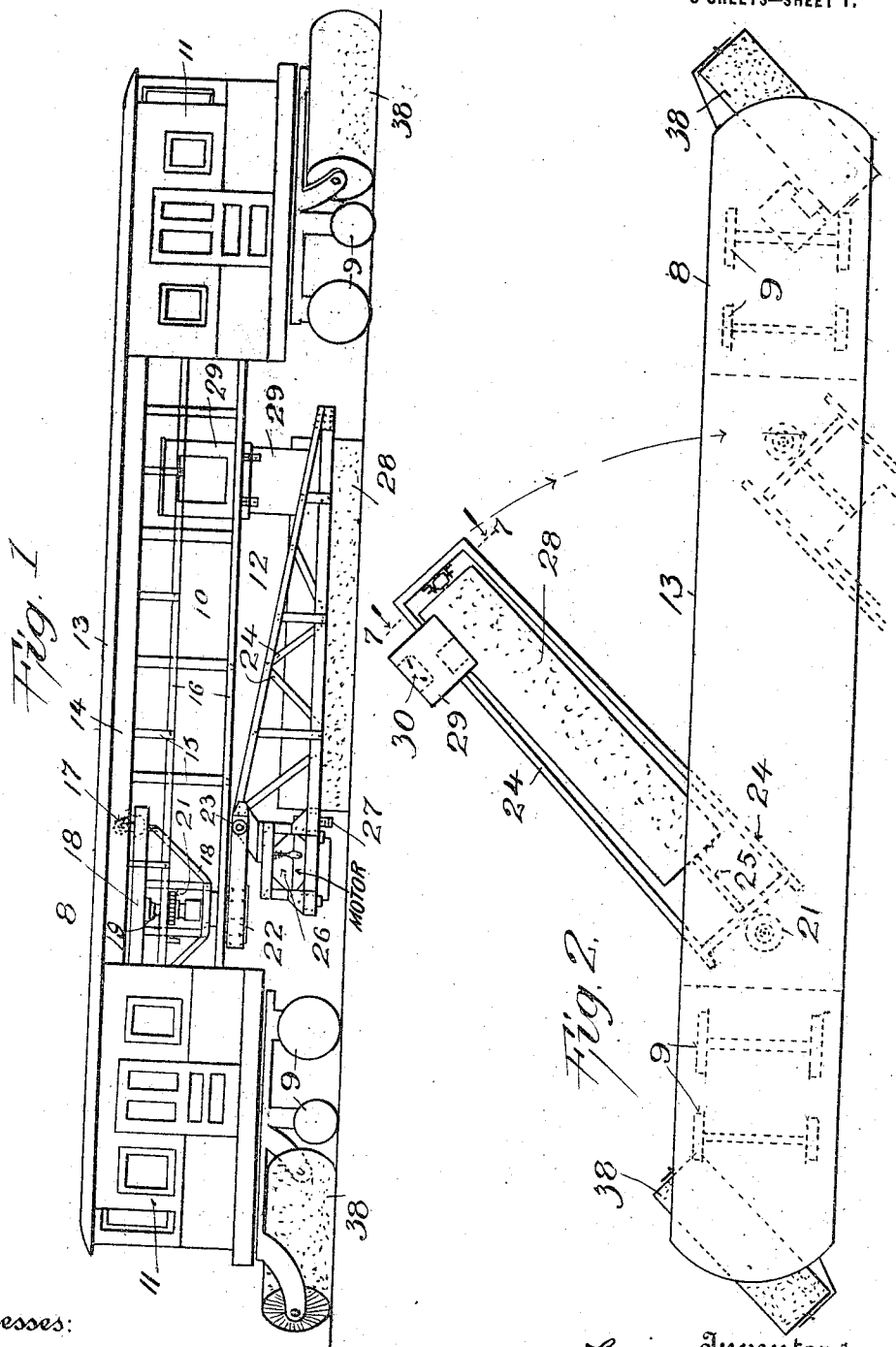


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F. HEDLEY & J. S. DOYLE.
STREET SWEEPING MACHINE.
APPLICATION FILED OCT. 14, 1914.

Patented Sept. 25, 1917.
3 SHEETS—SHEET 1.



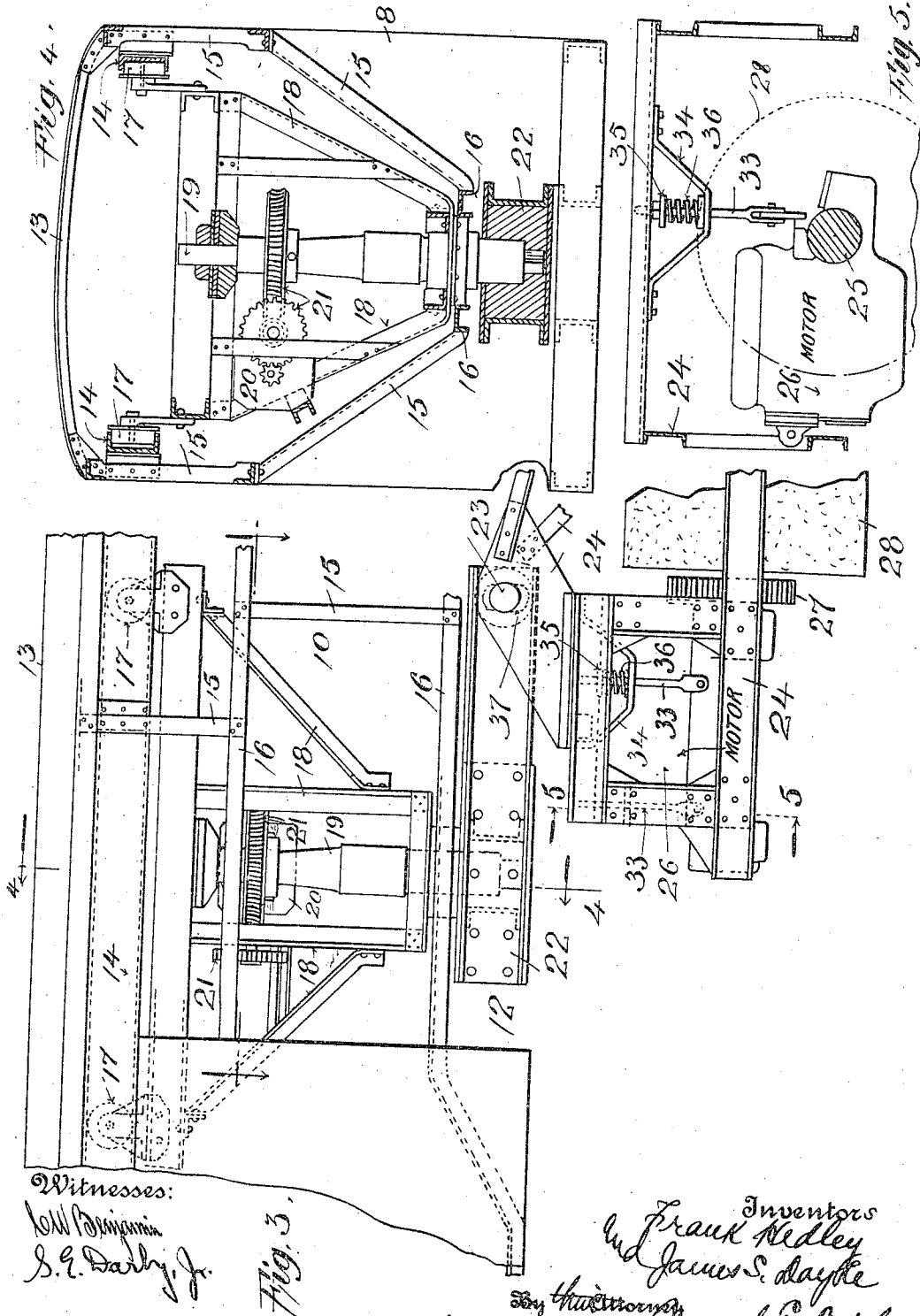
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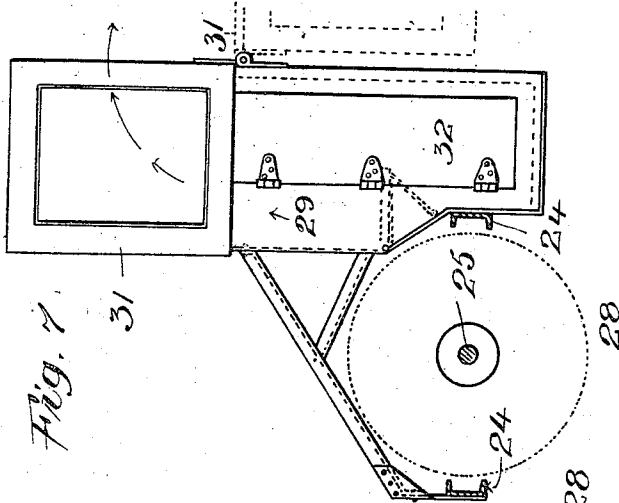
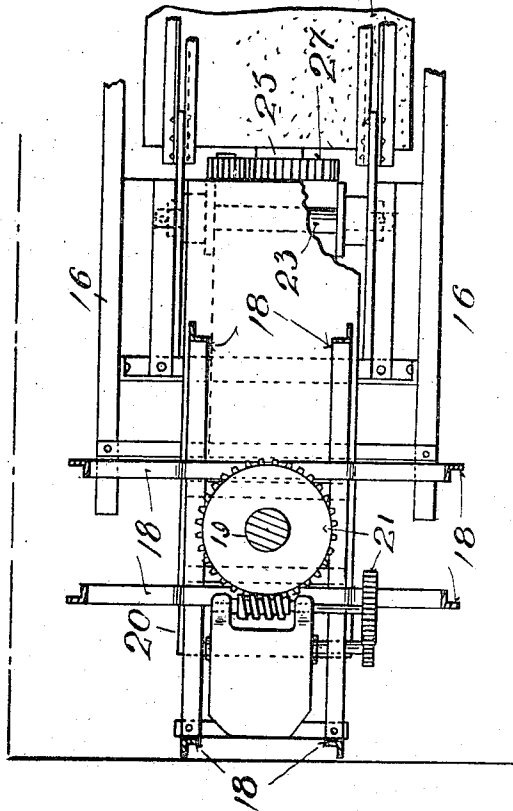


Fig. 6



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UNITED STATES PATENT OFFICE.

FRANK HEDLEY, OF YONKERS, AND JAMES S. DOYLE, OF MOUNT VERNON, NEW YORK.

STREET-SWEEPING MACHINE.

1,241,114.

Specification of Letters Patent.

Patented Sept. 25, 1917.

Application filed October 14, 1914. Serial No. 866,610.

To all whom it may concern:

Be it known that we, FRANK HEDLEY and JAMES S. DOYLE, both citizens of the United States, and residing, respectively, at Yonkers and Mount Vernon, in the county of Westchester, State of New York, have made a certain new and useful Invention in Street-Sweeping Machines, of which the following is a specification.

10 This invention relates to street sweeping machines.

The object of the invention is to provide an apparatus of the nature referred to which is simple in construction, economical to manufacture, and efficient in operation.

15 A further object is to provide a street sweeping apparatus wherein is employed a rotary sweeper carried by a frame in such manner that said sweeper may be swung laterally and horizontally from one side to the other of the frame on which it is mounted, so as to operate at either side of the frame and in proper relation with reference to the direction of travel of the frame.

25 Other objects of the invention will appear more fully hereinafter.

The invention consists substantially in the construction, combination, location and relative arrangement of parts, all as will be more fully hereinafter set forth, as shown in the accompanying drawings, and finally pointed out in the appended claims.

In the drawings,—

35 Figure 1 is a view in side elevation of a street sweeping machine embodying the principles of the invention.

Fig. 2 is a top plan view of the same.

40 Fig. 3 is a broken view in side elevation showing the movable carriage for the sweeper, and the manner of mounting the sweeper thereon.

Fig. 4 is a vertical transverse section on the line 4, 4, Fig. 3, looking in the direction of the arrows.

45 Fig. 5 is a view in vertical section on the line 5, 5, Fig. 3.

Fig. 6 is a broken view in horizontal section on the line 6, 6, Fig. 3, looking in the direction of the arrows.

50 Fig. 7 is a view in vertical section on the line 7, 7, Fig. 2, looking in the direction of the arrows.

The same part is designated by the same reference numeral wherever it occurs throughout the several views.

In street sweeping apparatus it is a common practice to employ rotary sweepers and to mount the same upon cars or frames which are propelled along the streets to be swept, or along the track rails of street car systems, the sweeper being suspended underneath the car or frame and ordinarily disposed in an inclined position relative to the line of travel of the car or frame. In the operation of sweeping machines so constructed, the sweepers are enabled to cover a comparatively limited area of street surface, and where such a machine is employed to clean away snow or dirt along the tracks of a street car system, for instance, the result is to leave the snow or dirt acted upon by the sweeper piled up in a ridge or heap lying in a line parallel to and closely adjacent the track rails, frequently making it difficult and inconvenient for passengers to board or alight from cars operating on the track system, and for pedestrians to cross the street. Moreover, if the sweeper is arranged to extend beyond the side of the frame or car on which it is mounted, whether on one side or the other, the entire frame or car must be turned around at the end of the line, or at the terminal of the trip, in order to enable the sweeper to operate on the opposite side of the track on the return trip. In many cases it is inconvenient and undesirable to turn the vehicle around. Again it is frequently the case that the presence of other vehicles or obstructions in the path of operation of the sweeper necessitates going around such vehicle or obstruction, and this is impossible where the apparatus is mounted and operates on the track rails of a street car system, thereby necessitating the removal of the obstruction and the delay of the sweeping apparatus until the vehicle or obstruction is removed.

It is among the special purposes of our present invention to provide a frame or car, which, in one form of embodiment of our invention, we propose to operate on the track rails of a street car system, and to mount thereon a rotary sweeper in such manner as to permit the sweeper to be rocked or swung at will into position to project or extend beyond either side of the carrier, or into position beneath the supporting frame or car, as exigency may require, and we propose to employ suitable means to accom-

plish such rocking or swinging movements without interfering with the mechanism for rotating the sweeper, and to control the same in efficient manner, thereby enabling the apparatus to clear away snow, rubbish, trash, dirt or the like from the immediate vicinity of the track rails, and on either side of the track rails, the sweeper operating on one side of the car or frame while the latter travels in one direction, and on the other side while traveling in the opposite direction, without the necessity of turning the car or frame around at the end of the line or trip; and to be swung underneath or toward the side of the car or frame in order to pass by an obstruction in its path.

While the principles involved may be carried out in many specifically different embodiments, without departure from the spirit or scope of our invention, as defined in the claims, we will describe one illustrative embodiment which we have found to be simple and efficient.

In the construction shown, 8 designates a supporting frame, which, in this instance, is in the form of a car, and when we refer to a car in this connection, we wish to include any suitable vehicle or frame. In the form shown the car 8 is mounted on truck wheels 9 designed to operate on track rails of a street car system, the truck wheels 9 being located at the ends of the car.

Intermediate its ends the body part 10 of the car is elevated or arched, as clearly shown in Fig. 1, leaving the end portions 11, with an open space between them. Connecting the end portions and forming part of the structure or framework of the elevated or arched portion 10, is a roof 13, beneath which are channel beams 14, respectively arranged at the sides of the elevated portion 10, and forming longitudinally extending tracks. The roof 13, and the track members 14, are supported by a framework including vertical and longitudinally extending beams, braces and struts indicated at 15, 16.

Operating in the tracks or ways afforded by the track members 14, are wheels or rollers 17, by and from which is supported and suspended a carriage 18, which may be shifted back and forth along the track members 14, from end to end of the elevated portion 10 of the car.

Journaled vertically in the carriage 18 is a shaft 19, to which axial rotation may be imparted in any suitable or convenient manner. A simple arrangement is shown wherein a motor 20, that, when operated, actuates suitable gearing 21, which rotatively actuates the shaft 19. The lower end of shaft 19, extends below the elevated framework of the car, and mounted thereon to revolve therewith is a frame 22, in which is mounted a horizontally arranged

axle or pin 23, upon which the sweeper frame 24 is journaled at one end, the other end of said frame extending freely therefrom. The sweeper shaft 25, extends longitudinally of the frame 24, and is journaled at its ends in bearings formed in or carried by the ends of said frame 24. In practice, the sweeper, 28, when in operating position rests upon the surface of the ground, and it may be axially rotated in any suitable or convenient manner. A simple arrangement is shown wherein a motor, indicated at 26, is mounted upon the end of the sweeper frame 24 nearest the pivot 23, and is carried thereby by suitable brackets which form journals therefor, as shown, and as will be readily understood.

From this description it will be seen that by suitably operating and controlling the motor 20, the vertical shaft 19 may be rotated in either direction and to any desired extent, thereby correspondingly rocking or swinging the sweeper frame 24, into the desired position to extend from either side of the car, and in any desired angle of inclination relative to the line of travel of the car, or to a position underneath the car. In this manner the sweeper is capable of operating over an area of street surface on either side of the track which is limited in distance from the track rails only by the length of the sweeper itself. It will also be seen that a vehicle or other obstruction in the path of the sweeper when extended from the side of the car may be easily passed by simply swinging the sweeper frame back toward the car to the required extent, or beneath the car, if necessary.

When the car reaches the end of the line or trip the carriage 18 is simply shifted or moved in any convenient or suitable manner along the track members 14, from one end to the other of the arched or elevated frame portion of the car, and the sweeper then swung out into the proper position on the opposite side of the car, as indicated in full and dotted lines in Fig. 2. In this manner we not only avoid the necessity of turning the car around at the end of the trip or line but we also are enabled to position the sweeper in the desired relation and inclination with reference to the line or direction of travel of the car, whether the car travels in one direction or the other.

The motors 20, 26, may be controlled from any suitable or convenient point. However, in order to secure the most advantageous operation of the apparatus we propose to control the operation of the motors from a cab 29, which is mounted upon and carried by the outer or free end of the sweeper frame 24. A suitable controller, indicated at 30, Fig. 2, located in the cab 29 and to which the motor circuits, not shown, are led in a well known manner, serves to effect the

desired control. In order to permit the cab to pass through the space 12, and beneath the frame 10, the upper part 31 of the cab is hinged horizontally to the lower part thereof, so as to be swung down out of the way of striking the elevated frame 10 of the car when the sweeper frame is swung to one side or the other of the car.

Access to the cab may be gained in any convenient manner, as, for instance, through door 32, see Fig. 7.

In order to relieve the motor 26 of undue shock or jar by the operation of the sweeper 28 over rough or uneven places, stones or the like in the roadway, said motor may be spring supported, as shown, by means of a hanger 33, passing through a bracket 34, and carrying a collar 35, between which and the bracket 34, a spring 36 is interposed. This secures the desired yielding suspension of the motor.

In operation the sweeper L is liable to encounter rough or uneven surfaces, stones, cobbles, or other small obstructions which may require a bodily elevation of the sweeper to pass thereover. The pivoting of the sweeper frame 24 on the shaft or pin 23 permits vertical rocking or tilting of the sweeper and its frame which will enable the sweeper to pass over a large proportion of such obstructions without difficulty. The extension of the frame 24 to the other side of the axis of pin 23 from the side on which the sweeper is located, and the weight of motor 26 which is carried upon said extension affords, to the extent of the weight thereof, a counterbalancing effect upon the sweeper to facilitate the vertical rocking or tilting movement thereof.

This vertical bodily movement of the sweeper may be facilitated. For example, the ends of pin 23 may be carried in vertically elongated slots indicated in dotted lines at 37, Fig. 3. This permits the entire sweeper frame and sweeper to rise, if required or necessary, without interfering with the tilting action thereof, and at the same time permits the sweeper to rest normally with the full weight thereof and of its frame evenly upon the surface of the street.

The end portions 11 of the car may be utilized as cabs for the car operating crew or to carry tools, apparatus or accessories, or for any other desired purpose.

In order to cover the surface of the track rails and intermediate area, auxiliary sweepers 38, of the ordinary arrangement may be employed at the ends of the car, as shown.

Having now set forth the objects and nature of our invention, and a construction embodying the principles thereof, we wish it to be understood that, in its broadest scope as defined in the claims, our inven-

tion is not to be limited or restricted to the details shown and described.

But what we do claim as new and useful and of our own invention, and desire to secure by Letters Patent is,—

1. In a street sweeping machine, a vehicle having an elevated body portion, a laterally movable horizontal supporting frame disposed beneath said elevated body portion and carried at one end thereby, a sweeper carried by said frame, means for rotating said sweeper, and means for rocking said frame horizontally.

2. In a street sweeping machine, a vehicle having an elevated body portion, a laterally movable vertically tilting horizontal supporting frame disposed beneath said elevated body portion and carried at one end thereby, a sweeper carried by said frame, and means for driving said sweeper.

3. In a street sweeping machine, a vehicle having an elevated body portion, a laterally movable horizontal supporting frame pivotally suspended at one end thereof beneath said elevated body portion, a sweeper carried by said frame, and means for driving said sweeper.

4. In a street sweeping machine, a vehicle, a vertically disposed shaft journaled therein, a frame carried at one end by said shaft to revolve therewith, a horizontally disposed sweeper carried by said frame, means for rotating the sweeper, and means for rocking said shaft.

5. In a street sweeping machine, a vehicle, a vertically disposed shaft journaled therein, a frame carried at one end by said shaft to revolve therewith, a sweeper frame pivotally suspended from said first mentioned frame, a sweeper carried in said sweeper frame, means to rotate the sweeper and means to rock said shaft.

6. In a street sweeping machine, a vehicle, a vertically disposed shaft journaled therein, a frame carried at one end by said shaft to revolve therewith, a shaft horizontally disposed in said frame, a sweeper pivotally supported on said horizontally disposed shaft, means to rotate said sweeper and means for rocking said vertically disposed shaft.

7. In a street sweeping machine, a vehicle, a vertically disposed shaft journaled therein, a frame carried by said shaft to revolve therewith, a pivot horizontally disposed in said frame, a sweeper frame pivotally suspended from said pivot, a sweeper mounted in the sweeper frame and disposed horizontally at one side of said pivot, said sweeper frame having an extension to the opposite side of said pivot, a motor mounted on said extension to rotate the sweeper, and means for rocking said shaft.

8. In a street sweeping machine, a vehicle, a carriage mounted for longitudinal

movement thereon, a sweeper supported at one end from said carriage for lateral swinging movement relative to the vehicle, means for actuating the sweeper, and means for laterally swinging the same.

9. In a street sweeping machine, a vehicle having longitudinally extending trackways, a carriage mounted thereon to move along said trackways, a sweeper supported at one end from said carriage for lateral swinging movement relative to the vehicle, means for actuating said sweeper, and means for laterally rocking the same.

10. In a street sweeping machine, a vehicle having longitudinally extending trackways, a carriage mounted thereon to move along said trackways, a vertical shaft journaled in said carriage, a horizontally disposed sweeper supported from said shaft, means for rocking said shaft and means for actuating said sweeper.

11. In a street sweeping machine, a vehicle having trackways, a carriage mounted thereon to move along said trackways, a vertical shaft journaled in said carriage, a horizontally disposed sweeper pivotally supported from said shaft for vertical tilting movement, means for rocking said shaft, and means for rotating the sweeper.

12. In a street sweeping machine, a vehicle having trackways, a carriage mounted thereon to move along said trackways, a vertical shaft journaled in said carriage, a horizontally disposed sweeper supported from said shaft, means for rocking said shaft, means for actuating said sweeper and means to permit vertical movement of the sweeper with relation to its support.

13. In a street sweeping machine, a vehicle having an elevated body portion, longitudinally extending trackways carried thereby, a carriage mounted upon said trackways, a horizontally disposed sweeper supported beneath said elevated body portion from said carriage, means for actuating said sweeper, and means for rocking the same laterally with reference to the vehicle.

14. In a street sweeping machine, a vehicle having an elevated body portion, longitudinally extending trackways carried thereby, a carriage mounted upon said trackways, a vertically disposed shaft

mounted in said carriage, a horizontally disposed sweeper frame carried by said shaft beneath said elevated body portion, means for rocking said shaft and means for actuating said sweeper.

15. In a street sweeping machine, a vehicle having end portions and an elevated body portion connecting them, supporting wheels for the end portions, longitudinally extending trackways carried by the intermediate elevated body portion, a carriage mounted upon said trackways, a horizontally disposed sweeper suspended beneath the elevated body portion from said carriage, means to actuate said sweeper, and means to swing the same laterally with reference to the vehicle.

16. In a street sweeping machine, a vehicle, a vertically disposed shaft journaled therein, a frame carried by said shaft to revolve therewith, a sweeper frame pivotally suspended at one end from said first mentioned frame, a sweeper carried by said sweeper frame, a cab mounted upon the other or free end of said sweeper frame, means controlled from said cab to rock said shaft and to rotate said sweeper.

17. In a street sweeping machine, a vehicle, a sweeper frame pivotally suspended at one end therefrom, a sweeper for said sweeper frame, a cab mounted on the free end of said sweeper frame, and means located in said cab for controlling the pivotal movements of said sweeper frame.

18. In a street sweeping machine, a vehicle, a sweeper frame pivotally suspended at one end therefrom, a sweeper for said sweeper frame, a cab mounted on the free end of said sweeper frame, and means located in said cab for controlling the pivotal movements of said sweeper frame, and for controlling the operation of said sweeper.

In testimony whereof we have hereunto set our hands in the presence of the subscribing witnesses, on this 21st day of September A. D. 1914.

FRANK HEDLEY.
JAMES S. DOYLE.

Witnesses:

H. P. TITUS,
WARREN MARCUS.