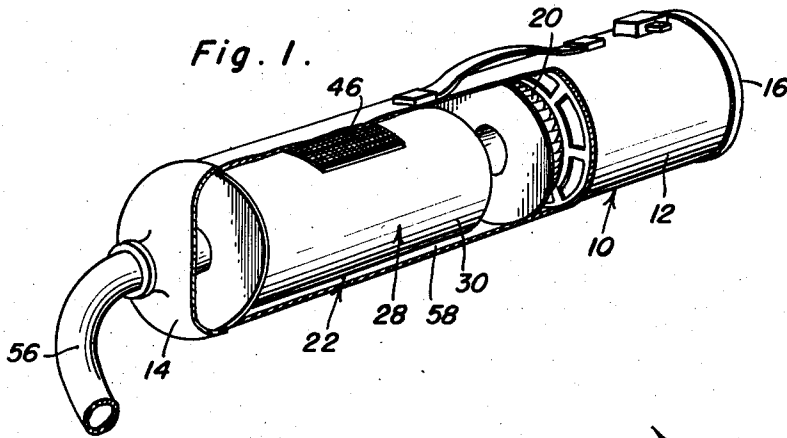
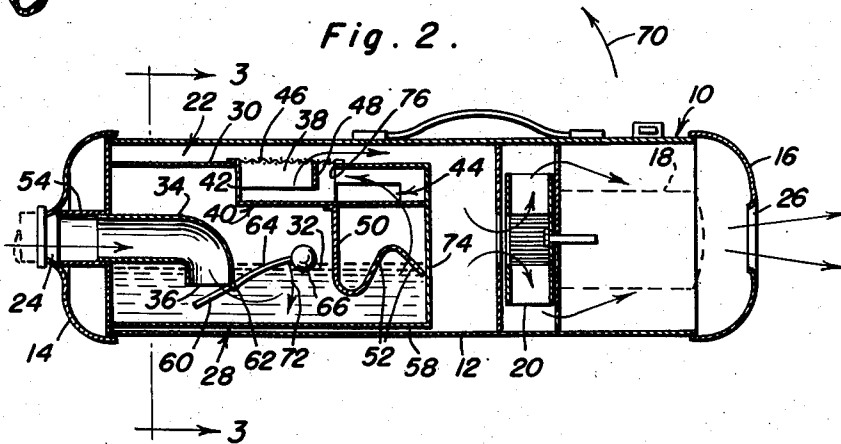
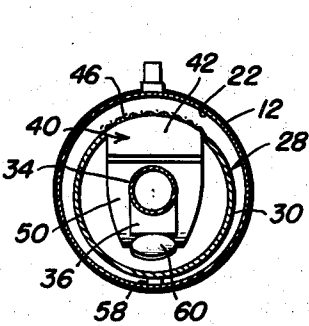
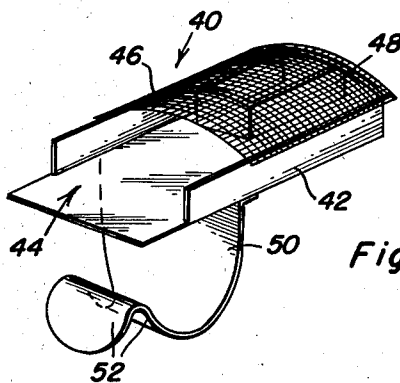


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W. H. SCHNABEL
VACUUM CLEANER CARTRIDGE
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VACUUM CLEANER CARTRIDGE

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1 Claim. (Cl. 183—22)

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This invention relates to new and useful improvements and structural refinements in vacuum cleaners, more specifically, vacuum cleaners of the tank type wherein the dust, etc., is collected in a removable dust bag, and the principal object of the invention is to facilitate relatively greater operating efficiency and sanitary nature of vacuum cleaners of this type.

The dust bag in a conventional vacuum cleaner is formed from loosely woven fabric so as to facilitate passage of air therethrough, but as the dust is deposited in the bag, the mesh of the fabric becomes gradually filled with dust particles which considerably hinder the passage of air through the bag and the operating efficiency of the machine is considerably impaired.

An important feature of the invention therefore resides in the elimination of the conventional dust bag and substitution thereof by a cartridge, so to speak, containing a liquid cleaning agent, matters being so arranged that the dust laden air is passed through the agent and is thereby freed from particles of foreign matter before it is exhausted into the atmosphere.

An additional feature of the invention resides in the provision of a filtering screen at the air exhaust opening of the cartridge, and also, in the provision of baffles within the cartridge adjacent the exhaust opening, which baffles provide assurance against the possibility of the air travelling directly through the outlet after bubbling through the liquid cleaning agent.

A still further feature of the invention lies in the provision of means for automatically closing the air inlet of the cartridge, when the entire machine is tilted from a substantially horizontal position, whereby the possibility of the liquid agent spilling through the air inlet is eliminated.

An important advantage of the invention lies in its simplicity of construction and in its adaptability for convenient substitution for the conventional dust bag in existing machines.

With the above more important objects and features in view and such other objects and features as may become apparent as this specification proceeds, the invention consists essentially of the arrangement and construction of parts as illustrated in the accompanying drawings, in which:

Figure 1 is a perspective view of a vacuum cleaner, partially broken away so as to reveal the invention in situ therein;

Figure 2 is a longitudinal cross sectional view of the subject shown in Figure 1;

Figure 3 is a cross sectional view, taken sub-

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stantially in the plane of the line 3—3 in Figure 2, and

Figure 4 is a perspective view of the air outlet screen and baffle assembly used in the invention. Like characters of reference are employed to designate like parts in the specification and throughout the several views.

Referring now to the accompanying drawings in detail, the general reference character 10 designates a tank type vacuum cleaner of a more-or-less conventional nature, the same including in its construction a horizontally disposed cylindrical housing 12 provided with suitable end caps 14, 16 and containing in one end portion thereof an electric motor 18 driving a suitable blower fan 20.

The remaining end portion of the housing 12 provides a dust collecting chamber 22, and the caps 14, 16 are formed with inlet and outlet apertures 24, 26 respectively, whereby passage of air through the machine is facilitated upon energizing of the motor 18.

In conventional practice, a dust collecting bag is removably receivable in the chamber 22, but the invention contemplates the provision of a cleaner cartridge 28 in substitution for the conventional bag, as will be clearly apparent from the following disclosure.

The cartridge 28 embodies in its construction a horizontally elongated receptacle 30 which is intended to receive a quantity of a liquid cleaning agent, such as water, or the like, the normal level of which is indicated at 32 in Figure 2. The receptacle 30 is provided in one end thereof with an air inlet duct 34 which extends into the receptacle and has a downwardly arcuated inner end portion 35 submerged in the liquid agent in the receptacle, as will be readily understood.

An air outlet opening 38 is provided in the upper portion of the receptacle 30, and a combined screen and baffle unit 40 is removably receivable in the receptacle through the medium of the opening 38. The unit 40 includes a box-like closure 42 having an open side 44 and is partially covered by a convexo-concave filter screen 46, a relatively smaller, box-like baffle 48 being secured within the enclosure 42, under the screen 46, as is best shown in Figure 4.

A downwardly extending baffle 50 is secured at the upper end thereof to the underside of the enclosure 42, the baffle 50 having a reversely arcuated or angulated lower end portion, as indicated at 52.

It should be understood that the dimensions of the unit 40 are such that it may be easily in-

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serted, in a longitudinally tilted position, into the receptacle 30 through the opening 38 until it is disposed in a position shown in Figure 2, wherein the screen 46, by engaging the outer surface of the receptacle 30, prevents the unit from dropping completely into the receptacle, as will be clearly apparent. It is to be also noted that in this position, the lower portion 52 of the baffle 50 is partially submerged in the liquid agent in the receptacle, substantially as shown.

The aforementioned duct 34 may be provided at the outer end thereof (inside the cap 14) with a tubular adapter 54, whereby a conventional attachment hose 56 may be connected to the duct 34 after being passed through the air inlet aperture 24 in the cap 14. It will be also understood that the dimensions of the cartridge 28 are such that it may be readily installed in the chamber 22 after removal of the cap 14, the cartridge 28 being substituted for the conventional dust bag.

In any event, when the invention is placed in use, dust laden air drawn by the blower 20 through the hose 56 will pass into the receptacle 30 through the duct 34, and while bubbling through the liquid cleaning agent in the receptacle, the air will be freed from dust and other foreign matter. Thereafter, the clean air, after negotiating its passage around the various baffles of the unit 40, is permitted to pass into the chamber 22 through the filter screen 46, so that it may thereafter be discharged through the exhaust aperture 26 of the machine in the usual manner.

The purpose of the screen 46 is to prevent relatively large foreign particles from accidentally passing through the cartridge 28 to the blower 20, while the various baffles in the unit 40 provide assurance that the air, after bubbling through the cleaning agent, does not pass directly through the outlet opening 38, but is maintained as long as possible in contact with the cleaning agent.

The inner end of the receptacle 30 may, if desired, be provided on the underside thereof with a suitable skid 58 for the purpose of retaining the receptacle in a substantially horizontal position. However, in order to prevent the possibility of the liquid agent from spilling outwardly through the duct 34 when the entire vacuum cleaner is tipped from a horizontal position, a normally open closure 60 is pivoted as at 62 to the portion 36 of the duct 34, the closure 60 carrying an arm 64, which, in turn, is provided at its outer end with a suitable float 66.

Matters are so arranged that this float, although possessing a certain amount of buoyancy in order to sustain flotation, also possesses sufficient weight so that when the entire machine is tipped in the direction of the arrow 70, the float 66 moves in the direction of the arrow 72 in response to gravity, whereby the closure 60 automatically covers the inner end of the duct 34, and escape of the liquid agent through the duct is prevented. Needless to say, when the machine is in a substantially horizontal position, 55

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the bouyancy of the float 66 normally retains the closure 60 in an open position, as shown in the accompanying drawings.

It should be also explained that when the receptacle is to be filled with water, or the like, the entire cartridge is simply removed from the chamber 22 and the screen and baffle unit 40 is withdrawn from the receptacle through the opening 38. Thereupon, with the receptacle 30 standing on its inner end 74, the liquid agent may be poured into the receptacle through the opening 38 and the opening is so disposed with respect to the lower end 74 that when the liquid level in the upright receptacle reaches the edge 76 of the opening 38, the filling operation is discontinued and the receptacle returned to a horizontal position with the liquid agent being at its proper level indicated at 32. The unit 40 may then be re-installed in the receptacle and the entire cartridge replaced in the vacuum cleaner.

It is believed that the advantages and use of the invention will be clearly apparent from the foregoing disclosure and accordingly, further description thereof at this point is deemed unnecessary.

While in the foregoing there has been shown and described the preferred embodiment of this invention it is to be understood that minor changes in the details of construction, combination and arrangement of parts may be resorted to without departing from the spirit and scope of the invention as claimed.

Having described the invention, what is claimed as new is:

In a filter cartridge for vacuum cleaners, the combination of a horizontally disposed cylindrical receptacle partly filled with a liquid cleaning agent, an air inlet duct extending into one end of said receptacle and having a down-turned inner end submerged in said liquid agent, an upper portion of the lateral wall of said receptacle being provided with a rectangular air outlet opening, and a combined screen and baffle unit comprising a horizontally elongated panel positioned in the upper portion of the receptacle and having a pair of upturned flanges at the longitudinal edges thereof, a convexo-concave screen secured at opposite edges thereof to said flanges and constituting a foraminous cover for said opening, and a baffle plate extending downwardly from said panel and having an undulated horizontal lower portion partly submerged in said liquid agent.

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