Feb. 17, 1925. 1,527,010

W. B. POWELL

STREET CLEANING MACHINE

Filed Sept. 16, 1922 3 Sheets-Sheet 1

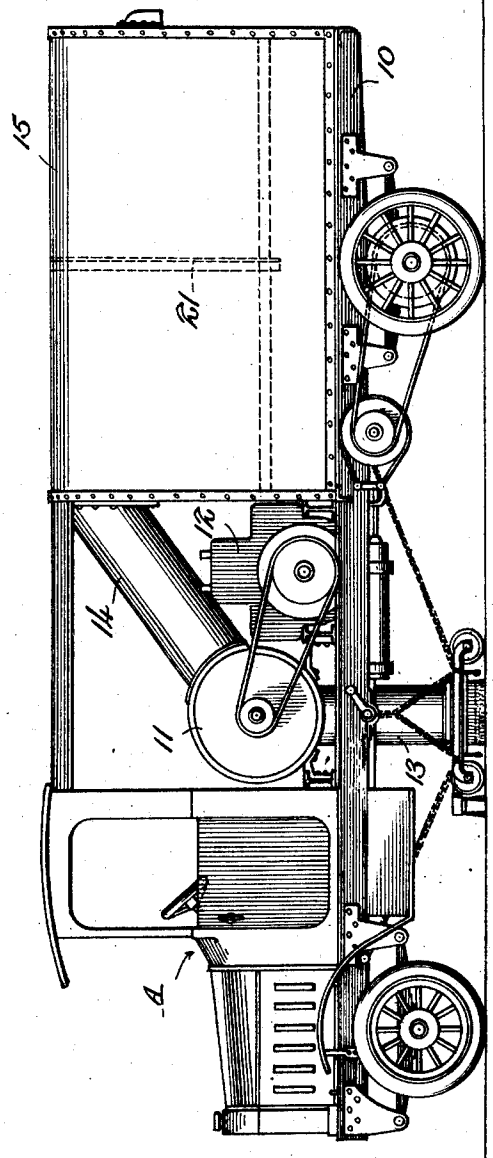


Fig. 1.

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Filed Sept. 16, 1922 3 Sheets-Sheet 2

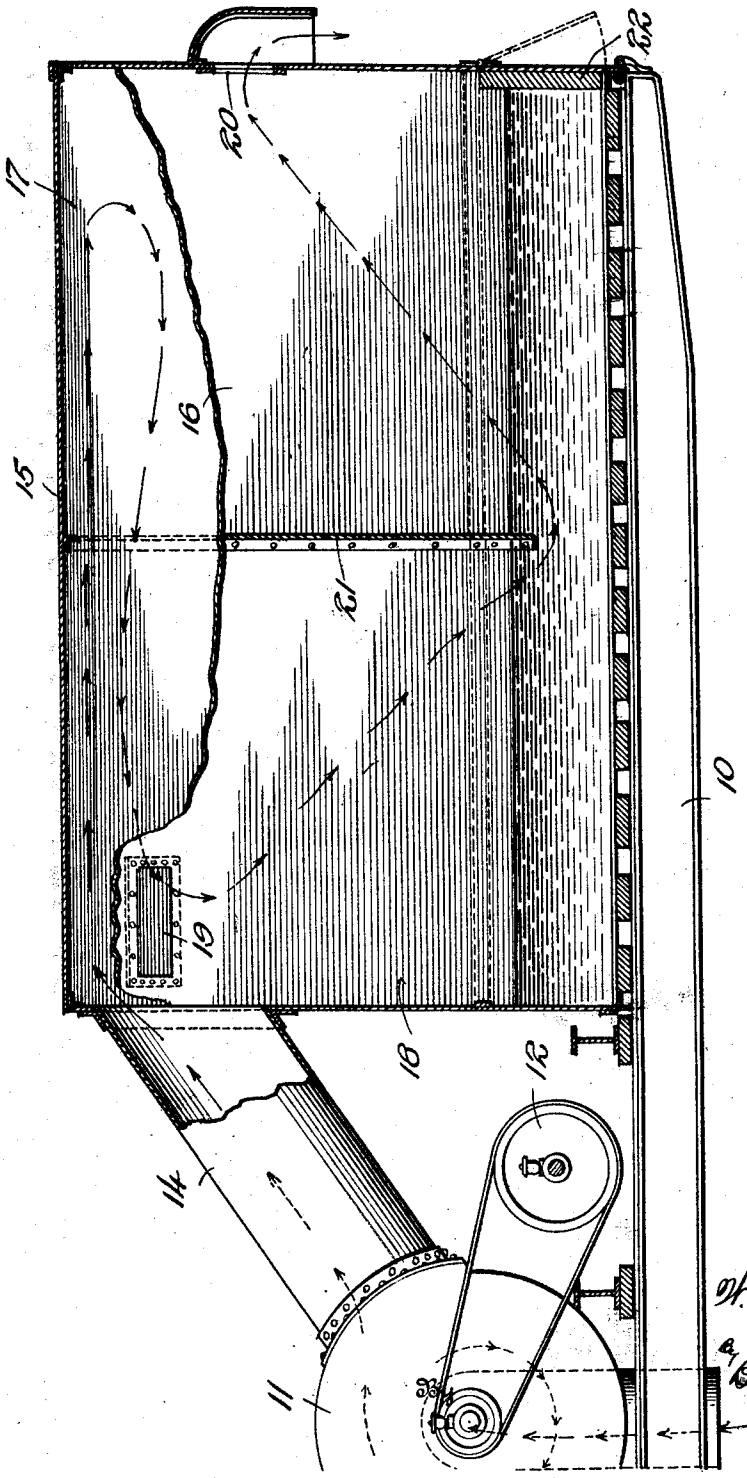


Fig. 2.

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Filed Sept. 16, 1922 3 Sheets-Sheet 3

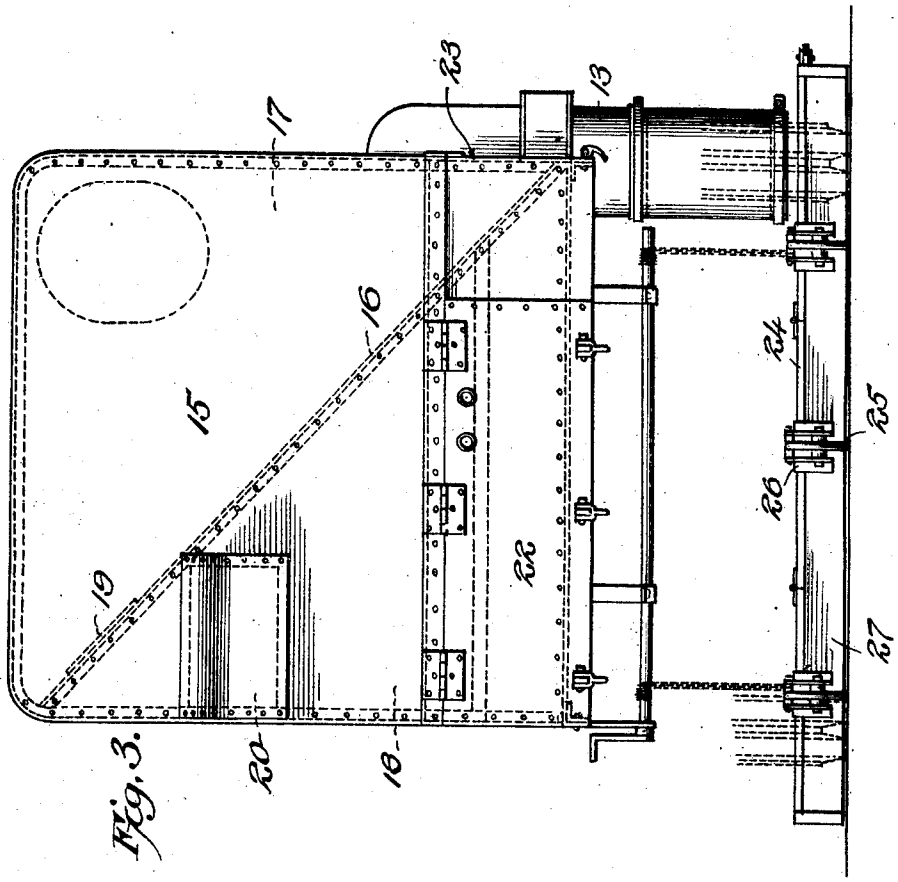


Fig. 3.

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Patented Feb. 17, 1925. 1,527,010

UNITED STATES PATENT OFFICE.

WILLIAM B. POWELL, OF MEMPHIS, TENNESSEE.

STREET-CLEANING MACHINE.

Application filed September 16, 1922. Serial No. 588,616.

To all whom it may concern:

Be it known that I, WILLIAM B. POWELL, a citizen of the United States, and resident of Memphis, in the county of Shelby and State of Tennessee, have invented certain new and useful Improvements in Street-Cleaning Machines, of which the following is a specification.

My invention relates to street cleaning machines of the type including means to loosen débris from the surface of a street and to pick up and convey such loosened débris to a suitable container whereby it may be carried to a dump or deposited in heaps for collection.

The principal objects of my invention are: first, to provide means to separate the heavier from the lighter débris, as for instance, sticks and trash from dust and dirt, and to provide separate compartments in the container for these two classes of débris which compartments may be emptied independently; second, to provide means to prevent the spread of dust created by action of the machine and to provide an arrangement embodying a water filter or precipitating medium whereby the dust laden air entering the container is purified subsequent to leaving the machine; and third, to provide a machine embodying the foregoing features that is light, durable, relatively inexpensive to produce and operate and that is thoroughly reliable and efficient in operation.

With the foregoing and other objects in view, my invention consists in the novel features of construction, combination and arrangement of parts as will be hereinafter more fully described, illustrated in the accompanying drawings and defined in the appended claims.

In the drawings wherein like characters of reference denote corresponding parts in the different views—

Figure 1 is a side elevation of a street cleaning machine embodying the novel and essential features of my invention;

Figure 2, an enlarged longitudinal section through the débris container showing the connection of the fan pick up arrangement therewith; and

Figure 3, a rear elevation of the débris container.

Referring now to the drawings in detail, 10 designates a suitable wheeled frame that is adapted to be propelled in any preferred manner and upon which the mechanisms constituting my invention are adapted to be mounted in the relative arrangement shown in Figure 1 of the drawings, whereby the objects aforementioned may be accomplished. In the present instance the frame is constituted by the chassis of a motor truck A and thus the machine is adapted to be mechanically propelled as is obvious.

Secured upon the frame 10 at any suitable point thereof is a fan or blower 11 that is adapted to be operated in any preferred manner, such for instance as a motor 12 which is also mounted on the frame, and has connected therewith a downwardly extending intake pipe 13 and an upwardly extending discharge pipe 14 which latter is connected with and opens into the front end of a débris container 15 mounted on the frame behind said fan and motor.

The discharge pipe 14 enters the front end of the container 15 near the top and near one side thereof (the right hand side in this instance) and the container is divided by a longitudinal partition 16 that in transverse section extends in the present instance diagonally from the lower right side to the upper left side of the container to provide within the same, débris and dust-receiving compartments 17 and 18, respectively, into the former of which pipe 14 enters as clearly shown in Figure 3 of the drawings.

Formed in the partition 16 near the forward end and near the top of the same is an opening 19 that provides communication between the débris and dust compartments 17 and 18, while formed in the rear wall of the container near the top of the dust compartment is an opening 20 that provides communication between this compartment and the atmosphere. Intermediately, the dust compartment 18 is divided by a partition 21 that extends transversely with respect to the container and the first partition 16 and that terminates at its lower edge somewhat above the bottom of the container. The partition 21 forms compartments 21^a and 21^b within the compartment 18 so that air entering the dust chamber by way of the opening 19 must pass under the partition 21 before it can enter the compartment 21^b and find exit through the opening 20 to the atmosphere. The lower rear end of the dust compartment is closed by a door 22 while the lower right side of the débris compartment is closed by a door 23, said doors being provided to permit dumping of

the contents of said compartments independently and whenever desired.

A débris loosening mechanism 27 is shown applied to the lower end of the intake pipe 13 in Figure 1 and is supported a suitable distance above the street by the small rollers or wheels 25.

In the operation of my machine, the fan 11 creates a vacuum of sufficient force which will pick up anything in reason that may be under the drag as the machine passes along the street. What is meant by anything in reason, is anything equalling in weight one-fourth of a brick. From the fan, the particles of dirt picked up by vacuum are forced through an intake opening in the container 15, compartment 17 thereof.

Upon entering of dirt in the chamber compartment 17, the velocity of air causes a whirlwind to be formed in the back end of the chamber by striking the top, rear end, transverse partition 16 and sides, during which time the heavier particles are falling by gravity to the bottom of compartment 17. In leaving the compartment 17, the dust laden air has to pass through the outlet 19 into a filtering compartment 21ª. The said outlet is used in the front and upper left-hand corner of the transverse partition 16. Dust laden air enters the filtering compartment 21ª with sufficient force to pass through water contained in the compartment 18 and under baffle plate 21. A certain amount of back pressure is built up in compartment 21ª which serves to keep a minimum amount of dust and prevent heavier particles from passing through the outlet 19. The dust that does pass through the outlet 19 is filtered from the air while passing through the water and under the baffle plate 21 into compartment 21ª. From compartment 21ª, the purified air passes out of a final exhaust 20 into the open atmosphere by expansion or whatever remaining velocity it may have after passing through the water and under said baffle plate 21.

It is to be understood that the tank is constructed air tight at all corners and intersections thereof to prevent any leakage of water or air, other than through regular air passages as explained above.

From the foregoing description considered in connection with the accompanying drawings, it is believed that the construction, operation and advantages of my improved machine will be fully understood, and while I have herein shown and described one specific embodiment of my invention I do not limit myself to the construction and arrangement shown, except for such limitations as are contained in the appended claims.

I claim:—

1. A street cleaning machine comprising a débris container, a longitudinal partition dividing said container into débris and dust compartments, air suction operable means to discharge débris into said débris compartment, means to cause the heavier débris to remain in said débris compartment and the lighter débris to be carried into said dust compartment, and means in the latter compartment to separate the lighter débris from the air and purify the latter prior to its discharge to the atmosphere.

2. A street cleaning machine comprising a débris container, a longitudinal partition dividing said container into débris and dust compartments, air suction means operable to discharge débris into said débris compartment, means whereby the heavier débris is separated from the lighter débris and these two classes of débris deposited, respectively, in said débris and dust compartments, and means in the dust compartment to purify the débris laden air prior to its discharge to the atmosphere.

3. A street cleaning machine comprising a débris container, a longitudinal partition dividing said container into débris and dust compartments, air suction means operable to discharge débris into said débris compartment, an opening in said partition providing communication between said compartments, a transverse partition terminating short of the bottom of said container and dividing said dust compartment into two sections, and an exit opening providing communication between one of said sections and the atmosphere, said dust compartment being adapted to be filled with water above the level of the bottom of said transverse partition whereby dust laden air entering said dust compartment must pass through said water prior to its discharge to the atmosphere.

4. A street cleaning machine comprising a débris container, a longitudinal partition dividing said container into débris and dust compartments, said partition extending diagonally of said container, air suction means operable to discharge débris into said débris compartment, an opening in said partition providing communication between said compartments, a transverse partition terminating short of the bottom of said container and dividing said dust compartment into two sections, an exit opening providing communication between one of said sections and the atmosphere, said dust compartment being adapted to be filled with water above the level of the bottom of said transverse partition whereby dust laden air entering said dust compartment must pass through said water prior to its discharge to the atmosphere, and a door closing the lower portion of each of said compartments whereby the contents thereof may be dumped.

5. A dust separator for street cleaning machines comprising an air-tight rectangu-

lar débris container having an inlet in its forward wall and an outlet in its opposite wall, a longitudinally and diagonally arranged partition extending throughout the length of said container and dividing said container into débris and dust compartments, said partition having an opening formed therein adjacent its forward upper end establishing a means of communication between said compartments, said dust compartment being adapted to be partly filled with water, and a centrally arranged transverse partition extending within the water of the dust compartment and terminating short of the bottom thereof whereby said dust compartment will be divided into two sections, substantially as and for the purpose specified.

In testimony whereof I hereunto affix my signature.

WILLIAM B. POWELL.