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DUST COLLECTING RECEPTACLE FOR VACUUM CLEANER

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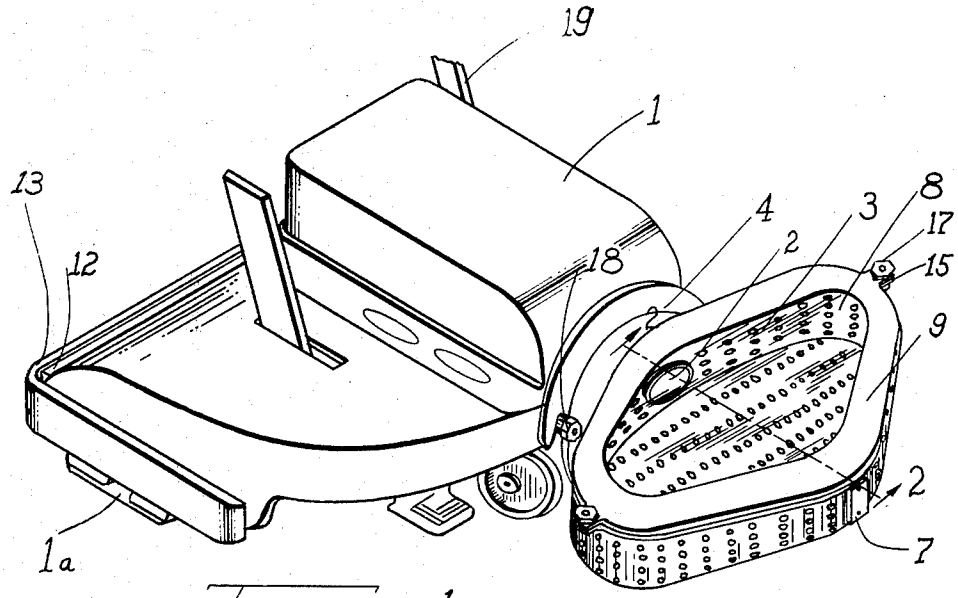


FIG. 1

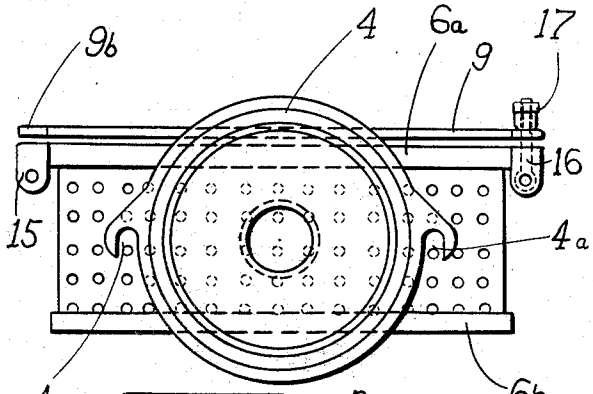


FIG. 3

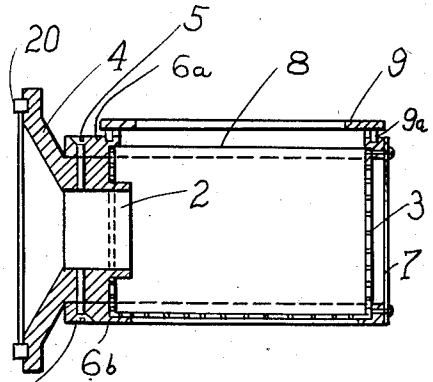


FIG. 2

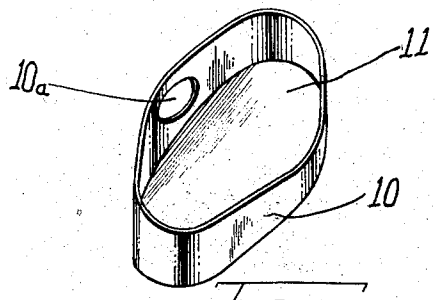


FIG. 4

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DUST COLLECTING RECEPTACLE FOR VACUUM CLEANER

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1 Claim. (Cl. 183—51)

Our invention relates to a vacuum cleaner and, more particularly, to a dust filtering and collecting unit therefor whose contents can be viewed at all times while the cleaner is in operation.

The well-known type of vacuum or suction cleaner includes a cleaner bag attached to the exhaust passageway of a fan chamber, which cleaner bag generally is supported at one end on the handle. In another type of cleaner, the filtering and suction units are both embodied in a housing to which the dust laden air stream is led through a flexible suction hose from a cleaning tool. In both these types of cleaners an outstanding disadvantage is that the interior of the filtering unit is not visible at all times so as to inform the operator as to how much dust has already been collected therein, or the nature of the dust particles. Also the detaching, removal and emptying of such units involve somewhat complicated, disagreeable and dusty operations.

An object of our invention is to provide a novel vacuum cleaner which is devoid of the above-named disadvantages of common types of vacuum cleaners and which includes an air cleansing unit which is readily detachable and easily emptied, also which is very effective in thoroughly filtering and collecting dust particles.

A still further object of our invention is to provide in a vacuum cleaner, an air cleansing unit which includes a disposable filtering pan for collecting dust particles, and having a sealed top window to enable viewing of the contents of the pan at all times while the cleaner is in operation to note the amount of dust collected therein.

Other objects and advantages of the present invention will become apparent from a study of the accompanying drawing wherein:

Figure 1 is a perspective view of the main portion of a vacuum cleaner having mounted at the rear thereof a dust collecting unit, with the filter bag removed, embodying the principles of our invention;

Figure 2 is a cross-sectional view taken along line 2—2 of Figure 1;

Figure 3 is a rear view of the dust collecting unit shown in Figures 1 and 2; and

Figure 4 is a perspective view of a filter bag which is adapted to be mounted within the perforated container shown in Figures 1 and 2.

Referring more particularly to Figure 1 of the drawing, numeral 1 denotes a vacuum or suction cleaner casing of well-known type having a forward nozzle communicating with an enclosed fan chamber which discharges air through an exhaust passageway or nozzle 2 into a perforated receptacle 3. The receptacle 3 may be round or somewhat elliptical, as shown, and may be of sheet metal, plastic or die cast metal. It has holes or perforations in the sides and bottom thereof for escape of clean air. The holes may be cast into any desired pattern. In the side wall an opening or spout is provided through which the nozzle 2 is adapted to project, which spout may be round or elliptical, as desired. The

nozzle 2 forms part of an adapter 4 having a flange with diametrically opposite slots 4*a* through which bolts 18 may extend to fasten the adapter to the rear portion of the vacuum cleaner casing. The receptacle 3 may be perforated with very small holes or made of very small mesh screening or cloth sufficient to filter dust particles, in which case it may be used alone without a filter bag. Alternately the receptacle 3 may have larger holes and may have mounted therein a dust collecting bag and filter 10, such as shown in Figure 4, made of fibrous, porous material adapted to filter dust particles. Bag 10 is provided with a hole 10*a* in the side thereof for registry with nozzle or spout 2.

Bolted onto adapter 4 by bolts 5 are a pair of somewhat elliptical, ring-like members 6*a* and 6*b* which are adapted to form a framework for supporting the perforated receptacle 3. A name plate and stiffener 7 forms a brace for the most rearward portion of members 6*a* and 6*b*. On the top surface of member 6*a* there is adapted to be mounted, in a dust-tight manner, a transparent cover 8 made of glass or transparent plastic material. A cover ring 9 may be cemented to the glass cover 8 to provide a removable lid. A sealing gasket 9*a* may be inserted in a grooved portion on the top surface of member 6*a* (or in the lower surface of cover ring 9) for providing the aforesaid dust-tight seal. Ear portions 15 may be provided on opposite sides of the top member 6*a* for pivotally supporting pivotally mounted bolts 16 onto which are screw threaded nuts 17. The bolts may be swung through grooved portions 9*b* of ring member 9. They afford a means for detachably clamping cover ring 9 against the sealing ring 9*a*. The above described bolt assembly may also include a spring immediately below nut 7 to provide a yieldable clamping action if desired, or a spring snap or catch fastening device may be used.

The perforated receptacle 3 may be detachably clamped, by means of adapter 4, to the rear opening of the vacuum sweeper to take the place of the conventional elongated dust bag that is similarly clamped thereto, and which is supported, at the top end, by the sweeper handle (not shown) attached to the fork 19. A tight seal is provided by gasket 20.

In operation, assuming that no dust bag is supported in the perforated receptacle 3 and that the holes or screening interstices of such receptacle are sufficiently small to filter dust, then as air is sucked in through the nozzle 1*a* and blown out through nozzle 2, it will flow outwardly through the perforations of receptacle 3 so as to collect or arrest the dust within receptacle 3. On the other hand if the perforations of receptacle 3 are large, and if a filter bag, such as 10 shown in Figure 4 with a hole 10*a*, is mounted in the receptacle, dust-laden air is blown through the filtering material of the bag and thereby collected within the bag so that the filtered air can be blown outwardly through the perforations of receptacle 3. Filter bag 10 may be either emptied and cleaned out, after each filling, or thrown away and replaced with a new bag, as desired.

If desired, a transparent plastic top portion 11 may be sealed to the top of filter bag 10 as shown in Figure 4, however, such top portion may be omitted, particularly in the case of the disposable bag. A very outstanding advantage of the transparent cover for the receptacle, as well as for the filter bag, is that it enables viewing by the operator of the contents of the dust collecting bag at all times so as to quickly alert the operator when the bag is almost filled with dust and requires emptying, also so as to alert the operator concerning the nature of the dust or foreign particles being collected to warn the operator if the nap of the rug is being unduly

removed, or if foreign particles such as coins, otherwise lost, have been picked up.

As a further aid to prevent entry of coins or metal objects in the sweeper which may damage the blower fan blades, there may be provided a bar magnet **12**, such as of Alnico or other highly magnetic material, and disposed in front of the sweeper, immediately behind a rubber bumper **13**, so as to magnetically attract such articles and thus prevent their entry into nozzle *1a*.

The receptacle **3** and filter bag are shown to be of somewhat elliptical shape in order to provide greater compactness of construction and a minimum amount of rearward projection. It will be understood, however, that it may be round, instead, or perhaps even more closely elliptical and flatter in shape to provide a minimum rearward projection. Also while a specific flanged portion of adapter **4** is shown other shapes may be used to accommodate other types of vacuum sweepers such as those having exhaust passageways in the rear, top, side or front, for forming an airtight connection for the dust receptacle. The dust collector or receptacle may be mounted in other types of sweepers than that shown, such as tank types and those with round housings containing the filter bag, in which case the overhanging housing portion is made of transparent plastic material to enable viewing of the filter bag interior. Chemically treated filter bags may be used for deodorizing, moth proofing, etc.

Thus it will be seen that we have provided a highly efficient dust collecting and filtering receptacle which may include a disposable filter bag, which receptacle is of such construction as to enable constant viewing of the nature of the collected dust, and efficiency of the cleaner, at all times by the operator so as to let the operator know when the bag is filled and when coins and other foreign matter are being collected, so that they may be recovered; furthermore we have provided an adapter and removable transparent lid which enables quick attachment of our dust collector to standard types of vacuum cleaners, in place of conventional bags, such as the kind having an elongated filter bag mounted on an upwardly extending handle, and which lid is easily and quickly removed for enabling removal of the filter bag; also we have provided a bar magnet which will assist in preventing entry of damaging magnetic objects into the vacuum cleaner.

While we have illustrated and described an embodiment of our invention, it will be understood that this is by way of illustration only, and that various changes

and modifications may be made within the contemplation of our invention and within the scope of the following claim.

We claim:

A dust collecting receptacle for attachment directly to the exhaust passageway of a vacuum cleaner, said receptacle being of rigid material having perforated side and bottom walls and a readily detachable top lid and having an air outlet opening in said side wall, said lid having a window portion of rigid transparent material, said receptacle having readily detachable mounting means including an air outlet nozzle for attaching the receptacle on the vacuum cleaner so that said air outlet opening will be in registry with said exhaust passageway, a disposable filter bag of substantially the same shape as said receptable and snugly fitted therein, said filter bag having an opening in its side wall for attachment to said nozzle and adapted to register with said air outlet opening of said receptacle for communication with said exhaust passageway, said filter bag having a top wall portion of transparent plastic material disposed substantially in registry with and close to said window portion of the receptacle so that the window portion will serve as a rigid backing for supporting said bag as air from said vacuum cleaner exhausts therethrough, throughout the side and bottom walls, and through the perforations in the side and bottom walls of said receptacle, whereby the contents of said bag may be viewed at all times through said window portion.

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