

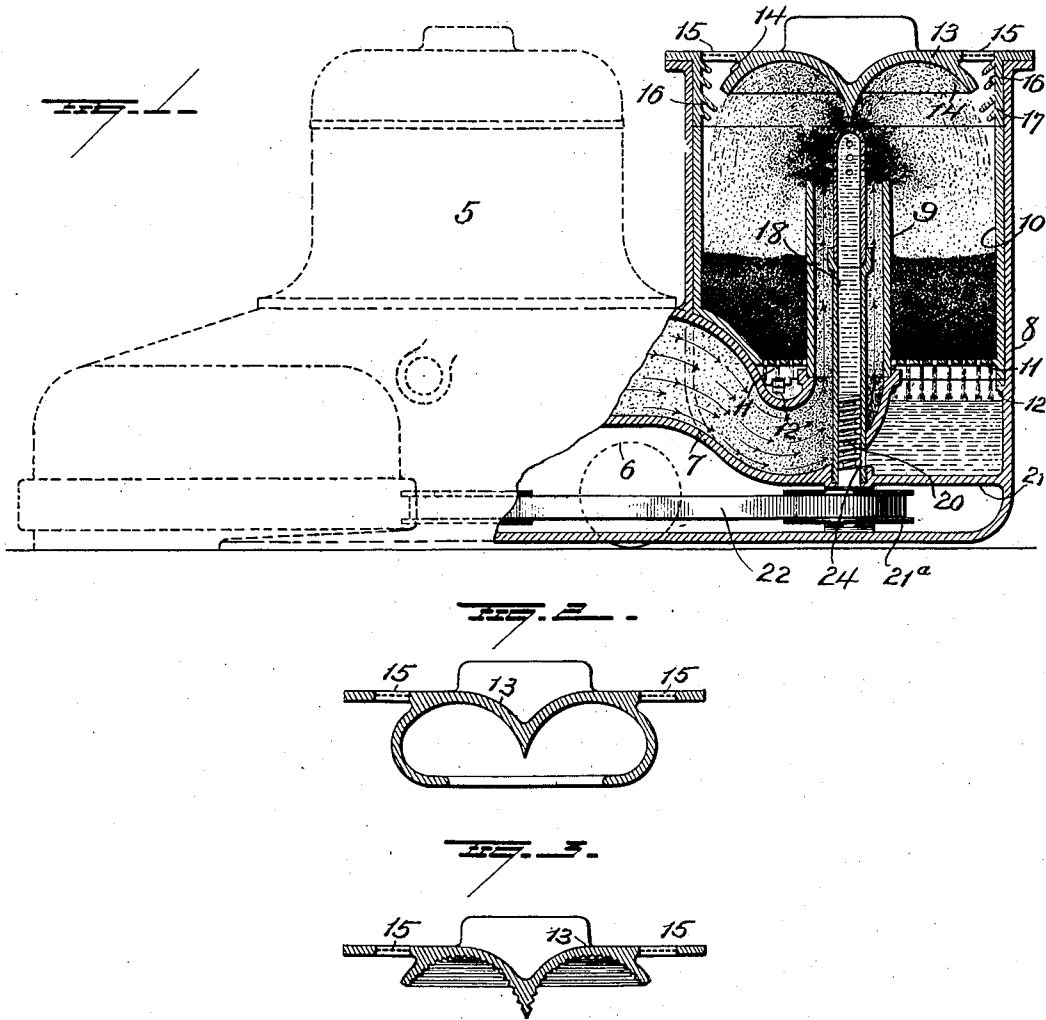
N. C. FETTERS AND C. R. RICHARDS.

DUST COLLECTOR.

APPLICATION FILED APR. 10, 1920.

1,363,860.

Patented Dec. 28, 1920.



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# UNITED STATES PATENT OFFICE.

NORMAN CRAIG FETTERS AND CHARLES RAYMOND RICHARDS, OF ALLIANCE, OHIO.

## DUST-COLLECTOR.

1,363,860.

Specification of Letters Patent. Patented Dec. 28, 1920.

Application filed April 10, 1920. Serial No. 372,761.

*To all whom it may concern:*

Be it known that we, NORMAN C. FETTERS and CHARLES R. RICHARDS, citizens of the United States and residents of Alliance, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Dust-Collectors; and we do hereby declare the following to be 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.

Our invention relates to an improvement in dust collectors adapted particularly for use in connection with electric sweepers:

15 In our application for Patent Serial No. 351,565 filed January 15th, 1920, the exit end of the duct through which the dust laden air passes terminates under water so that the air and dust and dirt are projected up-  
20 wardly through the water and are deflected into a sediment chamber in which the dust and dirt are collected.

25 In this invention the air duct terminates within the sediment chamber and above the water and the dust laden air is saturated with water as it leaves the duct, the water being forced up and sprayed over the escaping dust by a pump actuated by the suction motor of the sweeper.

30 In the accompanying drawings, Figure 1 is a view partly in elevation and partly in section of our improvement applied to a suction sweeper, and Figs. 2 and 3 are views in section of modified forms of deflectors.

35 In the drawings, we have shown the dust collector carried by and forming a part of the sweeper, but it is clearly evident that it may be either a fixed or portable structure connected to the sweeper or suction device by a flexible hose, hence we would have it understood that our invention comprehends  
40 both types of apparatus.

The sweeper or suction part 5 of the apparatus may be of any approved form, preferably having a suction fan operated by a motor, but the suction means may be actuated by suitable gearing connected with the wheels 6 on which the apparatus is mounted to travel.

50 The washer in which the dust is saturated with water is provided with a duct 7, connected as shown, or by a flexible hose as explained, with the suction device on sweeper 5, into which the dirt and dust laden air are forced by the suction fan or other device. This duct is preferably enlarged at its inlet

end and passes into the washer 8 and is curved so as to avoid all angles which would retard or deflect the air current passing through the same. It is curved upwardly at about the center of the washer 8 and carries the pipe 9 which forms a continuation of the duct and which passes upwardly through the sediment chamber 10 of the washer, and terminates near the top thereof, its upper end being open for the free escape of the dust and dirt laden air. The washer 8 is partly filled with water the normal level of which is below the perforated bottom 11 of the sediment chamber 10. This sediment chamber is shaped to conform to and fit within the washer 8, and preferably extends above the plane of the top of pipe 9, which latter passes through the perforated bottom 11 of chamber 10 so that all the dirt laden air will be discharged in the sediment chamber. This chamber 10 is seated on the lugs 12 and also on the duct 7 with its perforated bottom preferably in a plane above the normal water level in the washer 8, and it and the washer are closed by the cover 13 provided on its underside with an inverted conical deflector 14 which may be plain as shown in Fig. 1, serrated as in Fig. 3, or its lower edge may be extended and curved inwardly so as to deflect the water and dust toward the center and away from the sides and thus prevent upward splash as in Fig. 2. Any upward splash that might carry the water through the screened openings 15 in the cover 13 may also be prevented by the deflectors 16 formed integral with the inner face of the flange 17 of the cover 13. This flange fits snugly within the upper open end of the washer and rests on the upper edge of the sediment chamber 10 and forms in effect an extension of the latter.

Secured to the bottom of the water chamber 8 and passing through the curved duct 7 is the pump body 18. This pump body passes upwardly through pipe 9 approximately in the center of the latter and terminates in a plane under the apex of the inverted cone and preferably above the upper end of pipe 9 and is provided at its upper end with a series of small openings through which the water is ejected in the form of a fine spray so as to saturate all the dust and dirt drawn up by the air blast through pipe 9. Located in the lower end of the pump body 18 is the pump 20 which is preferably of the screw type as shown.

This screw is provided within the hollow bottom 21 of the sweeper with a pulley 21<sup>a</sup> around which the belt 22 passes, the said belt being driven by the main suction motor.

5 This pulley is seated on the bottom plate of the sweeper and makes a close fit with the bottom of the washer and it and the plain lower end of the screw, which fits snugly within the pump body, prevent any leakage

10 of water down into the hollow bottom 21. The portion of the pump body within the water chamber of the washer is provided with an opening 24 for entrance of water to the pump body and as the screw is rotated

15 the water is forced up the pump body and out through the perforations at the top of the latter where it intercepts the dust laden air and thoroughly saturates the dust and dirt drawn up by the air. The perforations

20 in the top of the pump body are so proportioned to the lifting capacity of the pump, that the water will be forced out under pressure sufficient to produce a fine spray, so that all the dust and dirt drawn in with the

25 air will be enveloped by the spray and saturated and settle down in the sediment chamber 10, while the air freed of its dirt and dust will pass out of the screened openings 15.

30 In the operation of the sweeper the dust and dirt drawn into the sweeper by the fan or blower is directed into the duct 7 and up through pipe 8 and is discharged from the latter into the sediment chamber 10. As the

35 pump is driven by the suction motor, it will be seen that as suction is started, the water in washer 8 will be forced upwardly through pump body 18 by the pump 20, and issuing at the top of pipe 9 in the form of a spray

40 will envelop and saturate the dust and dirt drawn up with the air, which striking the deflector 14 spreads laterally and is then deflected downwardly into the sediment chamber. The air discharged into the sedi-

45 ment chamber is washed by its contact with the water and passes out through the screened openings 15 which are sufficiently large to slow down the air, and the water carrying the dirt and dust falls into the sediment chamber and filters through the

50 solids and drains back into the washer 8. The liquid is then returned to be used over again and as the solids are retained in the chamber 10 they form a filter bed through

55 which the liquid is cleansed in its passage back to the washer. The chamber 10 is of a size sufficient to hold all the dust collected in several weeks of ordinary sweeping and the amount collected can be readily ascer-

60 tained at any time by simply lifting the cover 13, the washer can be refilled with water at any time, and as the chamber 10 is removable it can be removed and cleaned as often as may be necessary.

65 It is evident that many slight changes

might be resorted to in the relative arrangement of parts shown and described without departing from the spirit and scope of our invention. Hence we would have it understood that we do not wish to confine our-

70 selves to the exact construction and arrangements of parts shown and described, but

Having fully described our invention what we claim as new and desire to secure by Letters-Patent, is:—

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1. The combination of a suction device, a water chamber, a sediment chamber above the water chamber so that the water carried up by the air blast and deposited in the sediment chamber may drain back into the

80 water chamber, a duct leading from the suction device to the sediment chamber and a pump for spraying water drawn from the water chamber into the dust laden air as the latter is discharged into the sediment

85 chamber.

2. The combination of a suction device, a water chamber, a sediment chamber above the water chamber so that the water carried up by the air blast and deposited in the sedi-

90 ment chamber may drain back into the water chamber, a duct leading from the suction device and discharging in the sediment chamber and a pump for pumping water from the water chamber and discharging it

95 into the dust laden air as the latter leaves the duct.

3. The combination of a suction device, a water chamber, a removable sediment chamber located above the water chamber so that

100 the water carried up by the air blast and deposited in the sediment chamber may drain back into the water chamber, a duct leading from the suction device and discharging into the sediment chamber and a pump located

105 within said duct and provided at its upper end with spray orifices.

4. The combination of a suction device, a water chamber, a removable sediment chamber having a perforated bottom, the said

110 sediment chamber being above the water chamber so that the water carried up by the air blast and deposited in the sediment chamber may drain back into the water chamber, an air duct leading from the suc-

115 tion device to the sediment chamber, and a pump for pumping the water from the water chamber and discharging it into the sediment chamber.

5. The combination of a suction device, a water chamber below the sediment chamber, a sediment chamber above the water chamber so that the water deposited in the sedi-

120 ment chamber may drain into the water chamber, a duct leading from the device and discharging into the sediment chamber, and a pump within the duct and arranged to spray water into the dust laden air as the latter is discharged from the duct.

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6. The combination of a suction device, a 130

water chamber, a removable sediment chamber above the water chamber, a cover having a deflector, a duct leading from the suction device and discharging into the sediment chamber and against the deflector and a pump for spraying water into the dust laden air as the latter leaves the duct.

7. The combination of a suction device, a washer, a removable sediment chamber within the washer with its bottom in a plane above the normal level of the water in the latter, a duct leading from the suction device and discharging into the sediment chamber, a cover having air outlets, deflectors located below said outlets and means for spraying water into the dust laden air as the latter is discharged from the duct.

8. The combination of a suction device, a water chamber, a sediment chamber above the latter, a cover for the sediment chamber, the said cover having air escape openings, deflectors within the sediment chamber

under said openings for preventing the splashing of water through the latter, a duct leading from the suction device to the sediment chamber and means for spraying water over the dust laden air as the latter enters the sediment chamber.

9. The combination of a suction device, a water chamber, a sediment chamber above the water chamber, a duct leading from the suction device and discharging into the sediment chamber, and a screw type of pump for spraying water into the dust laden air as the latter is discharged into the sediment chamber.

In testimony whereof we have signed this specification in the presence of two subscribing witnesses.

**NORMAN CRAIG FETTERS.**  
**CHARLES RAYMOND RICHARDS.**

Witnesses:

**M. C. WISMER,**  
**JOHN V. URICH.**