

E. S. ESTLIN.
DUST COLLECTING TANK FOR STREET SWEEPERS.
APPLICATION FILED JAN. 6, 1911.

1,030,773.

Patented June 25, 1912.

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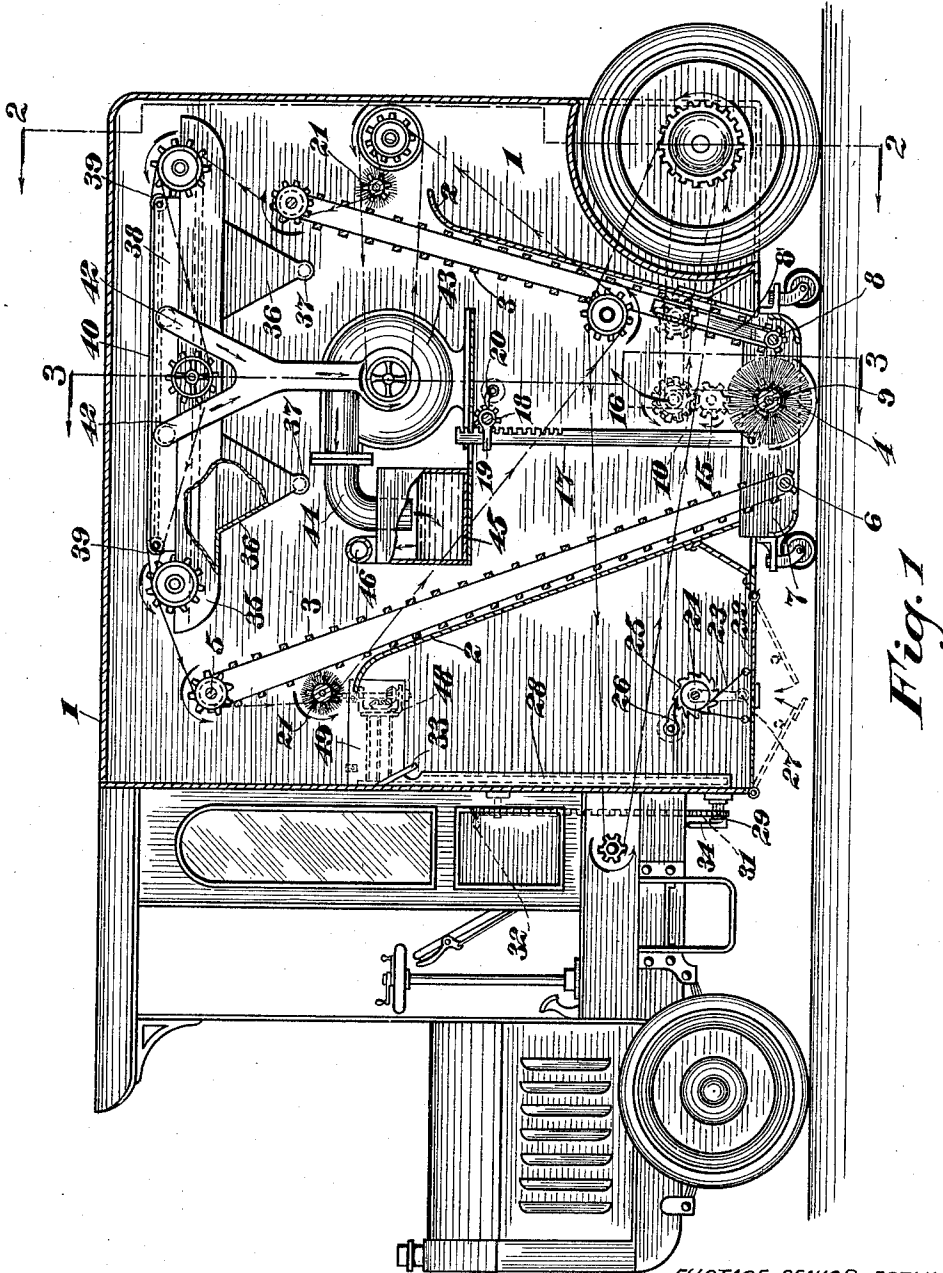


Fig. 1

Witnesses:

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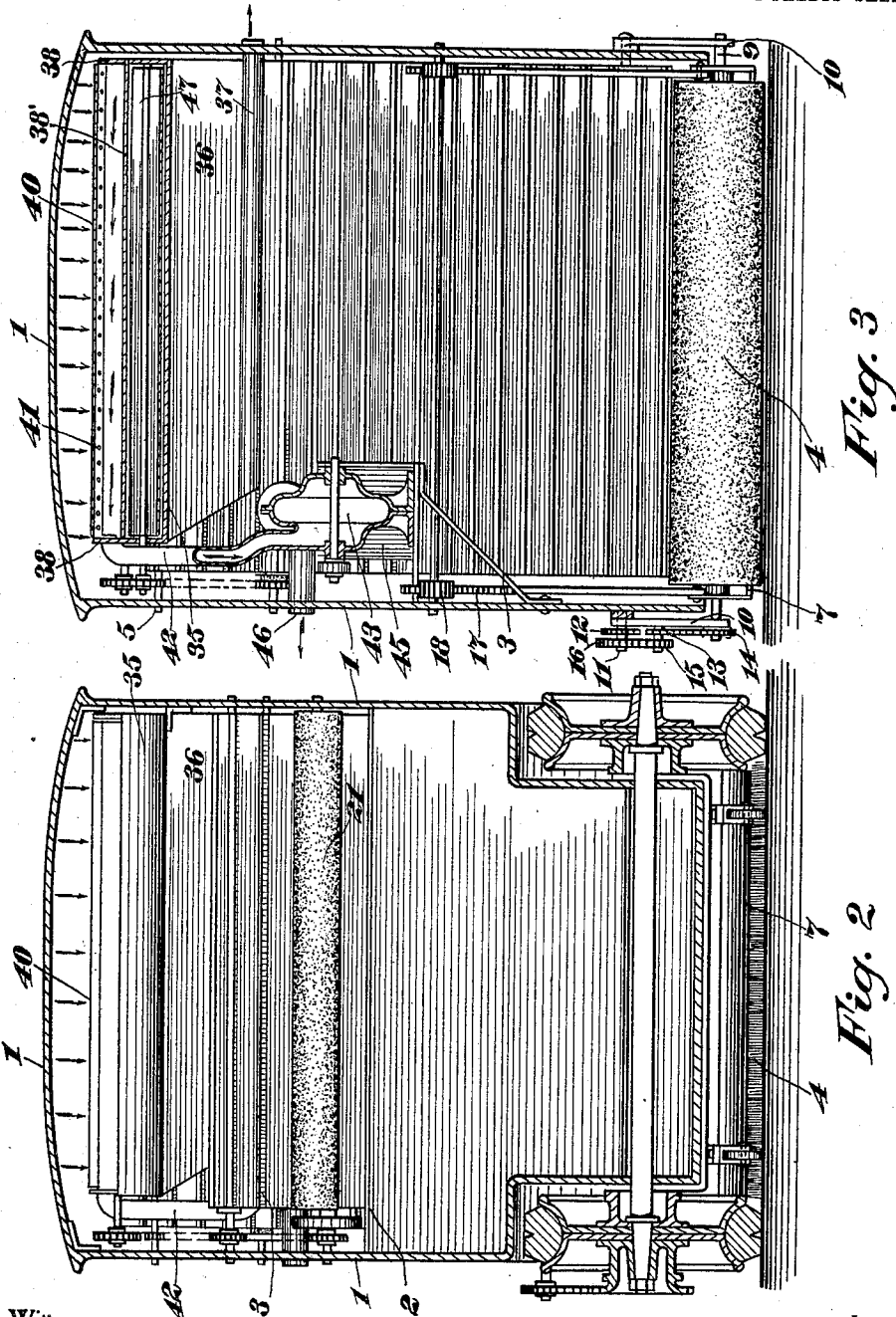


Fig. 3

Fig. 2

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UNITED STATES PATENT OFFICE.

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DUST-COLLECTING TANK FOR STREET-SWEEPERS.

1,030,773.

Specification of Letters Patent.

Patented June 25, 1912.

Original application filed June 2, 1910, Serial No. 564,623. Divided and this application filed January 6, 1911. Serial No. 601,203.

To all whom it may concern:

Be it known that I, EUSTACE SENIOR ESTLIN, a subject of the King of England, residing at Winnipeg, in the Province of Manitoba, Canada, have invented certain new and useful Improvements in Dust-Collecting Tanks for 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.

The present application is a division of application Serial Number 564,623.

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.

Referring to the drawings in detail, 1 indicates a large vehicle body or box-like casing, in which all of the operating parts are mounted. This body may be mounted either directly on the axles of the vehicle or on a suitable chassis suspended from the axles. 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 Fig. 3 extending from the side wall 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 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, guides 19 are used. These guides are pivotally mounted on the shaft to which the pinions 18 are secured. The racks are passed through the guides in such position that the guides 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. Rotary brushes 21 are arranged to 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 section 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.

I do not claim in this application the sweeping or dust elevating mechanism above described, nor the aforesaid means for draining.

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 40 described below, is covered by a plate 38', Fig. 3. Extending upwardly from opposite sides of the tank are plates 38, Fig. 3, in the opposite ends of which are journaled rolls 39, over which is passed an endless belt 40 of textile fabric or other material capable of acting as a bolt or screen which will let the finer dust pass through it while retaining coarser material on its face until reversed and washed in its travel. 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 into the upper face of the belt 40 which is composed of textile fabric adapted to permit the passage of air and very fine material through the same. 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 quenching tank 45. The quenching tank is partly filled with an antiseptic solution into which the dust laden air is discharged. After passing through the solution in the quenching 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. 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 between the plate 38' and the lower run of the endless belt.

5 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'. In this way, the adhering particles will be loosened and
10 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 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 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.

25 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.

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

Changes may be made in the construction, arrangement and disposition of the several parts of the invention, without in any way departing from the field and scope of the same, and it is meant to include all such within this application, wherein only a preferred form has been disclosed.

35 Having thus fully described my invention,

what I claim as new and desire to secure by Letters Patent is:

1. In a dust collector for use in a street sweeping machine, a quenching tank, a partition extending longitudinally therethrough and dividing the tank into upper and lower compartments, an endless traveling belt of screening material mounted with its lower run in the lower compartment which is filled with water and its upper run in the upper compartment, and a suction device operating within the upper of said compartments and upon the upper run of the aforesaid apron to draw fine dust through said belt and remove it from said compartment.

2. In a dust collector for use in street sweeping machines, a quenching tank, a partition extending longitudinally through said tank and dividing the same into an upper and a lower compartment the latter being filled with water, an endless traveling belt of screening material mounted with its lower run in the lower of said compartments and its upper run in the upper of said compartments, a frame work for supporting the upper run of said belt, a suction device between said frame work and the aforesaid partition and operating within the upper compartment and upon the upper run of said belt, and a beater mounted within the lower compartment between the aforesaid partition and said lower run of said belt and operating upon said belt.

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

EUSTACE SENIOR ESTLIN.

Witnesses:

G. H. MILLER,
WALTER E. ROOKE.