Mar. 6, 1923.

1,447,336

R. W. BAUGHMAN

STREET SWEEPING APPARATUS

Filed May 31, 1921

2 sheets-sheet 1

Fig. 1.

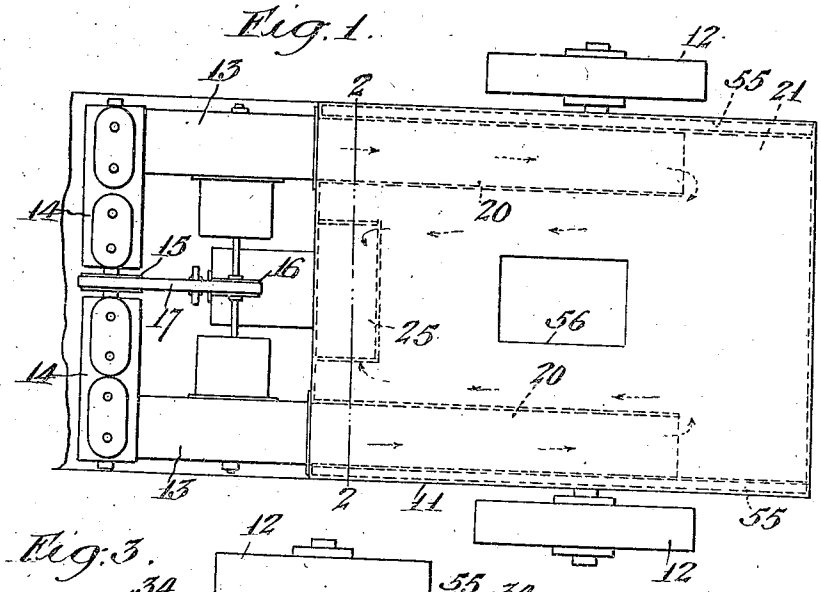


Fig. 3.

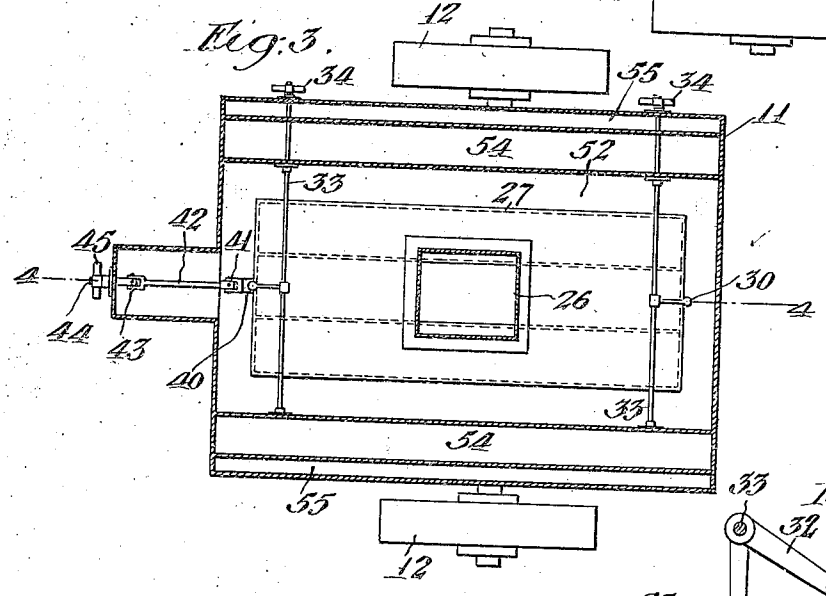
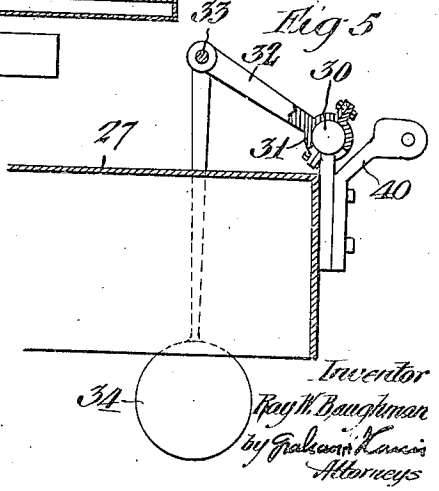


Fig. 5



Inventor
Roy W. Baughman
by Graham & Lawson
Attorneys

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1,447,336

STREET SWEEPING APPARATUS

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2 sheets-sheet 2

Fig. 2.

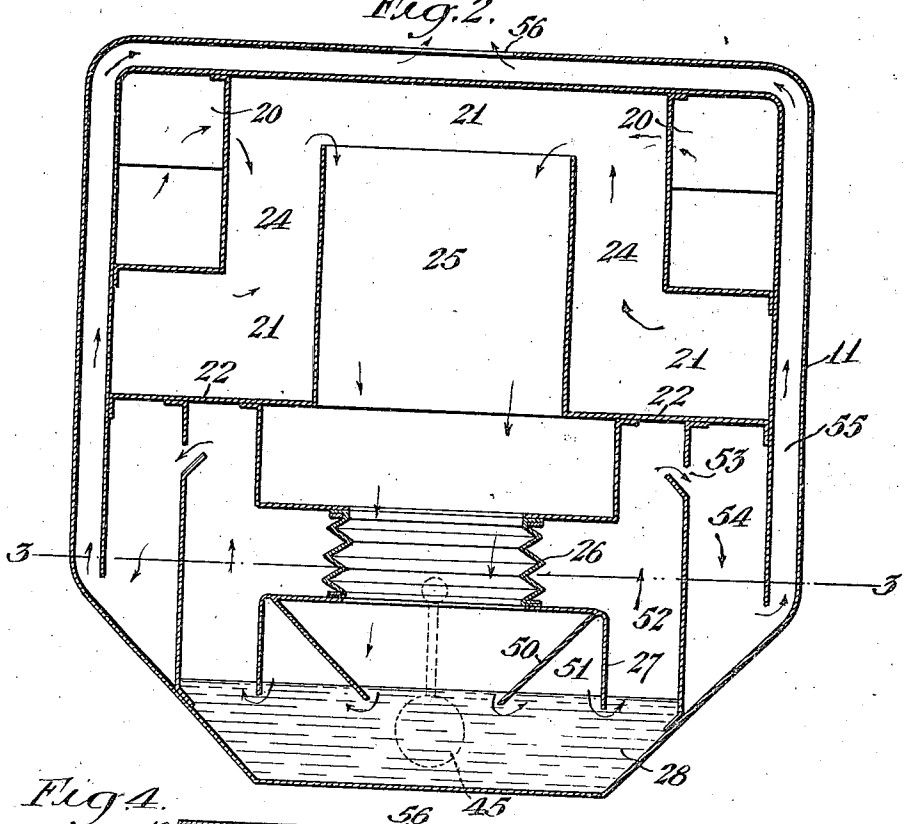
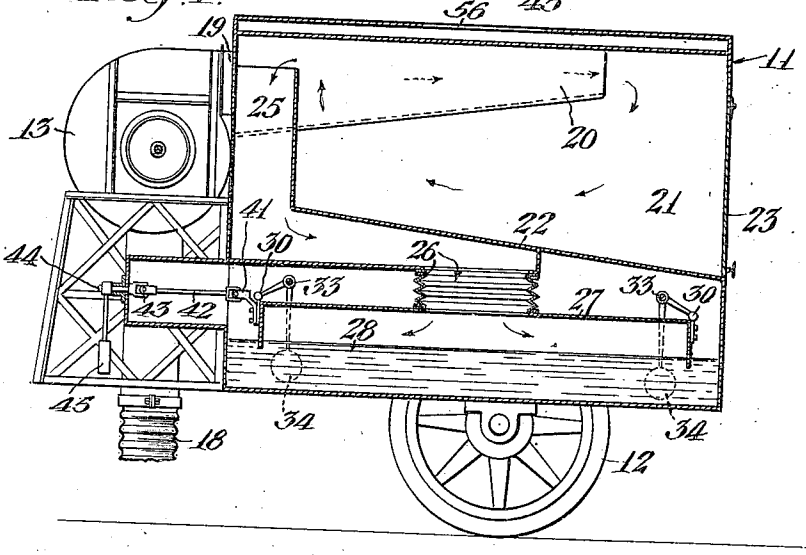


Fig. 4.



Inventor
Ray W. Baughman
by Graham & Kanic
Attorneys

Patented Mar. 6, 1923. 1,447,336

UNITED STATES PATENT OFFICE.

RAY W. BAUGHMAN, OF LOS ANGELES, CALIFORNIA.

STREET-SWEEPING APPARATUS.

Application filed May 31, 1921. Serial No. 473,718.

To all whom it may concern:

Be it known that I, RAY W. BAUGHMAN, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Improvement in Street-Sweeping Apparatus, of which the following is a specification.

My invention relates to street sweeping apparatus, and particularly to apparatus in which the dust and dirt are removed from the surface of the street by suction. In street sweepers of this type, large exhaust fans are used which draw the dirt from the surface of the street and deliver it in a column of moving air into a containing vessel in which the solid particles are removed from the air and caught, the air then being discharged.

My invention relates particularly to street sweepers of this type in which the final dust separation is accomplished by blowing the air through water which catches and holds the fine particles.

The object of my invention is to provide a very perfect separation of dust and air.

Further objects and advantages will be made evident hereinafter.

Referring to the drawings which are for illustrative purposes only,

Fig. 1 is a plan view of one embodiment of my invention.

Fig. 2 is a section on a plane represented by the line 2—2 of Fig. 1.

Fig. 3 is a section on a plane represented by the line 3—3 of Fig. 2.

Fig. 4 is a section on a plane represented by the line 4—4 of Fig. 3.

Fig. 5 is an enlarged view of the suspension means.

In the form of the invention shown, a sheet metal body 11 is provided mounted on wheels 12. Carried on the body 11 are two exhaust fans 13 which are driven by an engine 14 through pulleys 15 and 16 and a belt 17 or by any equivalent means. Air is taken into the exhaust fans 13 through a flexible tube 18 which is connected to the devices contacting with the surface of the street, these devices being well known in the art and forming no portion of the present invention and hence not being illustrated. The exhaust fans 13 deliver a rapid current of air containing dust, dirt and other solid and liquid matter through an opening 19 into side channels 20 inside the body 11. The air flowing through these side channels is delivered into a large depositing chamber 21 having a sloping bottom 22 on which all of the larger material is deposited, being taken out through a door 23. The air containing the fine dust passes upwardly through channels 24 and into a throat 25 which communicates through a flexible conduit 26 with an inverted pan 27. This inverted pan has its lower lips submerged in a body of water 28. The pan 27 is provided at either end with a ball 30 which is engaged by a cup 31 carried on an arm 32 which is rigidly secured to a shaft 33. Each of the shafts 33 extends through the body and is provided with a pendulum 34 which is rigidly attached to the shaft 33 outside the body. Secured to one end of the pan 27 is a bracket 40 which is connected through a universal joint 41 with a shaft 42 which in turn is connected through a universal joint 43 with a shaft 44 carrying a pendulum 45 which is rigidly attached to the shaft 44. The purpose of the members 30 to 45 is to maintain a constant submergence of the lower lip of the pan 27 in the water 28 quite regardless of the position of the body 11 as regards the horizontal.

It should be understood that in operating a street sweeper, it is necessary for the body 11 to pass over grades whereby it is thrown out of the horizontal in one direction and that many streets are crowned so that it is thrown out of the horizontal in the other direction especially when operating along the gutter. The inclination of the body 11 produces a displacement therein of the water 28. By the use of the pendulums 34 and 45, the pan 27 is inclined so that it is always parallel with the surface of the water so that a uniform submergence is maintained at all times. If, for example, referring to Fig. 4, the left hand end of the body is raised and the right hand end is lowered, it is evident that both of the pendulums will turn in a counter clock-wise direction about the shaft 33, the left hand end of the pan 27 being lowered and the right hand end being raised to compensate for changes in the water level. In the same manner the pendulum 45 tends to keep all the edges of the pan equally submerged in case the sweeper is inclined about a longitudinal axis. As a result the degree of submergence of the lowered edges of the pan 27 are maintained constant. This is a great advantage as it

not only provides a greater efficiency of dust separation, but it also allows the sweeper to be operated with a very small submergence which in turn allows the fans 13 to operate under a lower pressure and with a much greater capacity. The air delivered through the flexible conduit 26 into the pan 27 passes under an intermediate deflector 50 into a space 51 and from thence under the outer edges of the pan into a space 52; it then passes through openings 53 into longitudinal conduits 54 and upwardly through channels 55 being finally delivered to the outer air through an opening 56.

The water underneath the pan 27 is of course displaced to the level of the lower edge of the pan 27, since the air cannot be driven down through the body of water but must displace the water.

I claim as my invention:

1. In a gas washing device the combination of: a portable body in which liquid may be carried; a pan carried in said body having its lower edges submerged in said liquid; means for forcing the air to be washed into said pan; a universal joint at each end of said pan by which said pan is suspended in said body; means for simultaneously raising one end of said pan, and lowering the other end of said pan with relation to said body to compensate for changes in depth of said liquid in said body due to longitudinal changes in inclination of said body and means for turning said body about said joints to compensate for changes in depth of said liquid in said body due to transverse changes in inclination of said body.

2. In a gas washing device the combination of: a portable body in which liquid may be carried; a pan carried in said body having its lower edges submerged in said liquid; means for forcing the air to be washed into said pan; a universal joint at each end of said pan by which said pan is suspended in said body; suspension shafts extending across said body above said pan, one at one end of said pan and the other at the other end of said pan; two arms, one fixed on one shaft and the other fixed on the other shaft, each shaft being secured through one of said universal joints with one end of said pan; means for turning said shafts to simultaneously raise one end of said pan and lower the other end of said pan with relation to said body to compensate for changes in depth of said liquid in said body due to longitudinal changes in inclination of said body; and means for turning said body about said joints to compensate for changes in depth of said liquid in said body due to transverse changes in inclination of said body.

3. In a gas washing device the combination of: a portable body in which liquid may be carried; a pan carried in said body having its lower edges submerged in said liquid; means for forcing the air to be washed into said pan; a universal joint at each end of said pan by which said pan is suspended on said body; gravity operated means for simultaneously raising one end of said pan, and lowering the other end of said pan with relation to said body to compensate for changes in depth of said liquid in said body due to longitudinal changes in inclination of said body; and means for turning said body about said joints to compensate for changes in depth of said liquid in said body due to transverse changes in inclination of said body.

4. In a gas washing device the combination of: a portable body in which liquid may be carried; a pan carried in said body having its lower edges submerged in said liquid; means for forcing the air to be washed into said pan; a universal joint at each end of said pan by which said pan is suspended in said body; suspension shafts extending across said body above said pan, one at one end of said pan and the other at the other end of said pan; two arms, one fixed on one shaft and the other fixed on the other shaft, each shaft being secured through one of said universal joints with one end of said pan; gravity operated means for turning said shafts to simultaneously raise one end of said pan and lower the other end of said pan with relation to said body to compensate for changes in depth of said liquid in said body due to longitudinal changes in inclination of said body; and means for turning said body about said joints to compensate for changes in depth of said liquid in said body due to transverse changes in inclination of said body.

5. In a gas washing device the combination of: a portable body in which liquid may be carried; a pan carried in said body having its lower edges submerged in said liquid; means for forcing the air to be washed into said pan; a universal joint at each end of said pan by which said pan is suspended in said body; means for simultaneously raising one end of said pan, and lowering the other end of said pan with relation to said body to compensate for changes in depth of said liquid in said body due to longitudinal changes in inclination of said body; and gravity operated means for turning said body about said joints to compensate for changes in depth of said liquid in said body due to transverse changes in inclination of said body.

6. In a gas washing device the combination of: a portable body in which liquid may be carried; a pan carried in said body having its lower edges submerged in said liquid; means for forcing the air to be washed into said pan; a universal joint at each end of said pan by which said pan is

suspended in said body; suspension shafts extending across said body above said pan, one at one end of said pan and the other at the other end of said pan; two arms, one fixed on one shaft and the other fixed on the other shaft, each shaft being secured through one of said universal joints with one end of said pan; means for turning said shafts to simultaneously raise one end of said pan and lower the other end of said pan with relation to said body to compensate for changes in depth of said liquid in said body due to longitudinal changes in inclination of said body; and gravity operated means for turning said body about said joints to compensate for changes in depth of said liquid in said body due to transverse changes in inclination of said body.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 23rd day of May, 1921.

RAY W. BAUGHMAN.