

E. S. ESTLIN.
STREET SWEEPER.
APPLICATION FILED JUNE 2, 1910.

996,230.

Patented June 27, 1911.

4 SHEETS—SHEET 1.

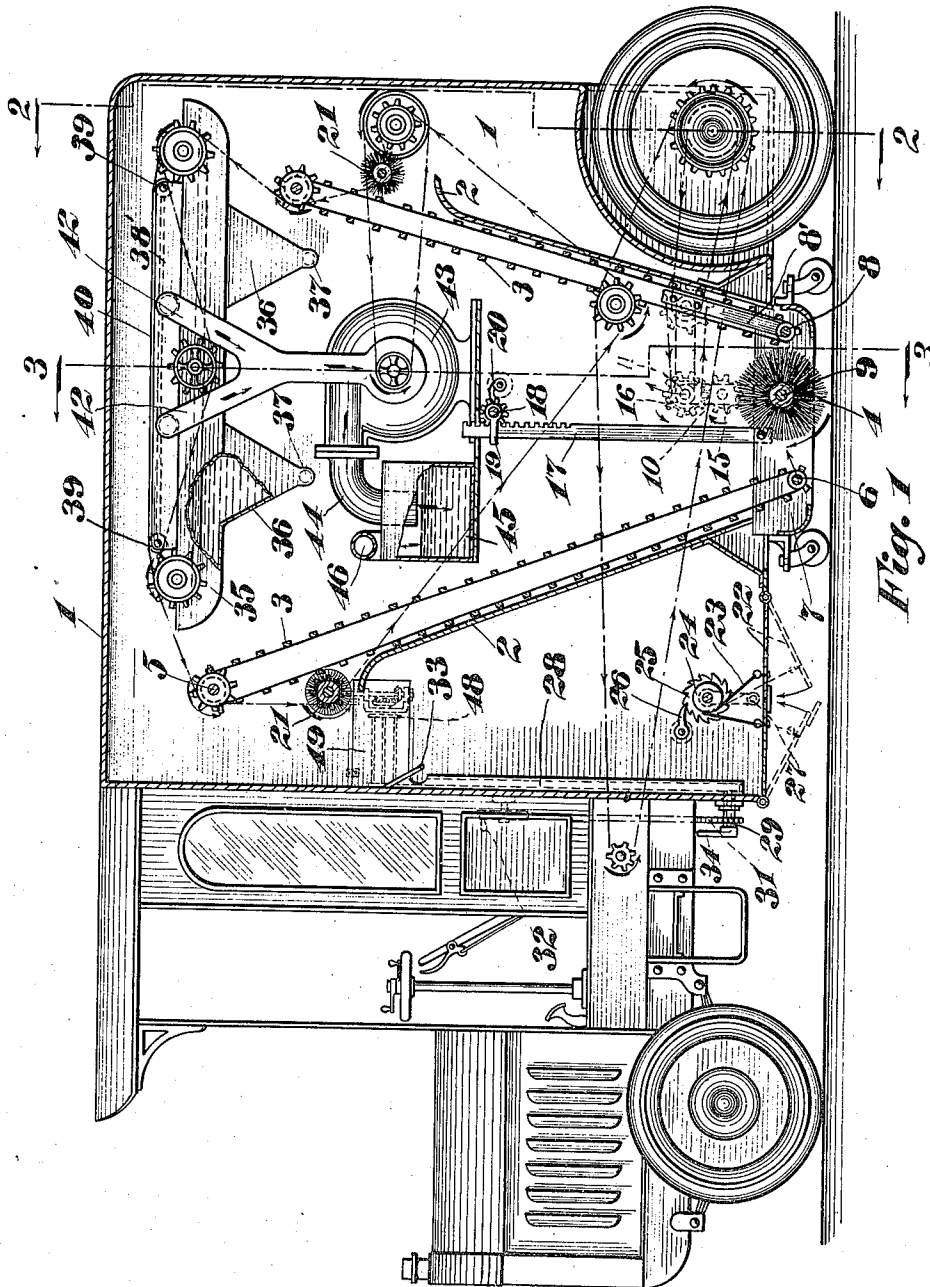


Fig. 1

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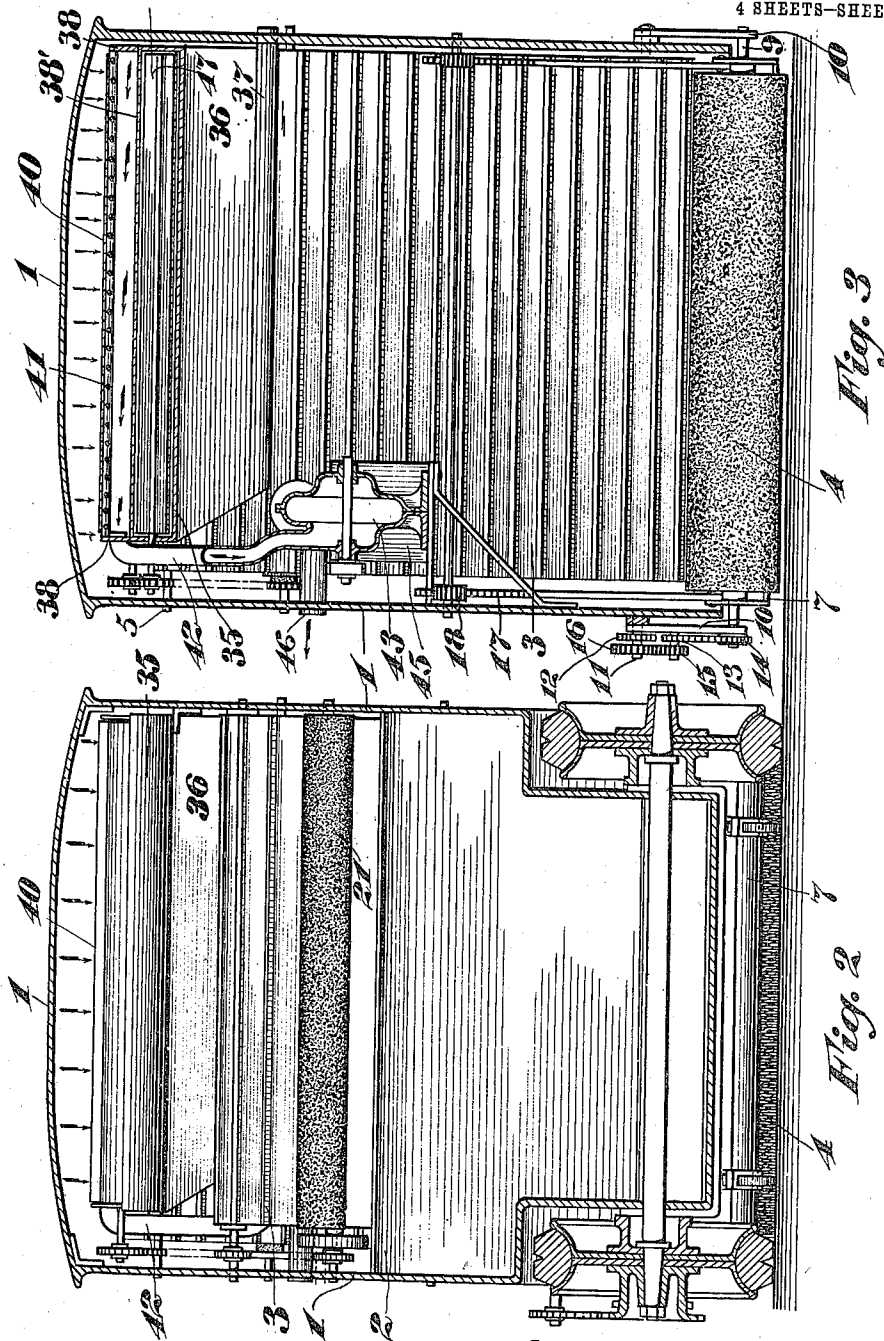
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4 SHEETS—SHEET 2.



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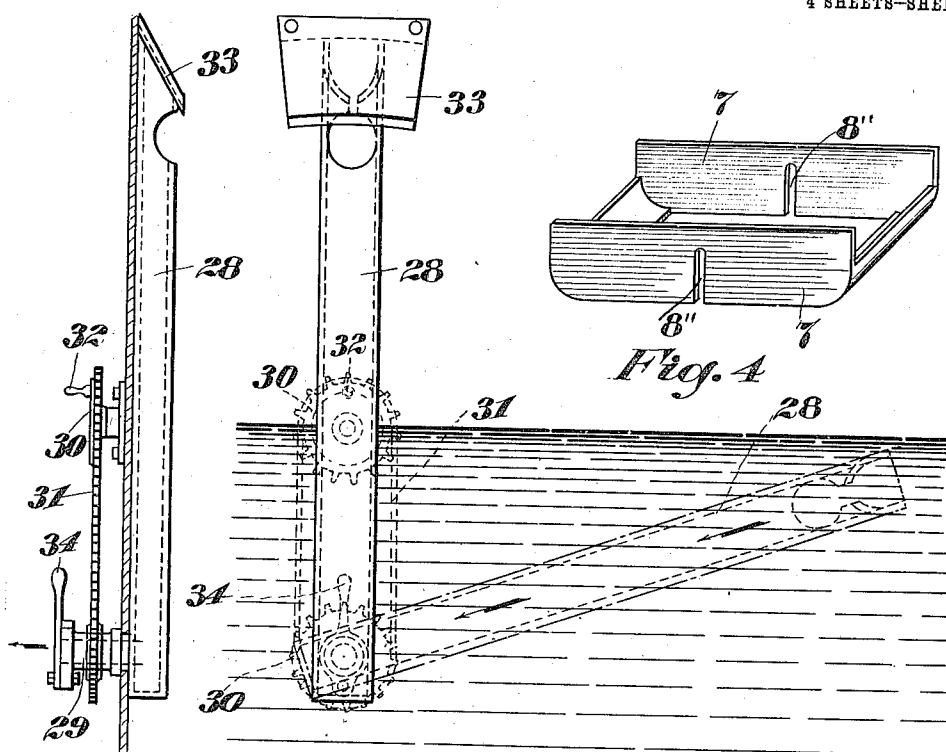


Fig. 5

Fig. 6

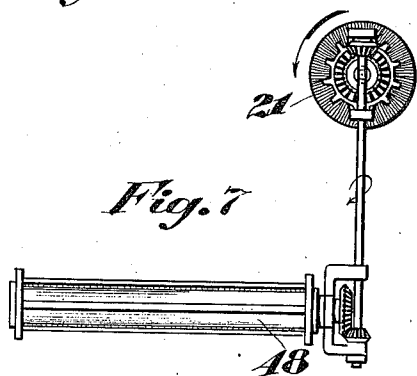


Fig. 7

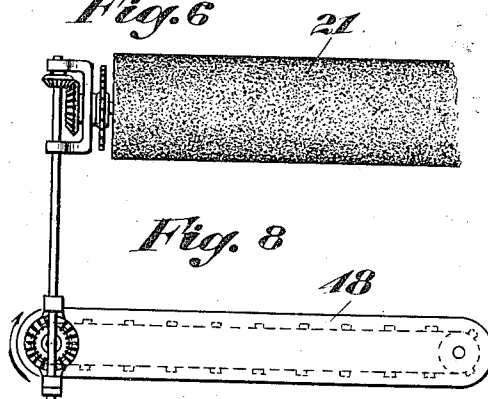


Fig. 8

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4 SHEETS—SHEET 4.

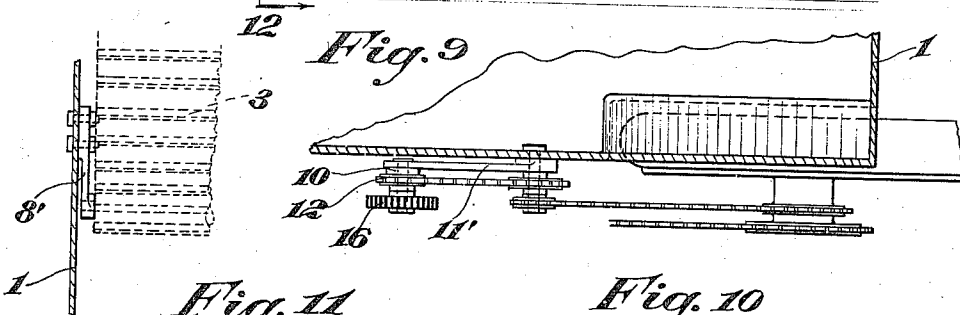
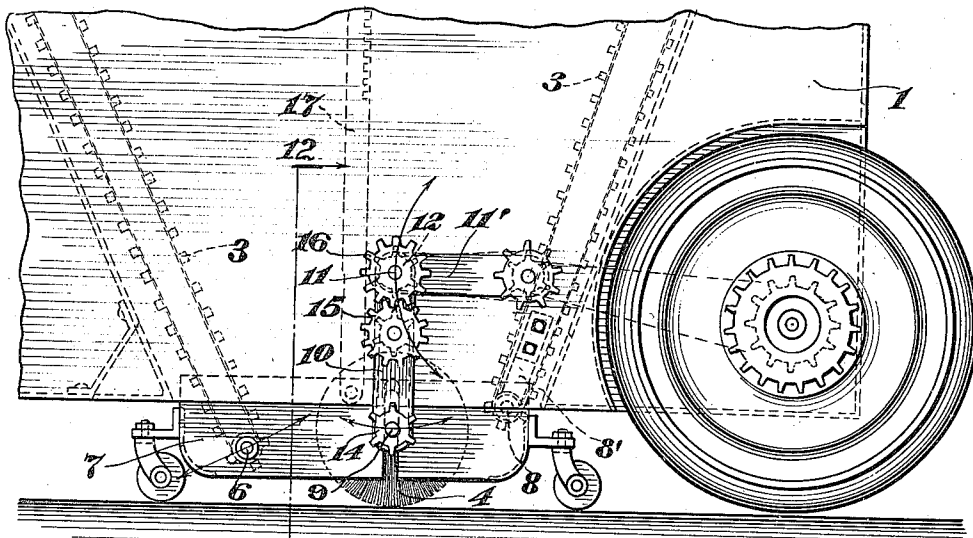


Fig. 11

Fig. 10

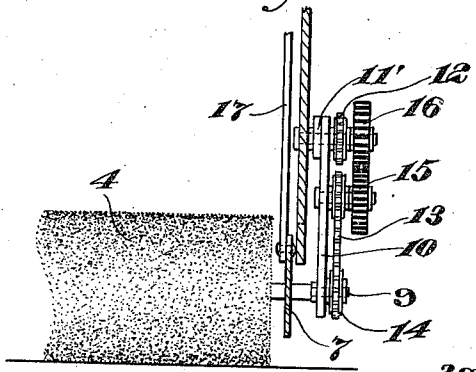


Fig. 12

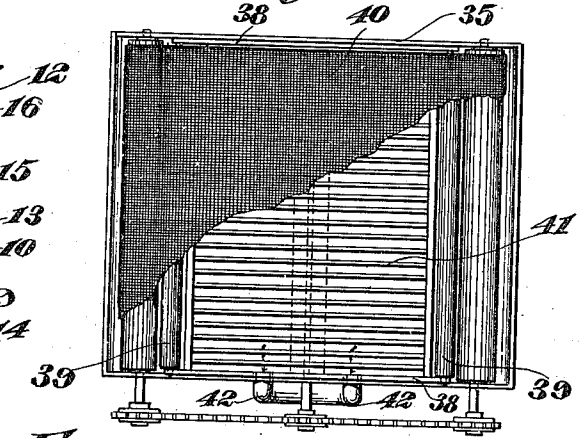


Fig. 13

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UNITED STATES PATENT OFFICE.

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STREET-SWEEPER.

996,230.

Specification of Letters Patent. Patented June 27, 1911.

Application filed June 2, 1910. Serial No. 564,623.

To all whom it may concern:

Be it known that I, EUSTACE SENIOR ESTLIN, a subject of the King of Great Britain, residing at Winnipeg, county of Selkirk, in the Province of Manitoba, Canada, have invented certain new and useful Improvements in Street-Sweepers; and I do hereby declare that the following is 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.

The invention to be hereinafter described relates to street sweeping machines, and more particularly to an automobile street sweeper.

This application is the parent application from which my application Serial No. 601,203, filed January 6, 1911, has been divided.

In order to more clearly disclose the construction, operation and use of the invention, reference should be had to the accompanying drawings forming part of the present application.

Throughout the several figures of the drawings, like reference characters designate the same parts.

In the drawings: Figure 1 is a central, vertical, longitudinal section through the body of the casing, showing all operating parts; Fig. 2 is a vertical cross section on line 2—2 of Fig. 1, looking in the direction of the arrows; Fig. 3 is a vertical cross section on line 3—3 of Fig. 1, looking in the direction of the arrows; Fig. 4 is a perspective of the sweeper casing, detached; Fig. 5 is a side elevation of the drain pipe, raised; Fig. 6 is a front view of the drain pipe, its lowered or operative position being shown in dotted lines; Fig. 7 is an end view of an auxiliary conveyer, detached; Fig. 8 is a right-hand side elevation of the auxiliary conveyer; Fig. 9 is an enlarged, fragmentary, side elevation of the mounting of the brush and the means for driving it; Fig. 10 is a top plan view of the construction shown in Fig. 9; Fig. 11 is an enlarged, fragmentary view of the brackets 8' for supporting the lower shaft 8 from the sweeper body; Fig. 12 is a vertical cross section on line 12—12 of Fig. 9, looking in the direction of the arrows; and Fig. 13 is a top plan view of the collecting tank and its cooperating parts, the apron being partly broken away.

Referring to the drawings in detail, 1 in-

dicates a large vehicle body or box-like casing, in which all of the operating parts are mounted. This body is mounted directly on the axles of the vehicle. A wide opening is left through the bottom of the casing and extending completely across the bottom from side to side thereof. Leading upwardly from each edge of this opening is an inclined wall 2. These two inclined walls divide the vehicle body into two compartments or chambers. Above each of the inclined walls is mounted a traveling conveyer 3, adapted to receive sweepings from the rotary brush 4. The upper end of the forward conveyer is journaled on a transverse shaft 5 mounted in the walls of the vehicle body 1. The lower end of the conveyer is journaled on a shaft 6 mounted in the forward part of a casing 7 supported on independently moving casters. The casing 7 is adapted to move independently of the body of the vehicle to follow the irregularities of the surface over which the vehicle travels. The movement of this casing, of course, must be independent of the rotary brush 4. To that end, the side walls of the casing are provided with slots 8", through which the ends of the axles of the brush project. By this construction it is possible for the casing 7 to have vertical movement relatively to the axle of the brush 4. The lower shaft 8 of the rear conveyer 3 is mounted in fixed bearings or plates 8' secured to the outer wall of the vehicle. The shaft 9 of the brush 4 is journaled in the lower ends of arms or plates 10, which are pivotally mounted on short stub shafts 11 extending from the forward ends of the link 11', the rear end of which are pivoted to the side wall of the body of the machine. By this arrangement, it is possible for the shaft 9 to have slight forward and rearward movement with the casing 7. The slots 8," of course, permit slight vertical movement of the casing relatively to the shaft 9 of the brush 4. A train of gears 12, 13, 14, 15, and 16 actuated from the rear axle may be used for driving the shaft 9 of the brush 4.

At times, it may be desired to raise the casing 7 from the surface of the road. For this purpose, rack and pinion mechanism have been provided, comprising a rack bar 17 pivotally connected to each end of the casing and a pinion 18 adapted to engage each rack. The pinions are secured to an operating shaft extending transversely through the machine body. In order to

maintain engagement between the pinions and racks, links 19 are used. These links are pivotally mounted on the shaft to which the pinions 18 are secured. The racks are passed through the links in such position that the links hold the racks in engagement with the pinions at all times. Dogs 20 are used to engage the pinions 18 and hold the racks in adjusted position. By raising the racks, the casing will be tilted rearwardly and upwardly. As the casing swings rearwardly, the walls of the slots 8" will engage the shaft 9 and cause it to swing rearwardly and upwardly from the pivotal points of the arms 10. As the shaft 9 swings rearwardly and upwardly, the brush 4, of course, will move out of contact with the road surface. Consequently, in order to render the sweeping apparatus inoperative, it is only necessary to raise the racks 17 and secure them in raised position.

The upper ends of the conveyers are at considerable distances above the upper ends of the plates 2, and are adapted to deliver sweepings into the chambers or compartments between the plates and the ends of the vehicle body. In order to assist in this delivery, rotary brushes 21 are used. These brushes rotate in contact with the surfaces of the traveling conveyers and revolve in directions opposite to the travel of the conveyers. They operate to brush all adhering matter from the conveyers so that it may drop into the chambers or compartments.

In order to discharge sweepings, &c., from the chambers or compartments, drop bottoms or doors 22 are provided. These doors are hinged to the walls of the compartments in any well known and usual manner, and are adapted to be raised to operative position by means of cords or chains or like devices 23. These cords have their opposite ends connected respectively to the doors and to a winding drum 24 fixed on a suitable shaft extending transversely of the compartment. One end of the shaft is provided with a ratchet 25 adapted to be engaged by a pawl 26 for holding the drum against reverse rotation. The shaft on which the drum is mounted may be revolved or rotated by means of the crank handle 27, shown in dotted lines in Fig. 1, or by any other suitable means.

In many instances, there will be a very considerable amount of water delivered to the receiving chambers or compartments. The water, of course, will be above most of the solid matter. In order to deliver the water from the compartments, without discharging the solid matter, a drain tube 28 has been provided. The tube comprises a flattened pipe section provided with one closed and one open end. The pipe is provided with an outlet or drain spout 29 near its lower end. This spout projects through

the wall of the chamber or compartment and acts as a pivot as well as a spout. Normally, the tube will be raised or in inoperative position. Its operative position is shown in dotted lines in Fig. 6. In order to raise and lower the drain tube, sprocket wheels 30 and sprocket chain 31 are provided. The lower sprocket wheel is made fast with the spout 29, while the upper one is mounted on a short stub shaft projecting from the wall of the body 1 and is provided with a handle 32. By operating the upper sprocket, it is possible to turn the pipe section 28 on its pivot and so raise or lower the open end, as desired. In order to prevent the entrance of solid matter into the upper end of the pipe section while in raised position, an inclined guard plate 33 is provided. This guard plate is secured to the inner wall of the compartment in such position as to overlie the open end of the pipe section when the pipe section is raised. The outlet 29 may be provided with a suitable valve plate 34 for keeping it normally closed.

During the operation of the machine, a great deal of dust will be forced up, of course, within the box-like body 1. In order to render the machine more efficient and thoroughly sanitary, means have been provided for collecting this dust. The means comprise a large settling tank 35 mounted in the upper part of the body 1. The settling tank is adapted to be filled with water and is provided with hopper bottoms 36 and outlet tubes or pipes 37. The top of the tank, beneath the upper run of the belt, is covered by a plate 38'. Extending upwardly from opposite sides of the tank are plates 38, in the opposite ends of which are journaled rolls 39, over which is passed an endless belt 40. The upper run of this endless belt is supported upon bars or a suitable framework 41, while the lower run is adapted to be immersed in the water of the tank. It will thus be seen that the plates 38, 38' and upper run of the endless belt 40, constitute, substantially, a box or chamber having one traveling surface. Communicating with this chamber are the two branches of a Y tube 42, which is connected to a suction fan 43. The fan 43 creates a suction through the Y tube 42 and within the chamber formed by the belt and plates. This suction, of course, draws the dust laden air onto the upper face of the belt 40. The finer dust will pass through the belt, through the Y tube 42, through the fan 43, out through a discharge pipe 44, and into a collecting tank 45.

The collecting tank is partly filled with an antiseptic solution into which the dust laden air is discharged. After passing through the solution in the collecting tank, the purified air passes into the atmosphere through the pipe 46. The coarser particles

which cannot pass through the material of the belt collect on its surface. As the belt passes through the water in the tank 35, the adhering particles will be washed from it.

5 In order to assist in washing off the particles, a beater 47 is provided. This beater comprises a shaft extending transversely of the tank 35 and provided with a plurality of beating blades. This device is mounted
10 between the plate 38' and the lower run of the endless belt. As it is rotated, its blades will strike the inner face of the lower run of the belt and at the same time stir up the water between the belt surface and plate 38'.
15 In this way, the adhering particles will be loosened and washed from the belt surface.

Where it is desired to remove quantities of snow from the center of the street to the side, an auxiliary conveyer may be used, as
20 shown in dotted lines in Fig. 1. It comprises a simple conveyer 48 of well known construction. Its outer end may be supported by brackets projecting from the side of the box-like body 1. Its inner end is projected
25 through the side of the body 1, the opening for its admission being closed by a door 49. The conveyer 48 may be driven from the forward conveyer by any suitable and well known gearing connections, as
30 clearly shown in Figs. 1, 7 and 8. All traveling and revolving parts may be driven by suitable chain and sprocket connections from the motor of the vehicle, as indicated by arrows in Fig. 1.

35 It is thought that the operation and use of the machine will be clear from the preceding detailed description.

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

1. A street sweeper comprising a box-like body provided with a transverse opening, upwardly inclined walls leading from the edges of the opening and dividing the lower
45 part of the body into compartments, a rotary brush suspended from the box-like body and rotating within the opening in the bottom, means for rotating the brush, and conveyers mounted above the aforesaid inclined
50 walls and adapted to receive sweepings from said brush.

2. A street sweeping machine comprising a box-like body provided with an opening in its lower face, inclined walls leading upwardly from the edges of said opening and

dividing the interior of the body into compartments, a sweeping brush suspended from said box-like body and rotating within the opening, conveyers mounted above said inclined walls, a casing mounted on casters independently of the box-like body and adapted to follow the irregularities of the surface over which the machine travels, connections
60 between the casing and the lower shaft of the forward conveyer, means for operating the aforesaid sweeping brush, and means for operating the conveyers.

3. A street sweeper comprising a box-like body provided with a transverse opening, arms pivotally connected to said box-like
70 body, plates pivotally connected to said arms, a sweeping brush journaled in the lower ends of said plates and rotating in the aforesaid transverse opening, inclined walls leading upwardly from the edges of
75 said opening and dividing the box-like body into compartments, conveyers mounted above said inclined plates and adapted to receive sweepings from said brush and deliver the same into the compartments, means for operating the conveyers, and means for rotating the sweeping brush.

4. A street sweeping machine comprising a box-like body provided with a transverse opening, arms pivotally connected to the
85 walls of the box-like body, plates pivotally connected to said arms, a sweeping brush journaled in the ends of said plates and rotating in the transverse opening, inclined walls leading upwardly from the edges of
90 said opening and dividing the box-like body into compartments, conveyers mounted above said inclined walls and adapted to receive sweepings from the sweeping brush and deliver the same to said compartments, a casing
95 provided with slots for the movement of the axle of the aforesaid sweeping brush and mounted on casters independent of the aforesaid box-like body, means for raising said casing above the surface over which
100 the machine travels, means for holding the casing in raised position, means for operating the conveyers, and means for rotating the sweeping brush.

In witness whereof I have hereunto set
my hand in the presence of two witnesses.

EUSTACE SENIOR ESTLIN.

Witnesses:

J. C. SCHOLFIELD,
JNO. R. MACLEAN.