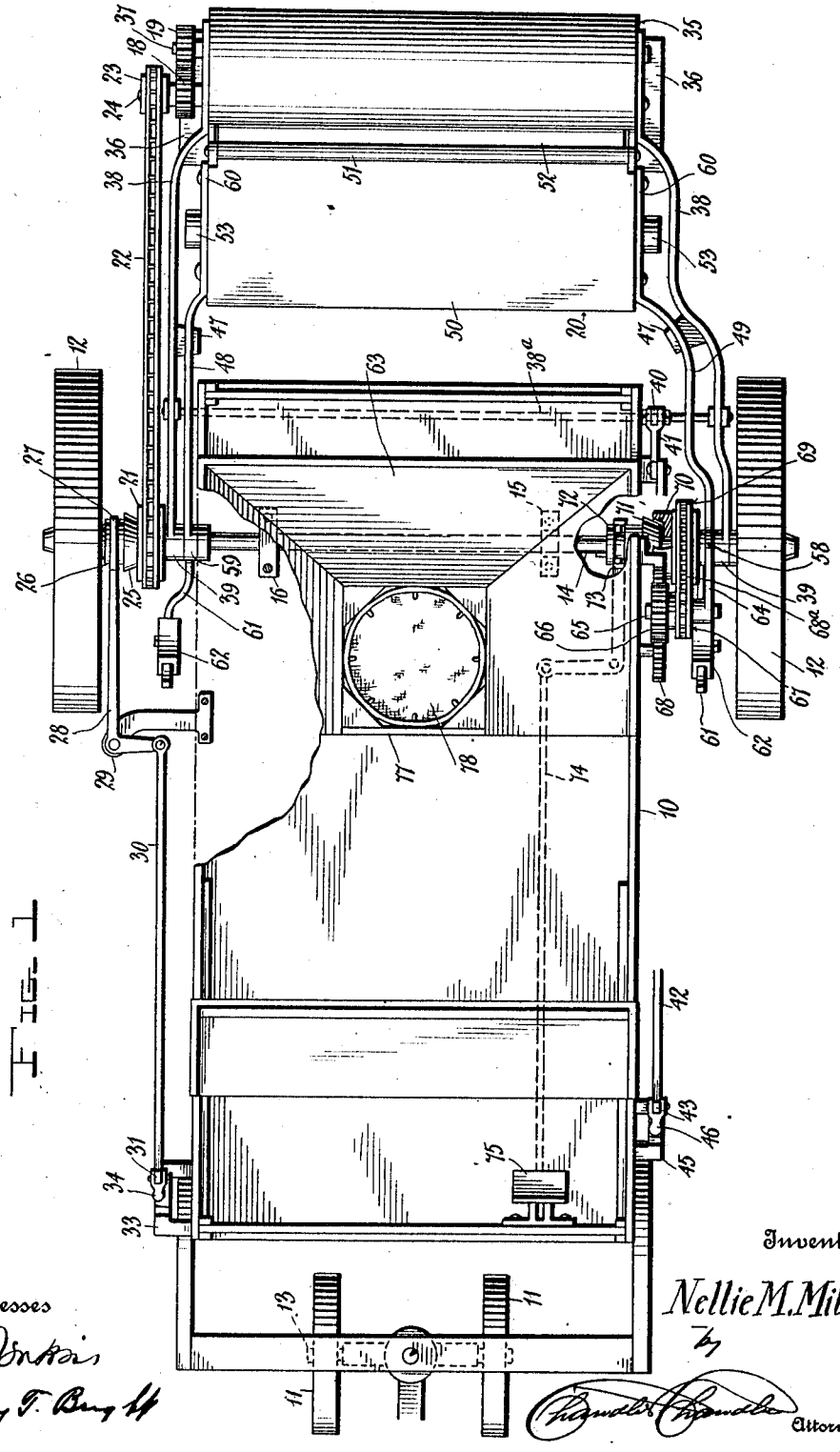

FIG. 1

Witnesses

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4 SHEETS—SHEET 2.

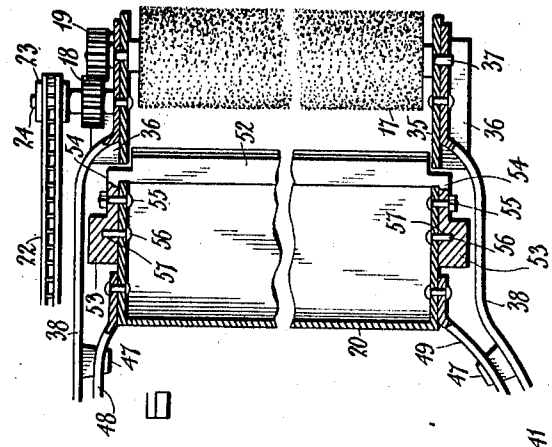

FIG. 6

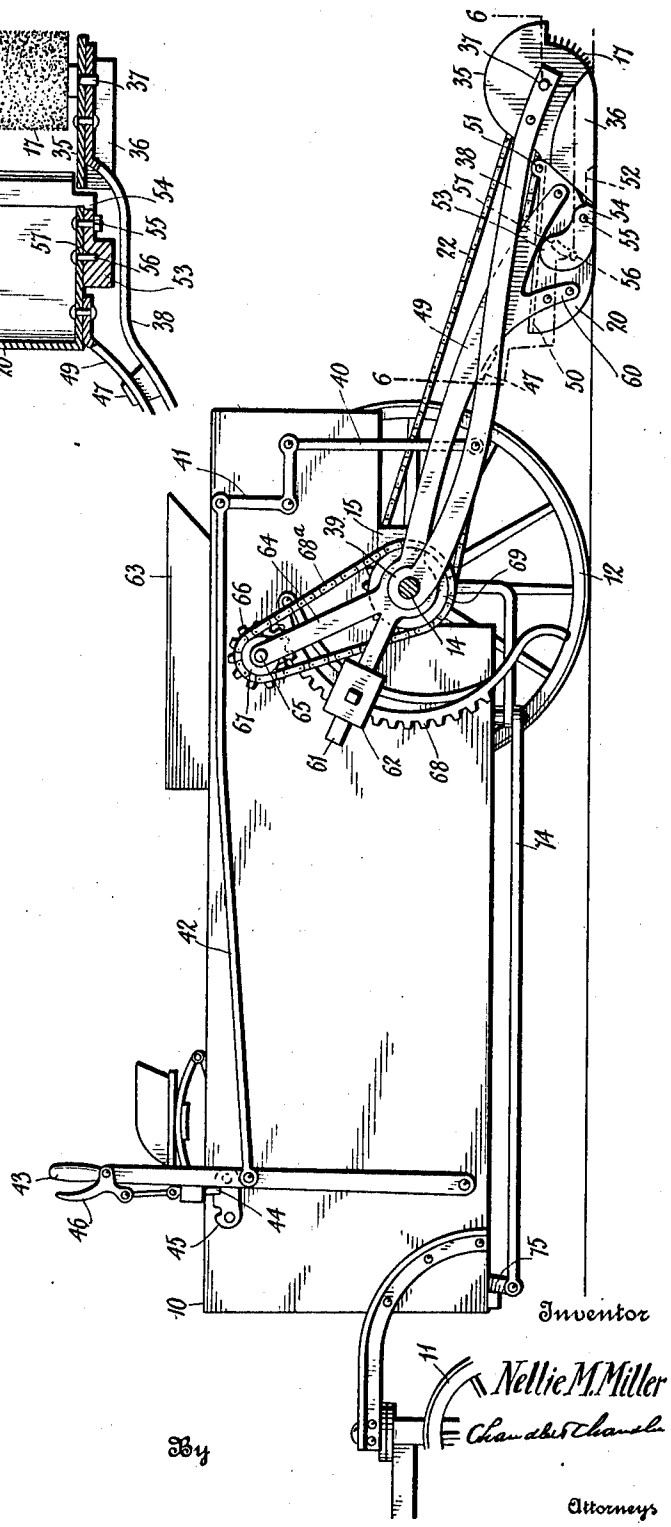

FIG. 2

Witnesses

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4 SHEETS—SHEET 3.

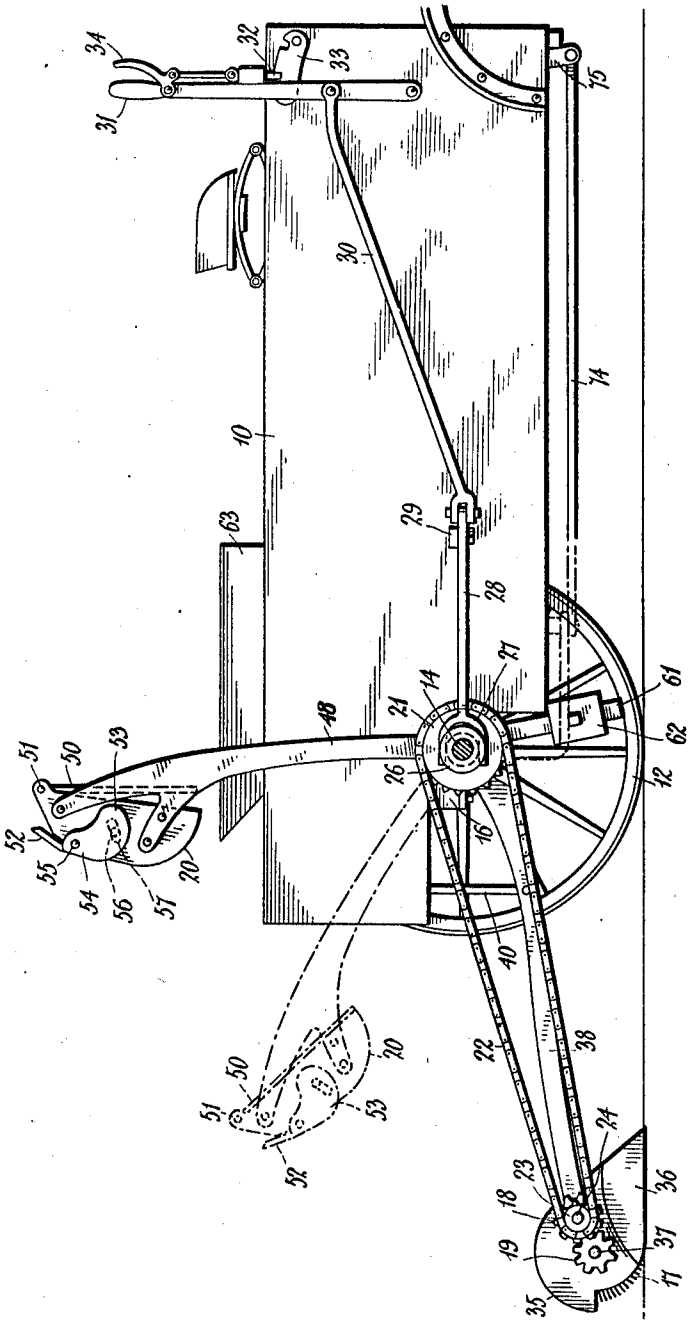

FIG. 3

Witnesses

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4 SHEETS—SHEET 4.

Fig. 4

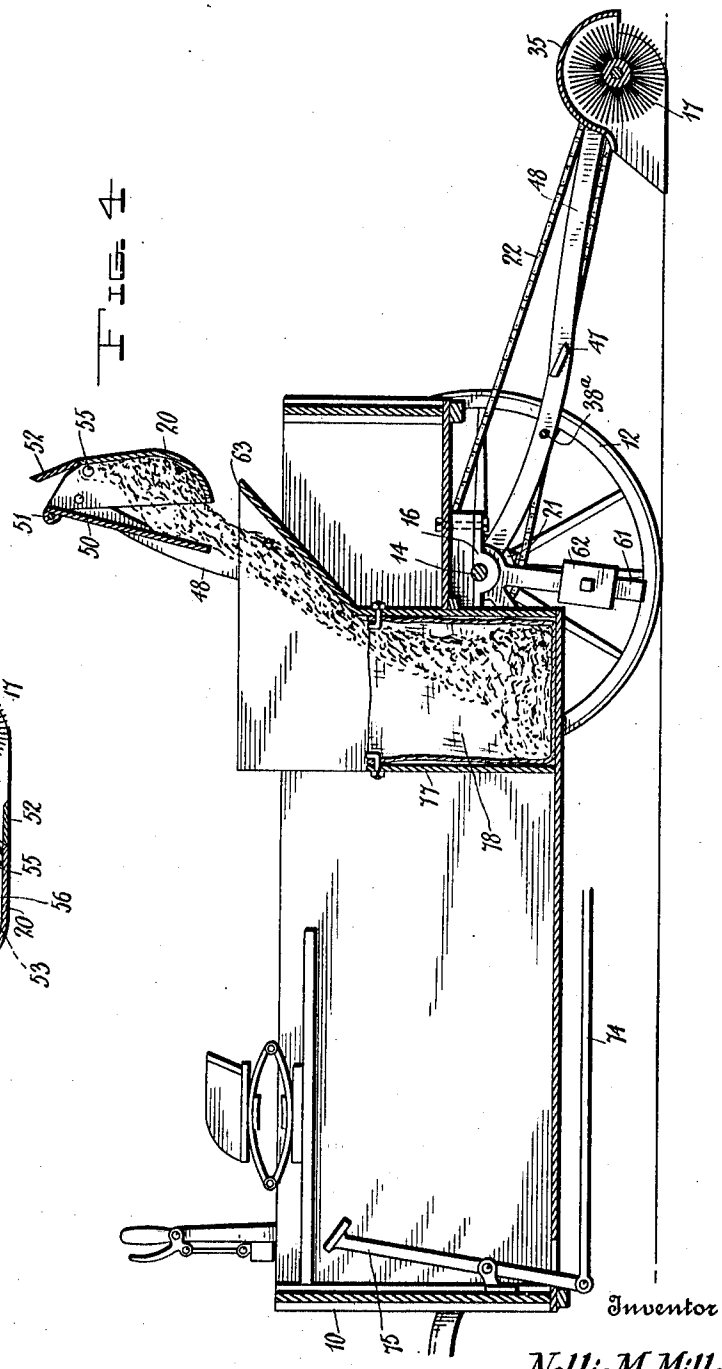
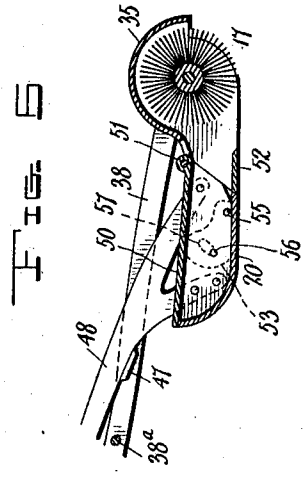


Fig. 5



Witnesses

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UNITED STATES PATENT OFFICE.

NELLIE M. MILLER, OF WASHINGTON, DISTRICT OF COLUMBIA.

STREET-SWEEPER.

1,003,937. Specification of Letters Patent. **Patented Sept. 19, 1911.**

Application filed March 27, 1911. Serial No. 617,103.

To all whom it may concern:

Be it known that I, NELLIE M. MILLER, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Street-Sweepers; and I do hereby 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.

This invention relates to improvements in street sweepers.

The object of the invention is to improve the construction of street sweepers and to provide a simple, efficient and comparatively inexpensive machine adapted to sweep the dust or dirt into the receptacle, which latter is capable of easy operation to elevated position to dump the contents thereof into a bag or sack.

A further object of the invention resides in so constructing the sweeper that the storing sacks may be removed from receiving position without the necessity of lifting the same vertically, such a construction enabling the sweepings to be conveniently handled, without the necessity of utilizing the great power that would be required to effect a vertical lift of the bags or sacks.

With these and other objects in view, the invention consists in the details of construction and in the arrangement and combination of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the appended claims; it being understood that various changes in the form, proportion, size and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings: Figure 1 is a plan view of a street sweeper constructed in accordance with the invention. Fig. 2 a side elevation of the street sweeper. Fig. 3 a similar view, showing the opposite side of the machine. Fig. 4 a longitudinal sectional view of the same. Fig. 5 a detail sectional view illustrating the arrangement of the pan and the main brush, and Fig. 6 a horizontal sectional view on the line 6—6 of Fig. 2.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

In the accompanying drawings in which is illustrated the preferred embodiment of the invention, the street sweeper is shown as comprising in its construction, a wheeled vehicle consisting of a wagon body 10 supported by front and rear wheels 11 and 12. The front wheels are rotatably mounted on the spindles of the front axle 13 of the usual construction, while the rear wheels 12 are fixed on the terminal portions of a rear axle 14 which is journaled in suitable bearings 15 and 16, located at opposite sides of the body 10. The rear axle 14 is disposed at a greater elevation than the front axle 13 and the rear wheels 12 are of a greater diameter than the front wheels 11. These different elevations of the front and rear wheels is compensated for by forming the body 10 with a greater depth at its forward portion that at its extreme rear, the purpose of so constructing the body 10 will be hereinafter more fully referred to. The rear axle rotates in its bearings when the wheeled vehicle is drawn forward and motion is communicated from the rear axle to the main brush 17 by sprocket gearing and spur gears 18 and 19, which change the direction of motion to cause the brush 17 to rotate in the proper direction for sweeping the dust and dirt into a pan or receptacle 20. The sprocket gearing consists of a sprocket wheel 21 loosely mounted on the rear axle and connected by a sprocket chain 22 with a sprocket pinion 23, arranged on a stub shaft 24 and preferably formed integral with the spur gear 18, but it may be connected with the same in any desired manner. The sprocket wheel 21 is equipped at its outer side with a conical clutch face 25 arranged to be engaged by a clutch section 26 slidably mounted on the rear axle and having a conical face to frictionally engage the face 25 of the sprocket wheel. Any other construction of clutch, however, may be, of course, employed. This slidable clutch section is provided with an annular groove and is engaged by a forked end 27 of a bell crank lever 28, fulcrumed at its angle on a suitable bracket 29 and connected by a rod 30 with an operating lever 31 which is equipped with a dog or detent 32, arranged to engage a segment 33 and controlled by a latch lever 34. The segment is provided with opposite notches, arranged to be engaged by the dog or detent for holding the

slidable clutch sections in and out of engagement with the clutch face of the sprocket wheel, and the latch lever 34 is arranged adjacent to the handle or grip portion of the operating lever.

The main brush 17 which is located in rear of the wheeled vehicle, is journaled in suitable bearings of a casing 35, composed of spaced sides or ends and a curved top, which is arranged close to the brush. The brush casing 35 is open at the bottom and front, and the ends may be increased in thickness at the bottom to provide weights 36 for producing the desired contact between the brush and the surface acted on by the same. Any other suitable means, however, may be employed for weighting the brush casing, or otherwise securing the desired pressure of the brush. One end or side of the brush casing carries the stub shaft 24 and also has mounted on it a stub shaft 37, which supports the spur gear 19. The brush casing is pivotally connected with the rear axle by forwardly extending arms 38, consisting of bars rigidly secured at their rear ends to the outer faces of the end walls of the brush casing and provided at their front ends with bearings 39 through which the rear axle passes. The rear axle forms a pivot for the arms 29, which are adapted to be swung upward to elevate the brush above the supporting surface, and one of the arms is connected by a rod 40 with one arm of a bell crank lever 41, pivoted at its angle to one of the sides of the wagon body at the outer face thereof and having its other arm connected by a rod 42 with an operating lever 43. The operating lever 43, which is pivoted at its lower end, is equipped with a dog or detent 44 for engaging a notched segment 45. The dog or detent is controlled by a latch lever 46 and the segment 45 is provided with two notches, for holding the main brush in its raised and lowered positions respectively.

The arms 38 are also provided with inwardly projecting lugs or flanges 47, extending beneath levers 48 and 49, which pivotally connect the pan or receptacle 20 with the rear axle, whereby both the brush and the pan may be elevated by the operating mechanism of the former. The arms 38 are preferably connected by a transverse bracing rod 38ª, piercing the said arms 38 and having threaded terminals for the reception of nuts, which are arranged in pairs to engage the inner and outer faces of the arms.

The pan consists of a horizontal bottom, a curved front wall formed integral with the bottom and vertical end walls. The rear side of the pan is open to enable the dust to be swept into it by the main brush, and it is equipped with a lid 50, hinged at its rear edge 51 to the end walls of the pan and supported by the upper edges of the same. The rear edges of the end walls of the pan or receptacle abut against the front edges of the end walls of the brush casing, which are inclined upwardly or rearwardly to permit the pan to readily disengage itself from the casing. In order to prevent the contents of the pan from spilling through the open back when the pan is elevated, the bottom is equipped with a hinged section 52, consisting of a transversely disposed plate pivotally connected at its ends with the end walls of the pan, and arranged in a horizontal position and forming an extension of the bottom of the pan, when the latter rests upon the surface to be swept. The rear edge of the hinged section is beveled to permit the dust to be readily swept into the pan. The hinged section 52 is equipped with weights 53 arranged at the outer faces of the end walls of the pan and having shank portions 54 through which pivot bolts 55 pass. The weights automatically swing the extension section upward at an angle to the bottom to form a guard when the pan is raised from the supporting surface, and when the pan is lowered to the supporting surface, the weights come in contact with the same and swing the hinged section downward to a horizontal position in alinement with the bottom. The swinging of the weights 53 is limited by means of projecting pins 56 mounted on the end walls of the pan and operating in arcuate slots 57 in the inner faces of the weights 53. The slots do not extend entirely through the weights and are thereby protected from dust and other accumulation.

The levers 48 and 49, which extend longitudinally of the street sweeper, are provided intermediate of their ends with bearings 58 and 59 to receive the rear axle, and their rear arms have forked terminals 60, which are secured to the end walls of the pan, and their forwardly extending arms 61 are equipped with an adjustable weight 62 adapted to nearly counterbalance the weight of the rear arms and the pan so that little power is required to lift the contents of the pan when the latter is elevated for dumping it, as hereinafter fully explained. The pan and the rearwardly extending arms have also sufficient excess of weight to cause the pan to descend after it has discharged its contents into a hopper 63. The lever 49 is also provided with an arm 64, located above and arranged at an acute angle to the forwardly extending weight carrying arm and carrying a stub shaft 65 upon which a spur pinion 66 is mounted. The spur pinion, which is preferably formed integral with a sprocket pinion 67 meshes with an arcuate rack 68 mounted on the adjacent side of the wagon body and depending therefrom. The spur pinion is arranged at the upper end of the rack 68 when the pan rests upon the

supporting surface, and motion is communicated to it from the rear axle by sprocket gearing to cause the spur pinion to move along the curved rack and thereby elevate the pan to a point above the hopper 63. When the pan is swung upward to a point above the hopper, the hinged lid will open by gravity and the contents will be discharged into the hopper. The sprocket pinion 67 is connected by a sprocket chain 68ª with a sprocket wheel 69, loosely mounted on the rear axle and having a conical clutch face 70 arranged to be engaged by a cone face 71 of a movable clutch section 72 which is slidably mounted on the rear shaft or axle 14. The slidable clutch section 72 has an annular groove and is engaged by a forked arm 73 of a bell crank lever fulcrumed at its angle and having its other arm connected by a rod 74 with a foot lever 75 mounted within the body of the vehicle and arranged within easy reach of the driver. When it is desired to elevate and dump the contents of the pan, the driver applies his foot to the lever 75, which carries the slidable clutch section 72 into engagement with the clutch face of the sprocket wheel 69, and motion is thereby communicated to the pinion, which meshes with the rack. The teeth of the rack preferably terminate short of the lower end of the rack bar, which is provided with a smooth projecting portion 76 adapted to form a stop for limiting the forward swing of the pan. The smooth stop also will permit the pinion to rotate without injury, should the driver keep his foot on the lever 75 after the pan has been elevated. As soon as the contents of the pan are discharged into the hopper, it is permitted to swing downward, its downward movement being retarded by the action of the counter-balancing weights and also by the friction of the gearing. Any suitable means, however, may be employed for positively controlling the downward movement of the pan.

The hopper 63 has inclined sides and an inclined rear wall extending upward from the bag holding frame 77. The hopper is open at the front the entire depth of the forward portion of the wagon 10 to afford ready access to and easy removal of a bag 78 which is supported in open position by the frame 77 just beneath the inclined walls of the hopper 63.

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

1. In a street sweeper, the combination with a wheeled vehicle, of a rotary brush, a pan open at the back and arranged in advance of the brush to receive sweepings therefrom, means for elevating the pan to discharge the contents thereof, a hinged section arranged at the rear edge of the bottom of the pan and forming an extension thereof when the pan is in its lowered position, and means for automatically tilting the hinged section upwardly to form a guard when the pan is raised.

2. In a street sweeper, the combination with a wheeled vehicle, of a rotary brush, a pan open at the back and arranged in advance of the brush to receive sweepings therefrom, means for elevating the pan to discharge the contents thereof, a hinged section arranged at the rear edge of the bottom of the pan and forming an extension of the same when the pan is in its lowered position, and a weight connected with the hinged section and arranged to swing the same upwardly to form a guard when the pan is elevated.

3. In a street sweeper, the combination with a wheeled vehicle, of a brush casing, a rotary brush mounted within the casing, arms pivotally connecting the casing with the vehicle, a pan arranged to receive sweepings from the brush, levers pivotally connecting the pan with the vehicle, means carried by the arms of the casing for supporting the levers and the pan, and operating mechanism connected with one of the arms of the casing for raising and lowering the same.

4. In a street sweeper, the combination with a wheeled vehicle, of a brush casing having arms connected with the vehicle and provided with inwardly projecting lugs, a rotary brush mounted within the casing, a pan arranged in advance of the brush in position to receive sweepings therefrom and having levers pivotally connected with the vehicle and supported by the said lugs, means for swinging the levers upwardly to discharge the contents of the pan, and operating mechanism connected with one of the arms of the brush casing for raising and lowering the same.

5. In a street sweeper, the combination with a wheeled vehicle having a rotary axle, of a brush casing having arms pivotally mounted on the axle, a rotary brush mounted within the casing, a pan located in advance of the brush in position to receive sweepings therefrom, levers fulcrumed on the axle and connected with the pan and gearing connected with the levers and with the axle to elevate the pan to discharge the contents thereof.

6. In a street sweeper, the combination with a wheeled vehicle having a rotary axle, of a brush casing provided with arms pivotally mounted on the axle, a rotary brush operating within the casing, a pan located in advance of the brush in position to receive sweepings therefrom, longitudinal levers fulcrumed on the axle and connected at their rear ends to the pan, a curved rack, a pinion carried by one of the levers and

meshing with the rack, and gearing connecting the pinion with the axle for elevating the pan to discharge the contents thereof.

7. In a street sweeper, the combination with a wheeled vehicle, of a rotary brush, a pan open at the back and arranged in advance of the brush to receive sweepings therefrom, means for elevating the pan to discharge the contents thereof, a hinged section mounted on the pan and forming an extension of the bottom thereof when the pan is in its lowered position and a weight pivoted to the pan and connected with the hinge section to swing the latter across the open back of the pan when said pan is elevated and to return said hinged section to a position to form an extension of the bottom of the pan when said pan is lowered.

In testimony whereof, I affix my signature, in presence of two witnesses.

NELLIE M. MILLER.

Witnesses:
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GEO. H. CHANDLEE.