M. SKRZYSZEWSKI.

STREET SWEEPING MACHINE.

APPLICATION FILED FEB. 15, 1915.

1,176,408.

Patented Mar. 21, 1916.

5 SHEETS—SHEET 1.

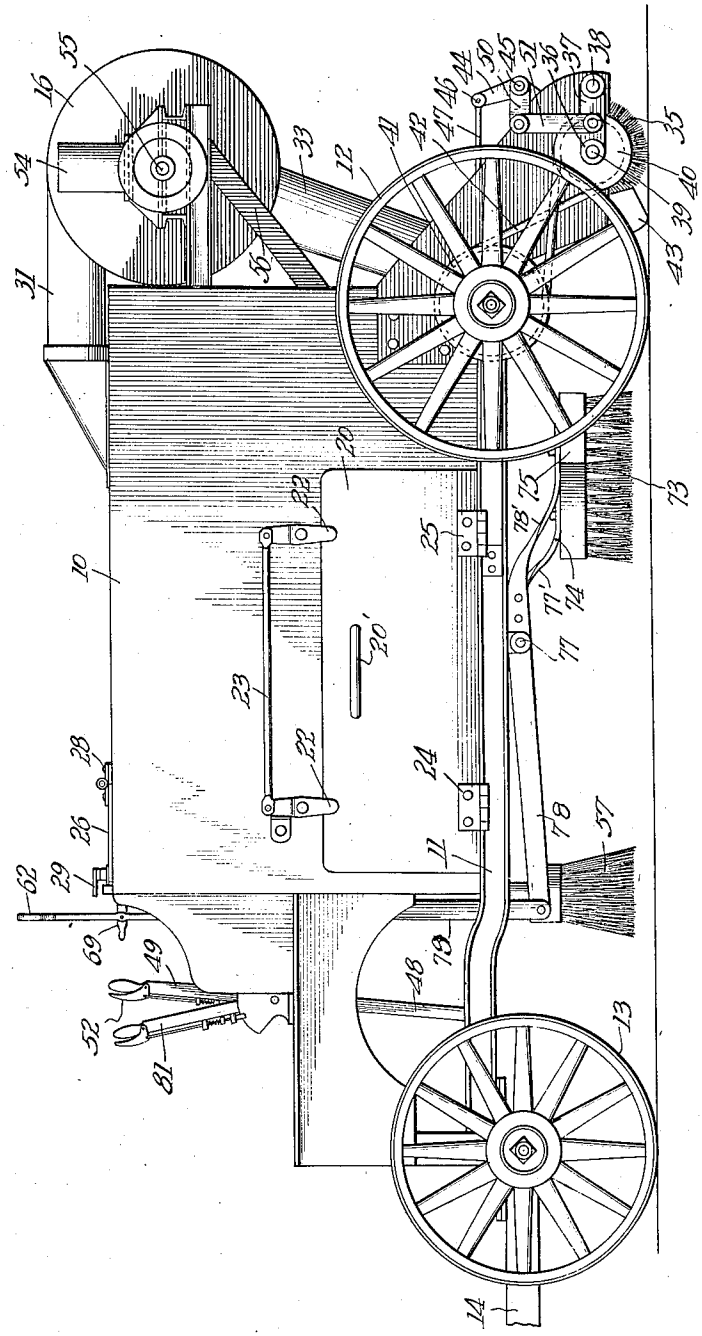

Fig. 1.

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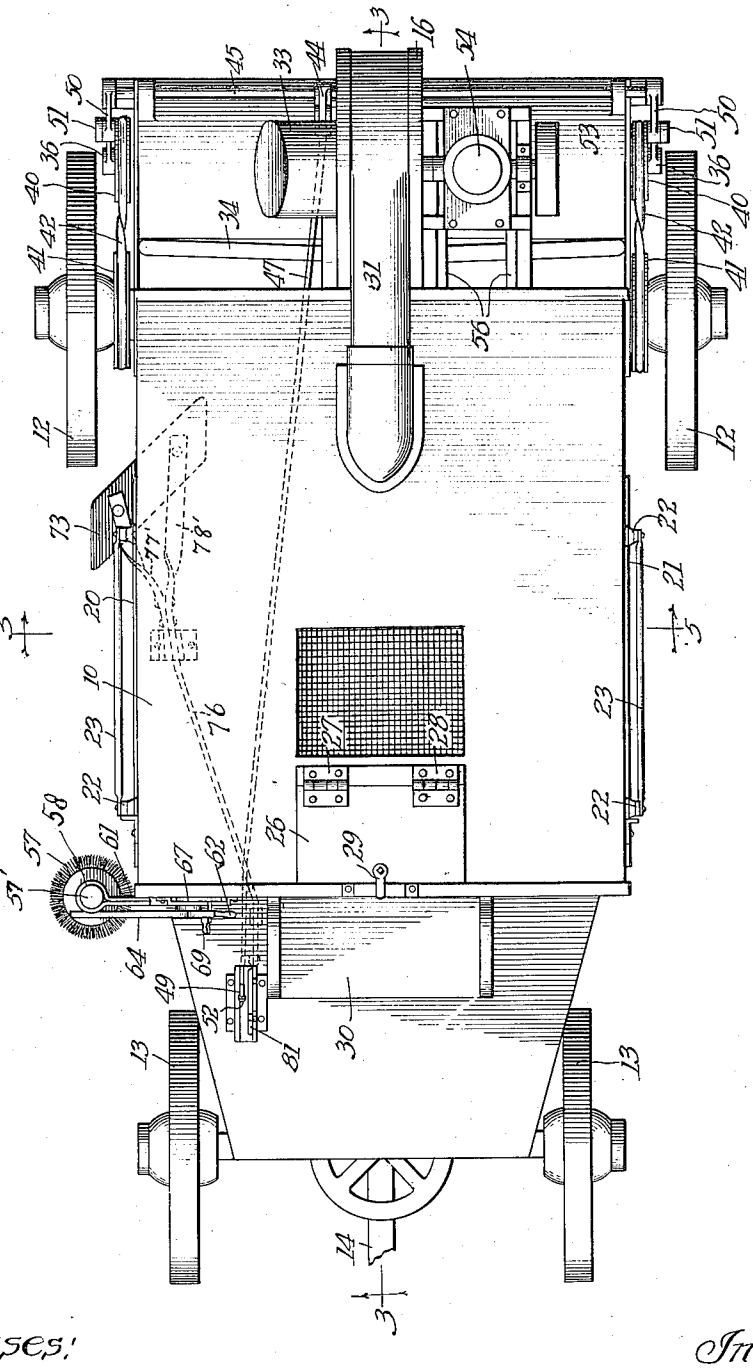

Fig. 2.

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Fig. 3.

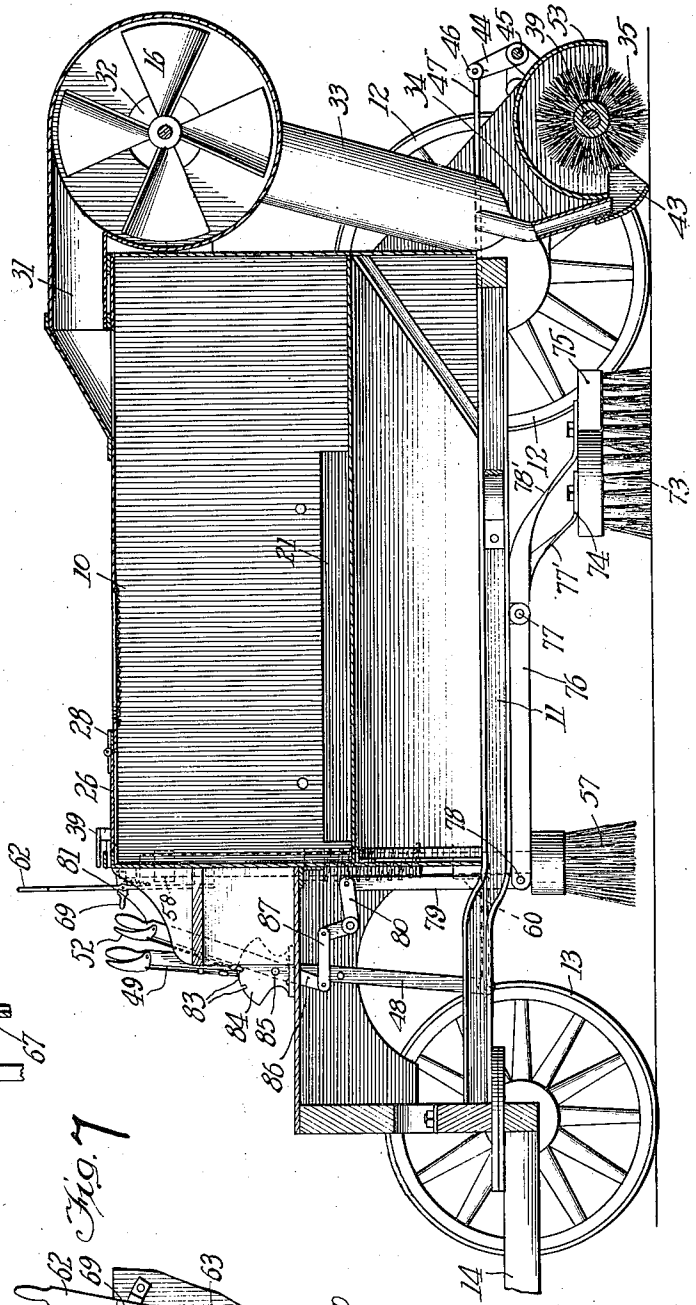


Fig. 8.

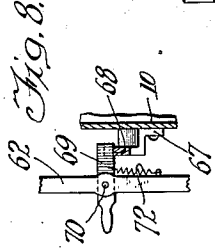
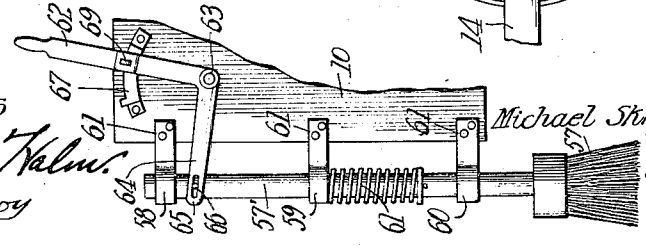


Fig. 7



Witnesses

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5 SHEETS—SHEET 4.

Fig. 4.

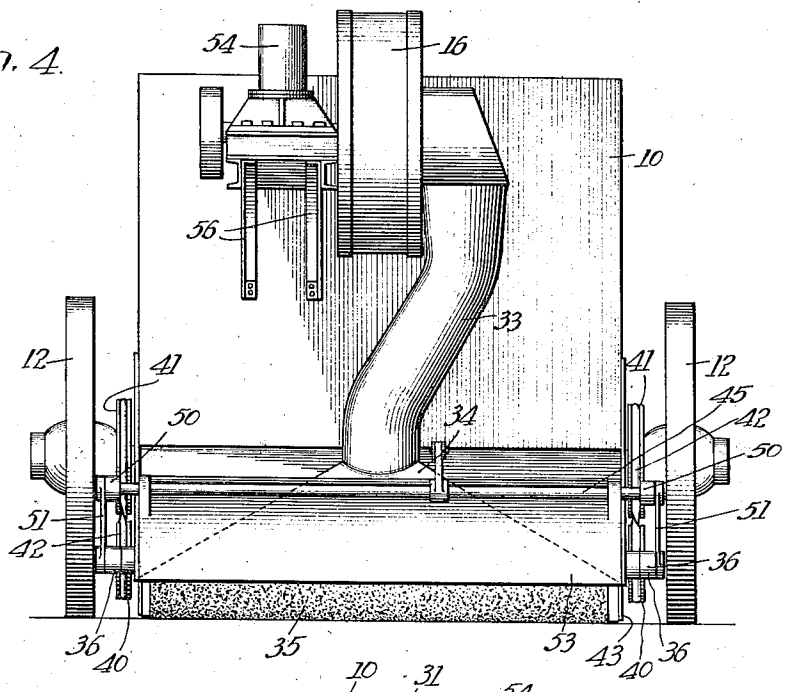
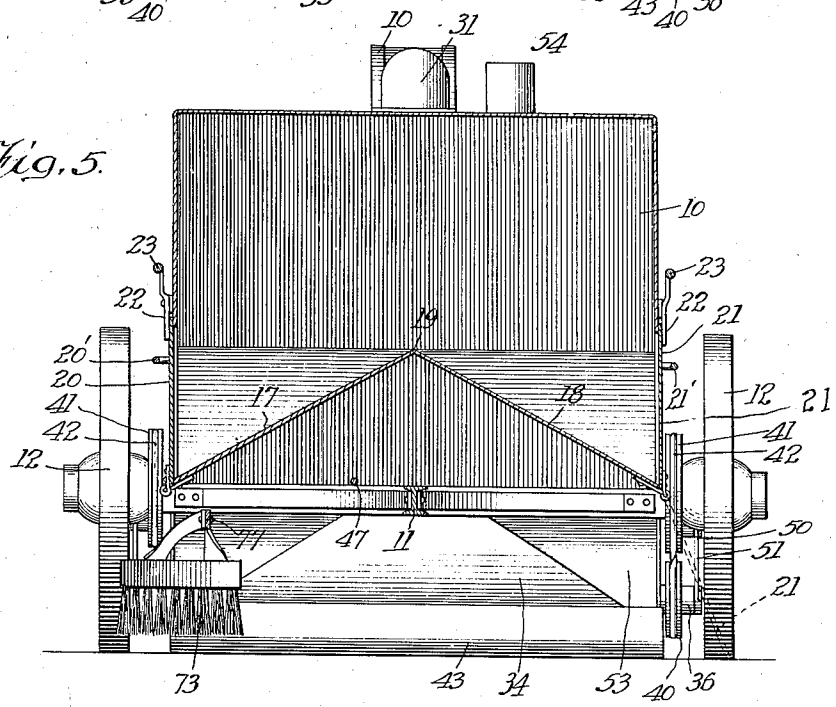


Fig. 5.



Witnesses:

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5 SHEETS—SHEET 5.

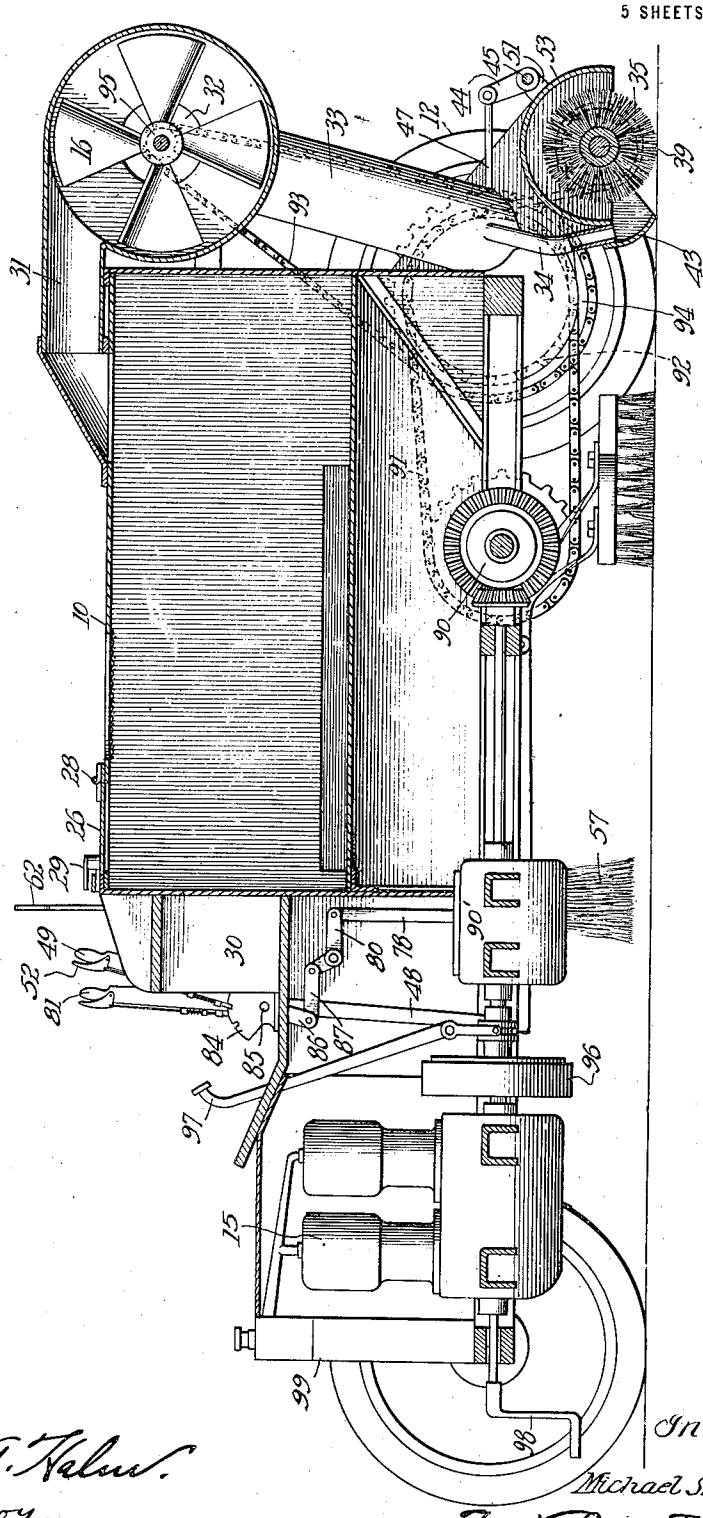

Fig. 6.

Witnesses
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W. P. Kilroy.

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Foster Barr & Mann Attys.

UNITED STATES PATENT OFFICE.

MICHAEL SKRZYSZEWSKI, OF CHICAGO, ILLINOIS.

STREET-SWEEPING MACHINE.

1,176,408. Specification of Letters Patent. Patented Mar. 21, 1916.

Application filed February 15, 1915. Serial No. 8,171.

To all whom it may concern:

Be it known that I, MICHAEL SKRZYSZEWSKI, a subject of the Emperor of Austria-Hungary, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Street-Sweeping Machines, of which the following is a specification.

My invention relates to improvements in street sweeping machines.

One of the general objects of my invention is to cheapen the construction of, simplify and improve machines that may be drawn by horses, or made self propelling, whereby to efficiently sweep up and remove from the roadway accumulations of dirt and dust. And still another object of my invention is to provide means for easily and quickly discharging the dust and dirt from the container.

Other and further objects of my invention will become readily apparent to persons skilled in the art, from a consideration of the following description when taken in conjunction with the drawings, wherein—

Figure 1 is a side elevation of the machine. Fig. 2 is a plan view thereof. Fig. 3 is a longitudinal section taken on line 3—3 of Fig. 2. Fig. 4 is a rear elevation of the machine. Fig. 5 is a transverse section taken on line 5—5 of Fig. 2. Fig. 6 is a longitudinal sectional view, similar to Fig. 3, showing the vehicle as it will appear when driven by an internal combustion engine. Figs. 7 and 8 are enlarged views of brush lifting and supporting mechanism.

In all the views the same reference characters are employed to indicate similar parts.

My invention consists essentially of a dust tight bin or container 10, mounted upon a chassis comprising a frame 11, carried by two pair of traction wheels 12 and 13.

In the exemplification shown in Fig. 3 the vehicle is to to be drawn by horses, by hitching them to swingle trees carried by the tongue 14, while in the exemplification shown in Fig. 6, a gasolene engine 15 is provided for propelling the vehicle, by use of the usual transmission gearing connected with the rear traction wheels 12, and for rotating the suction fan 13, as will be hereinafter more fully explained.

The bin is provided with a bottom that is inclined from a central plane, the walls of the floor 17, 18 being inclined from an apex 19, as shown in Fig. 5, so that the dirt and dust deposited in the container, or bin 10, will slide down the inclined planes 17 and 18 to and out of the doors 20 and 21, when said doors are open. In Fig. 5, the door 21 is shown open, in dotted line, so that the dirt will slide down the inclined planes 17 and 18 and over the doors 20—21 to the roadway. The doors 20 and 21 are held closed by means of buttons 22, of which there are two for each door, each pair being connected together by a connecting bar or link 23. When the lower ends of the buttons 22 are turned into substantially horizontal position so as to be out of the path of the door, by means of the hand rail 23, as shown in Fig. 1, the door can then be opened into the dotted line position shown in Fig. 5. The doors, 20 and 21 are hinged at their lower edges, to the frame 11, as at 24, and 25, and when the doors are raised and closed by the buttons 22—22 the bin 10 is practically dust tight. Another door 26 is made in the top wall of the bin 10 and hinged thereto, as at 27 and 28, and secured in place by a latch 29. This door is easily in reach of the driver's seat 30 so that by opening this door and looking into the bin he can tell whenever it is substantially full and requires emptying.

Mounted upon the rear of the bin 10 is a fan 16, for operating the pneumatic dust elevator, connected to the bin by a conduit 31; the eye 32 of the fan being connected by conduit 33 with a relatively flat, thin receiving nozzle 34. The nozzle 34 which is relatively narrow, as shown in Fig. 3, extends to substantially the full width of the vehicle, as shown in Fig. 4, and terminates immediately in front of the rotatable brush 35. The brush 35, at each end, is journaled in bearings 36 formed in a pivoted link 37, pivoted to the brush-hood, as at 38. The brush shaft 39, carries a pulley 40, which is secured thereto, and which is driven by a pulley 41, by means of a belt 42 from the traction wheel 12, on each side of the machine.

Secured to the front end of the nozzle 34, is a fiexible guard 43 against which the dust and dirt is swept, in front of the lower end of the nozzle 34 by the brush 35. The dirt and dust is raised into the nozzle by the partial vacuum established therein by the fan. A bell crank arm 44 is pivoted to the brush-hood, as at 45, the upper end of

which is connected, as at 46, to a rod 47. The rod 47 extends forward and is connected to the lower end 48 of a shifting lever 49, the other end 50 of the bell crank lever 44 is connected by a link 51 midway of the link 37. By movement of the hand lever 49 fore and aft, the brush 35 may be lifted free of the roadway or may be brought into contact therewith, and held in selected position by a latch lever 52 operating in conjunction with a quadrant provided with a notch for holding the lever in place.

The brush 35 is provided with a canopy or housing 53, overlying its top surface to prevent the dust from being scattered into the surrounding air.

In the horse drawn vehicle I prefer to rotate the suction fan 16 by means of an independent gas engine 54, which is connected directly to the fan shaft 55, and which is preferably mounted upon a bracket 56 secured to the bin 10. In the motor driven modification I drive the fan 16 from the traction wheels.

A vertically disposed substantially round brush 57 is adapted to sweep the dirt and dust from the curb of a roadway and is mounted in bracket bearings 58, 59 and 60 that are secured to the sides of the bin 10, as at 61, the staff 57′, of the brush 57 is slidable in these brackets and is resiliently held in operative position, or in contact with the curb, by means of an open helical spring 61, which surrounds the staff 57′ and bears against the bracket 59. A hand lever 62 is pivoted to the bin 10, as at 63, and is provided with a longitudinally extending arm 64, slotted as at 65, and engaging a pin 66 projecting from the staff 57′ whereby the brush 57 may be lifted by means of the hand lever 62 against the resistance of the spring 61. A quadrant, or sector 67, is provided with a notch 68 in which the latch 69, which is pivoted to the lever 62, as at 70, engages to hold the brush 57 in elevated position. The latch end 69 is resiliently depressed by a spring 72 so that when the lever 62 is moved into position shown in Fig. 7, the latch 69 will automatically engage the notch 68, and hold the brush 57 in elevated position which is desirable when the machine is not moving along the curb of the roadway.

The machine is provided with another sweeping brush 73, the outer forward end 74 of which is somewhat in advance of the rear end 75 so as to sweep the dirt and dust into a windrow that it may be in the path of the main rotary brush 35 in the progress of the machine. This brush 73, catches the dirt that is swept forward by the brush 57 and moves it farther over toward the center of the machine within the path of the rotary brush 35.

It is not always desirable that the brush 73 should be in contact with the roadway and to this end I provide a pivoted lever 76, bifurcated at its rear end, forming prongs 77′ and 78′ each of which prongs is connected to the brush and which lever is pivoted to the frame of the machine, as at 77; the front end 78 extending forwardly of the bin and being connected to link 79 that is pivoted to one end of the bell crank 80. A hand lever 81, provided with a latch 82 adapted to engage a notch 83 in the quadrant 84, is pivoted, as at 85, and has its lower end 86 connected to a link 87 that engages the other end of the bell crank 80, whereby the brush 73 may be raised or lowered by moving the hand lever 81 forwardly or rearwardly, as the case may be, and securing it in selected position in either of the notches 83—83. It will thus be seen that either of the brushes, 57 and 73, may be held in contact with the roadway or lifted therefrom by proper manipulation of the hand levers 49 and 81.

In the modification shown in Fig. 6, wherein the vehicle is self propelling, the engine 15 is connected to the driving wheels 12—12 by means of the usual transmission gearing 90 and the chains 91—91 passing over sprocket wheels 92—92 secured to the respective traction wheels 12—12 of the vehicle. A chain 93 passes over a similar, but larger wheel 94 on one of the traction wheels 12 of the vehicle, and onto a smaller sprocket pinion gear 95, secured to the fan shaft 55, whereby to drive the fan 16. A friction clutch 96, is operable by a foot lever 97 to connect the engine 15 with the speed changing transmission gear mechanism 90′. A crank 98 is employed to start the engine as usual with self propelling vehicles of this character and a radiator 99 is the means for cooling the circulating water in the cylinders of the engine.

When my sweeping machine is designed to be drawn by borses, I employ a gasolene engine for driving the rotary fan 16 so that no extra load is imposed upon the animals. In the modification the propelling engine furnishes power for this purpose and by this means the rotary fan is driven at speeds substantially proportional to the speed of the vehicle, over the roadway, so as to increase the sweeping capacity of the machine proportionally to the increased speed of the moving vehicle.

My sweeping machine may be used in the daytime without offending the persons upon the street as the vacuum produced in the throat or nozzle 34 by the fan 16, in connection with the housing over the brush, to lift the dirt from the rotating brush 35, does not permit of any material amount of dust to escape into the surrounding atmosphere, therefore the operation of the machine is not obnoxious, to pedestrians when the streets are crowded.

While I have herein shown a single embodiment of my invention for the purpose of clear disclosure, it is manifest that many changes may be made in the arrangement and formation of the parts, within the scope of the appended claim, without departing from the spirit of my invention.

Having described my invention, what I claim is:—

In a street sweeper the combination of a receptacle for dust; a hood communicating therewith inclosing the upper part of a rotary brush; a brush; a link pivoted to each side of the hood in rear of the brush; a brush shaft carried in bearings in the front ends of said links; a driven pulley on the brush shaft; a vehicle traction wheel carrying a driving pulley; a belt connecting said pulleys; a crank hanger shaft parallel with the brush shaft supported on said hood; arms extending from said shaft; a link at each end connecting said arms to the respective brush supporting links; another arm extending from said crank hanger shaft; a rod connecting said arm to a controlling lever to raise or depress the brush and an adjustable controlling lever pivotally mounted on the front of the vehicle to which said rod is connected.

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

MICHAEL SKRZYSZEWSKI.

In the presence of—

STANLEY W. COOK,

MARY F. ALLEN.