J. R. POLLOCK.

STREET SWEEPER.

APPLICATION FILED JAN. 16, 1909.

943,122. Patented Dec. 14, 1909.

Fig. 1.

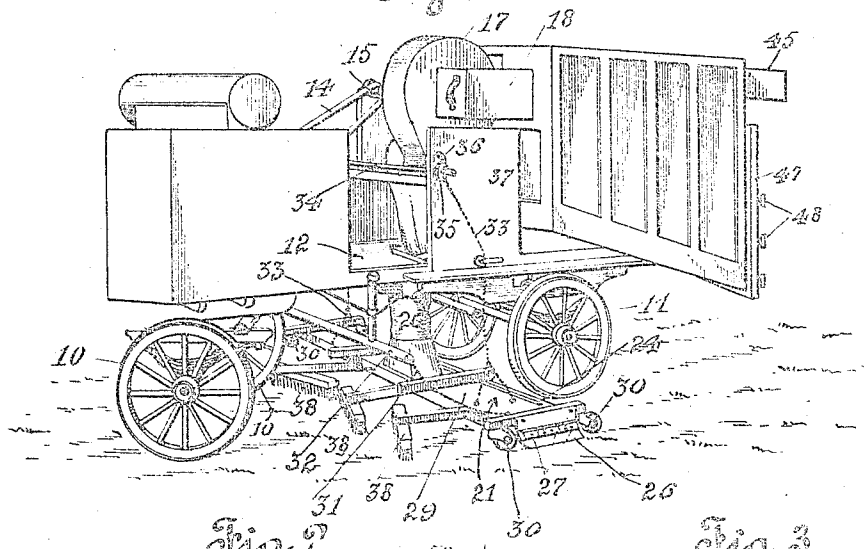


Fig. 2.

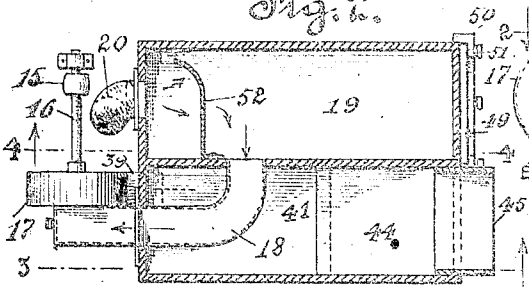


Fig. 3.

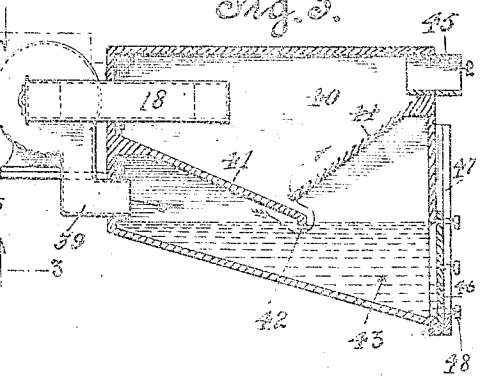


Fig. 4.

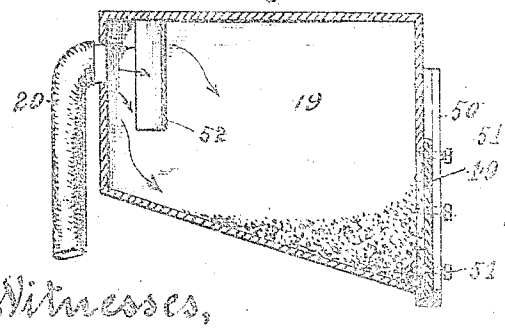
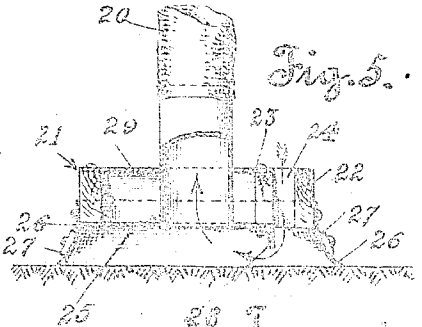


Fig. 5.



Witnesses,

Hilliard Everett,

S. B. Austin

Inventor,

John R. Pollock,

By E. B. Stokes

Attorney.

UNITED STATES PATENT OFFICE.

JOHN R. POLLOCK, OF LONGBEACH, CALIFORNIA, ASSIGNOR OF ONE-HALF TO E. S. BRUCE, OF LONGBEACH, CALIFORNIA.

STREET-SWEEPER.

943,122. Specification of Letters Patent. Patented Dec. 14, 1909.

Application filed January 16, 1909. Serial No. 472,619.

To all whom it may concern:

Be it known that I, JOHN R. POLLOCK, a citizen of the United States, residing at the city of Longbeach, county of Los Angeles, and State of California, have invented new and useful Improvements in Street-Sweepers, of which the following is a specification.

My invention relates to that class of street sweeping machines in which the debris on the surface of the street is first loosened and a suction fan is employed to remove the debris and deposit it in a receptacle, and then to purify the dust laden air by removing the dust therefrom and depositing the dust within a receptacle and discharging the purified air free from dust, outside the machine.

I accomplish this object by the mechanism described herein and illustrated in the accompanying drawings, in which:

Figure 1 is a perspective view of my improved street sweeper. Fig. 2 is a horizontal section of the dirt receptacle and dust purifying chamber taken on the line 2—2 of Fig. 3. Fig. 3 is a longitudinal vertical section of the dust purifying chamber taken on the line 3—3 of Fig. 2. Fig. 4 is a longitudinal vertical section of the dirt receptacle taken on the line 4—4 of Fig. 2. Fig. 5 is a transverse vertical section of the suction head.

In the drawings the running gear of my machine consists of the front pair of wheels 10 and the rear pair of wheels 11 which are connected to the platform 12 in any suitable manner, preferably like such wheels are connected in an ordinary wagon when the machine is to be moved by animal power, but if the machine is driven by mechanical power such as a gas engine or electric motor the wheels would be connected to the platform like automobile wheels are connected to the body of the car.

Upon the platform is mounted at the front end thereof a suitable motive power which may consist of an electric motor, a gas engine or a steam engine.

In the drawings the motive power is a gas engine not shown, being hid by the bed of the wagon. From this engine belt 14 runs to pulley 15 mounted on a shaft 16 which is the driving shaft of exhaust fan 17, whereby said fan is operated. The suction port of the exhaust fan is connected by pipe 18 with the dirt receptacle 19 preferably near the top thereof and on the inner side a little forward of the center. This dirt chamber is also connected by the flexible pipe 20 with the center of the suction head 21. This suction head is composed of a long narrow wooden frame 22 which is preferably a little longer than the distance between the wheels and in shape a parallelogram. Extending longitudinally this frame and secured thereto is partition 23 which is placed near the back side of the frame so as to form an air channel 24 between the back timber of the frame and the partition, which channel extends longitudinally the entire length of the frame, being closed at the ends by the end timbers of the frames. A metallic plate 25 or other closure, preferably of sheet iron is secured to the bottom of the partition and to the front portion of the frame and forms the top of the suction head.

A flexible curtain 26 is secured to the frame and extends downwardly to the surface of the street to be swept. This curtain is held in contact, when in use, with the surface of the street by small metal plates 27 which are riveted or otherwise secured thereto. This curtain is preferably about three inches wide. Secured to the bottom of partition timber 23 is a downwardly projecting deflector 28 preferably of angle iron, which causes the air which passes through channel 24 to pass in close contact with the surface of the street. This angle iron preferably extends to within about one inch of the street surface when in use.

To prevent dirt and other material from lodging on the top of plate 25 another metallic plate 29 is secured to the front portion of the frame and to the top of the partition.

Pipe 20 passes through plates 25 and 29.

At each end of the dirt collector are casters 30. The dirt collector is connected by chains, one of which 31 is shown in Fig. 1, at each end thereof to a cross bar 32 which bar is secured to the platform, and the suction head is caused to travel by these chains when the platform is moved forwardly. Each end of the suction head is connected by chains 33 with shaft 34 which is provided with a ratchet 35.

A pawl 36 is secured to side wall 37 and operates to hold the ratchet against movement in one direction.

When it is desired to elevate the suction head above the surface of the street this

shaft is rotated to wind the chains thereon until the suction head is elevated the required distance, when dog 36 retains the ratchet in that position until released therefrom.

Projecting in front of and secured to the suction head are scratcher brooms 38 which bear upon the surface of the street being swept and loosen any dirt that may be packed thereon. The discharge port of the suction fan is connected by pipe 39 with the front end of the air purifying chamber 40 below the rearwardly and downwardly projecting deflector 41 which is connected to the front end of the chamber as best shown in Fig. 3. This front deflector is provided with a downwardly projecting flange 42 which causes the air which strikes the deflector to abruptly turn downwardly at the end thereof and enter the water 43 with which the chamber is provided and which stands therein preferably on a level just submerging the flange. To the rear end of the purifying chamber is secured the deflector ledge 44 which extends downwardly and forwardly and terminates in front of ledge 41.

45 is a discharge chute through which the air passes out of the machine.

46 is a door in the lower part of the rear end of the purifying chamber which can be opened when it is desired to clean the chamber. It is vertically movable in the guideway 47 and is held in position by set screws 48 or other suitable device. The dirt receptacle 19 is provided with a door 49 which is vertically movable in guideway 50 and is held in its closed position by set screws 51.

In the operation of my machine the same is drawn over the surface of the street by any suitable power. The engine for operating the exhaust fan is set in motion and the air is exhausted from the suction head. The principal supply of air will enter the suction head through channel 24, passing under the deflector in the suction head at all points. It then passes up through pipe 20 into the dirt receptacle where it is allowed to expand and come in contact with deflector 52 which extends across the receptacle to nearly the outer side and to about one half the depth so as to cause the heavier particles of matter to be deposited in the bottom of the receptacle.

The dust laden air will pass on through pipe 18 into the exhaust fan and will be ejected therefrom through pipe 39 and into the air purifying chamber 40 between the front deflector 41 and the water 43 in said chamber. The pressure from the fan forces the air around and below flange 42 and upwardly between deflectors 41 and 44 and it then passes out through discharge chute 45. As the air passes around flange 42 it lashes the water into a spray which takes the dust out of the air and the purified air passes out of the chamber. The dust is turned into mud which settles to the bottom of the chamber. At the close of each day's work the mud and water in the purifying chamber is removed and the next morning the chamber is recharged with water by the use of a hose which can be inserted through the discharge chute. I have found by practical experience that it is only necessary to charge the purifying chamber with water once a day.

By this construction an efficient street sweeping machine is provided that takes up all loose dirt upon the surface of the street over which the suction head moves.

It will be observed that the air passing through channel 24 passes under deflector 28 which is in close proximity to the street surface and then passes upwardly, thereby creating a lifting effect upon the loose dirt, and at the same time pushing the dirt along the line of motion of the machine.

It will be understood that the exhaust is of sufficient power to produce in the air going through channel 24 a whipping effect upon the surface of the street being swept.

It will also be observed that after passing up through pipe 20 the air is delivered into a chamber or receptacle directly in front of a curved deflector plate which the heavier particles of dirt strike and are thrown downward upon the floor of the receptacle and that the air must then either pass under or around the end of the deflector in order to reach the outlet through pipe 18 and that only the lighter particles of dust will pass with the air into the fan, and before the air can escape from the machine it will be discharged through water which will take out all the dust.

Having described my invention what I claim is:

In a pneumatic street sweeping machine a long narrow suction head having the sides and ends thereof composed of weighted flexible curtains and having a longitudinal channel near one side of said suction head, said channel being open at the top and terminating near and above the plane of the bottom of the suction head in combination with means to draw air through said channel and from said suction head.

In witness that I claim the foregoing I have hereunto subscribed my name this 11th day of January, 1909.

JOHN R. POLLOCK.

Witnesses:

G. E. HARPHAM,

S. B. AUSTIN.