H. MEREDITH-JONES.

VACUUM CLEANER.

APPLICATION FILED FEB. 10, 1914.

1,219,756.

Patented Mar. 20, 1917.

2 SHEETS—SHEET 1.

Fig. 1.

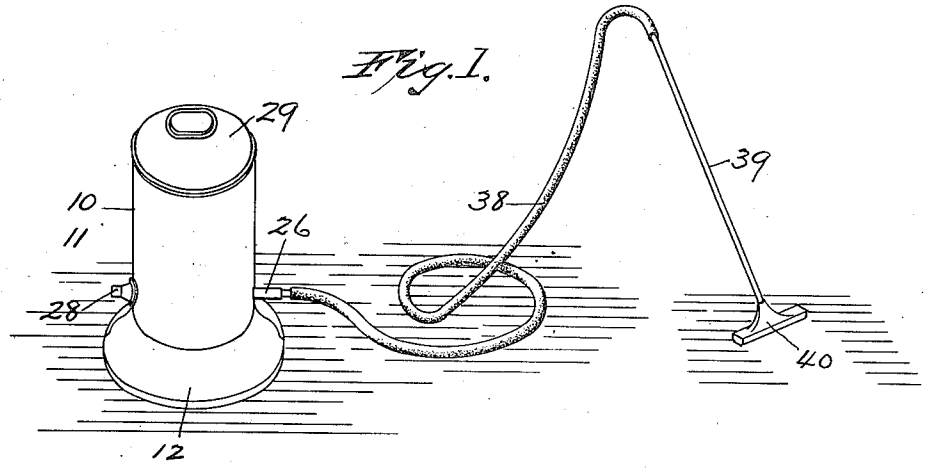
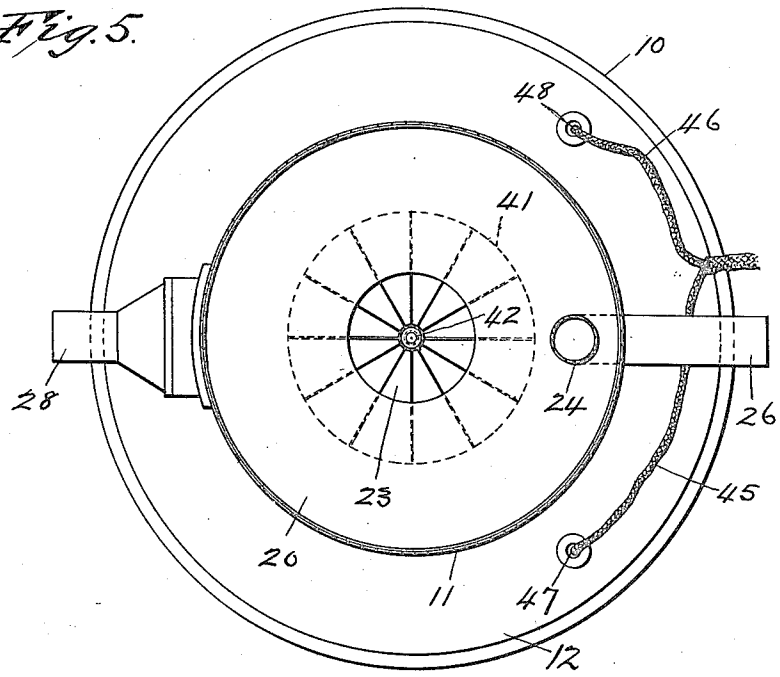


Fig. 5.



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2 SHEETS—SHEET 2.

Fig. 3.

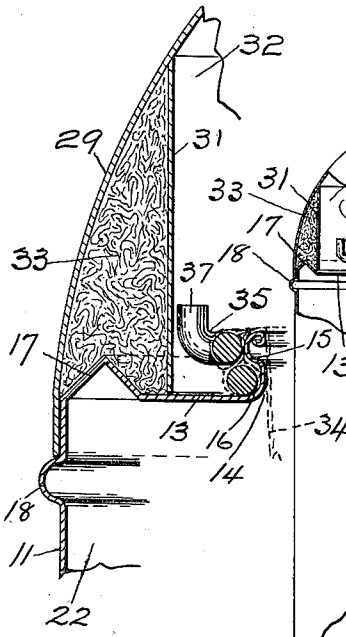
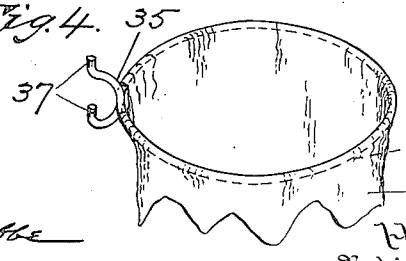


Fig. 2.

Fig. 4.



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UNITED STATES PATENT OFFICE.

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VACUUM-CLEANER.

1,219,756. Specification of Letters Patent. Patented Mar. 20, 1917.

Application filed February 10, 1914. Serial No. 817,778.

To all whom it may concern:

Be it known that I, HUBERT MEREDITH-JONES, a subject of the King of England, and a resident of New York, county and State of New York, have invented a certain new and useful Improvement in Vacuum-Cleaners, of which the following is a full, clear, and exact specification.

This invention relates to a class of pneumatic cleaners adapted to be utilized for removing accumulated dust and litter through the medium of air pressure produced by a suction device.

My invention has for its object primarily to provide a vacuum cleaner designed to be employed in factories as well as in residences and elsewhere whereby dust and accumulated litter may be readily removed without the use of sweeping devices and like implements; to provide a separator composed of a cylinder having a top plate in which is an opening, and on the top of the cylinder a hollow cover in which is arranged an inner casing having an open bottom which is partially closed by the top of the cylinder, thereby providing communicating air chambers; to provide in the lower part of the cylinder two transverse partitions which are spaced apart to provide a third chamber, and in one of these partitions an opening leading into the other chamber of the cylinder; to provide the chamber of the cover with an inlet, and the lower chamber of the cylinder with an outlet.

Other objects of the invention are to provide an intersticed, or perforated receiver, or bag of fabric, or other suitable material, and to mount this bag removably in the opening of the cover so as to be suspended in the upper chamber of the cylinder; to provide in the lower chamber of the cylinder a suction device, or fan adapted to be operated for suctionally forcing air under pressure through the inlet of the cover, through the receiver and through both chambers of the cylinder for being exhausted through the outlet; to provide means whereby the suction device may be electrically operated; and to provide a yielding retaining element serving to removably hold the receiver against accidental displacement to the cover at its opening.

A further object of the invention is to provide a vacuum cleaner of simple and efficient construction, and which is susceptible of being made in any desired size and in different shapes.

A practical embodiment of the invention is represented in the accompanying drawing forming a part of this specification in which similar characters of reference indicate corresponding parts in all the views, the said invention being more fully described hereinafter, and then pointed out in the claims at the end of the description.

In the drawing, Figure 1 is a perspective view of one form of vacuum cleaner embodying my invention.

Fig. 2 is an enlarged elevation, partly in section and partly in detail, of the separator of the device.

Fig. 3 is an enlarged fragmentary sectional view of a part of the upper portion of the separator.

Fig. 4 is an enlarged fragmentary view showing the upper part of the receiver used in the separator, and

Fig. 5 is an enlarged view taken on the line II—II of Fig. 2.

The vacuum cleaner has a separator 10 constructed with a cylinder, or hollow body 11 which is supported on a hollow base 12 of a suitable form to adapt the separator to rest upon the floor or surface of the place where the device may be in use.

The cylinder 11 has a top plate 13 provided with a round opening 14, and the peripheral edge of the top plate at its opening is struck upwardly to provide an annular flange 15. The flange 15 is curved in substantially an S-shape, as viewed in cross-section, so as to provide an annular groove 16 around the base of the flange. Adjacent to the outer edge of the top plate 13 is an upwardly extending concentric bead 17, and around the outer surface of the wall of the cylinder 11 contiguous to its upper edge is provided a bead 18. In the lower part of the cylinder 11 are two transversely disposed partitions 19 and 20 which are spaced apart to provide a lower chamber 21 in the cylinder while the space between the partition 20 and the top plate 13 provides an upper chamber 22. Centrally of the partition 20 is an opening 23, and adjacent to the edge of the partition is an opening 24. Through the wall of the cylinder 11, and in proximity to the opening 24 is an opening 25 leading into the lower chamber 21 of the cylinder, and disposed through this

opening as well as through the opening 24 of the partition 20 is an inlet pipe 26 for admitting air therethrough. The inlet pipe 26 is of sufficient length to extend upwardly through the cylinder so that its upper end communicates with an opening 27 provided in the top plate 13 of the cylinder, and the lower end of said pipe extends a suitable distance outwardly of the cylinder. Also through the cylinder at a part thereof diametrically opposite to the inlet pipe is an opening in which is inserted an outlet pipe 28.

On the top of the cylinder 11 is a hollow cover 29 which is hinged to the cylinder, at 30, so as to be adapted to be swung to open and closed positions on the top plate 13. The cover 29 is preferably semi-spherical, or cup-shaped, and arranged interiorly of the cover is a casing 31 having an open bottom which is in opposed relation to the top plate 13 of the cylinder when the cover is closed thereon whereby a chamber 32 is provided in the cover. The casing 31 is of a diameter approximately equal to the part of the top plate 13 within its concentric bead 17 so that the passage through the pipe 26 will lead into the chamber 32, and this chamber will also be in communication with the upper chamber 22 of the cylinder. The side wall of the casing 31 is vertically disposed, as shown. The greater part of this wall and the wall proper of the cover are thereby spaced apart, and in this space is provided a packing 33 of felt, or other suitable material with which the concentric bead 17 of the top plate 13 contacts when the cover is closed on the cylinder, in order that the connection between the cover and the cylinder may be air-tight.

Suspended in the chamber 22 of the cylinder 11 is an intersticed, or perforated receiver, or bag 34 made of fabric, or other suitable material adapted to permit air to pass therethrough, but which will serve to obstruct the passage of dust, or other substances which the air may be charged with whereby the foreign matter may be retained in the bag. The porous bag 34 may be of any desired size and shape, and the upper open end of said bag is removably disposed in the opening 14 of the top-plate 13 of the cylinder so that the edge portion of its mouth will overlap the upper edge of the S-shaped flange 15 of said top-plate. Serving as means to removably hold the receiver, or bag 34 upon the flange 15, I provide a yielding retaining element, or clamp 35. The clamp 35 is preferably made of spring metal, and this clamp has an annular body 36 which is stitched, or otherwise attached around the bag at the edge of its mouth. The clamp 35 is formed so that both end portions thereof overlap each other, and the free end parts of these overlapping ends are bent upwardly, as at 37, so as to be spaced apart. When applying the bag, or receiver 34 to the separator, it is disposed through the opening 14 of the top plate 13 so that the clamp 35 will rest upon the upper edge of the S-shaped flange of the top plate. By then forcing the bent ends 37 of the clamp 35 toward each other the body 36 of the clamp will be spread sufficiently for guiding the clamp over the S-shaped flange, and on releasing the bent ends of the clamp it will tightly engage the flange for holding the bag against accidental displacement in the separator.

As is incident to vacuum cleaners of this type, to the end of the inlet pipe 26 extending beyond the cylinder 11 is attached one end of a flexible pipe 38 carrying on its other end a metal pipe 39 and a nozzle 40, and for the purpose of utilizing air under pressure for removing from surfaces dust and litter, in the lower chamber 21 of the cylinder 11 is provided a suction device, or fan 41. The suction device 41 may be of any desired make, but I prefer to employ a form of fan, such as is disclosed in my pending application, serially numbered 807,039, and which is not claimed specifically as a part of this present invention. The fan 41 is held upon one end of the shaft 42 of an electric motor 43, and this shaft is journaled in the walls of a box 44 provided upon the underside of the partition 19 of the cylinder so as to be disposed in the interior of the hollow base 12. The motor 43 is thus arranged in the box 44, and this motor may be of any well known type adapted to efficiently drive the fan. The motor 43 may be operated by an electric circuit transmitted thereto from any suitable source of electricity supply through the medium of wires, as 45 and 46, which are connected to the motor and pass exteriorly of the base 12 through two holes 47 and 48 provided therein.

This vacuum cleaner is operated in the customary manner, for instance the separator 10 is suitably positioned, and the pipe 39 is directed by the operator of the device for guiding the nozzle over the surface to be cleaned. When the circuit to the motor 43 is closed the fan 41 will be driven for suctionally forcing the air which may be charged with dust and litter through the nozzle 40, through the pipes 39 and 38, through the inlet pipe 26, through the chamber 32 of the cover 29, and into the bag 34. The air will pass through the interstices of the bag 34 into the chamber 22 of the cylinder, while the foreign substances will be filtered therefrom and collected on the interior surface of the bag. The rarefied air will then be forced from the chamber 22, through the opening 23 of the partition 20, through the chamber 21 of the cylinder 11

and exhausted through the outlet pipe 28. Obviously by making the separator 10, the pipes 38, 39, and the nozzle 40 of sufficient sizes litter of various classes as well as dust may be readily removed from surfaces by the employment of this form of vacuum cleaner.

In the foregoing description, I have embodied the preferred form of my invention, but I do not wish to be understood as limiting myself thereto, as I am aware that modifications may be made therein without departing from the principle, or sacrificing any of the advantages of this invention, therefore I reserve to myself the right to make such changes as fairly fall within the scope of the appended claims.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:—

1. In a vacuum cleaner, a cylindric casing divided into an upper, a lower, and an intermediate chamber, an inlet and an outlet in the lower chamber, means connecting said inlet to said upper chamber, a dust receiver mounted in the intermediate chamber and communicating with said upper chamber, and means carried within the lower chamber for drawing air through said inlet thence into said dust receiver, and finally exhausting said air through said outlet.

2. In a vacuum cleaner, a casing divided into an upper, a lower, and an intermediate chamber, an inlet and an outlet in said lower chamber, means connecting said inlet with said upper chamber, a dust receiver mounted in said intermediate chamber and communicating with said upper chamber, and a suction device mounted within said lower chamber and adapted to create a suction within said intermediate chamber.

3. In a vacuum cleaner, an open ended cylinder having a pair of transverse partitions in its lower portion, the upper of said partitions being provided with an opening, a suction device mounted on said lower partition, means for driving said device, an inlet and an outlet in said cylinder intermediate said transverse partitions, a dust receiver mounted in the open end of said cylinder, and a cover for said cylinder, said cover being adapted to form a closed chamber above said dust receiver, together with means connecting said inlet with the interior of said closed chamber, substantially as described.

4. In a vacuum cleaner, an open ended casing having a separate chamber in the lower portion thereof, said chamber being in open communication with the top portion of the casing, a dust receiver closing the open end of the casing, and a top for said casing adapted to form a closed chamber above said dust receiver, an inlet and an outlet in said cylinder located within said lower chamber, means for connecting said inlet with the interior of the upper closed chamber, together with means for creating a suction within said lower chamber immediately below said dust receiver.

5. In a vacuum cleaner, an open ended casing, a transverse partition in the lower end of said casing having a housing attached to the bottom thereof, a motor mounted in said housing, a suction device carried by said partition and adapted to be driven by said motor, a second partition in open communication with the interior of the casing, an inlet and an outlet in said casing intermediate said partitions, and a dust receiver secured in the open end of the casing; together with a top for said casing adapted to form a substantially closed chamber over said dust receiver, said inlet being in open communication with the interior of said substantially closed chamber, substantially as and for the purpose described.

This specification signed and witnessed this ninth day of February A. D. 1914.

HUBERT MEREDITH-JONES.

Witnesses:

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