Dec. 26, 1939. R. M. REED 2,184,433

SUCTION CLEANER

Filed Oct. 8, 1938

Fig. 1.

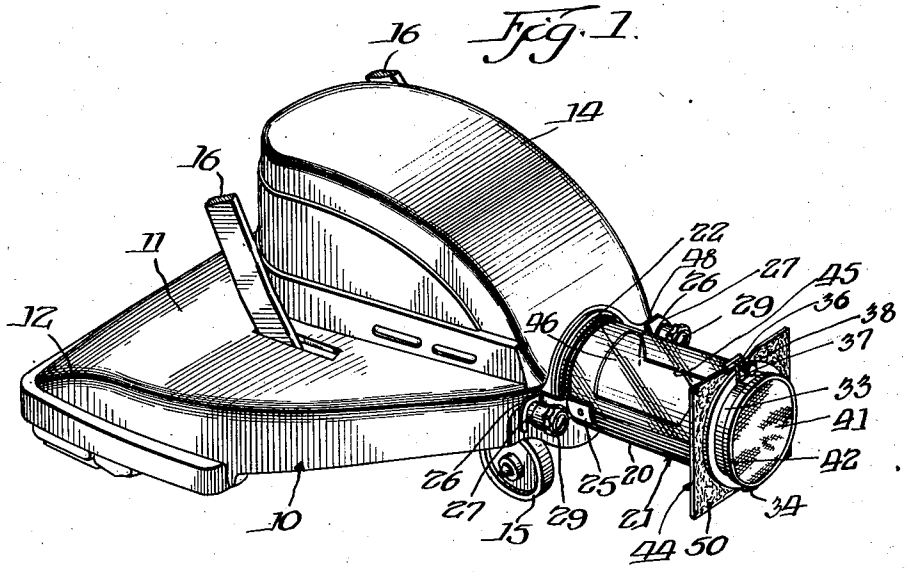
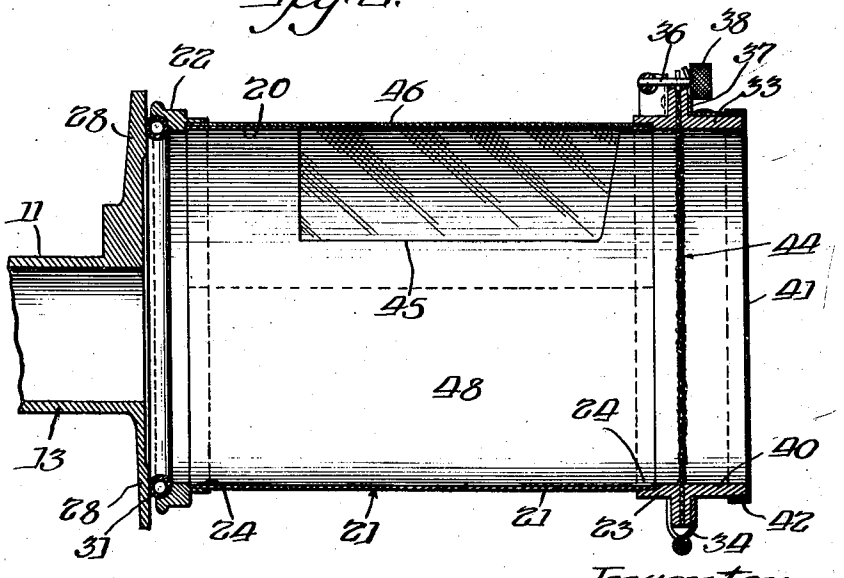


Fig. 2.



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SUCTION CLEANER

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5 Claims. (Cl. 35—13)

The present invention relates to suction cleaners in general and particularly to new and novel improvements in dirt traps for demonstrating the cleaning effectiveness of suction cleaners.

In merchandising suction cleaners it is necessary to demonstrate to the prospective purchaser the cleaning effectiveness of the cleaner. The method, now practiced, to demonstrate the amount of dirt removed from a floor covering is to operate the cleaner over the surface to be cleaned and then remove the cleaner bag and empty the dirt therefrom. Removing and emptying the bag is a disagreeable operation.

The purpose of this invention is to eliminate these and other disadvantages by providing a demonstration dirt trap which is an accessory for the cleaner and functions without employing the usual cleaner bag. In using my invention the usual cleaner bag is removed from the cleaner exhaust and the accessory is attached thereto. The accessory is so constructed as to provide a dirt chamber in which all the dirt removed from the surface covering accumulates therein, and an observation glass is disposed with respect to the dirt chamber so that the prospective purchaser can operate the cleaner and at the same time observe the dirt-laden air whirling within the dirt trap and also notice the dirt accumulating within the dirt chamber.

It is therefore an object of the invention to provide a new and improved accessory to be used for suction cleaners. Another object is to provide a new and improved demonstration dirt trap adapted to be used on suction cleaners, exclusive of the usual cleaner dirt bag. A further object is the provision of a dirt trap adapted for use as an accessory for suction cleaners, and embodying an easily removable air filter. Another object of the invention is the provision of an accessory dirt trap for suction cleaners whereby the purchaser can observe the foreign matter accumulate as the suction cleaner is moved over the surface being cleaned. Other objects and advantages of the invention will be apparent from the specification and drawing, wherein:

Figure 1 is a rear perspective view of a suction cleaner showing the cleaner filter bag removed and a demonstration dirt trap attached to the exhaust of the cleaner; and

Figure 2 is a sectional view through the dirt trap.

The embodiment of the invention herein disclosed comprises a suction cleaner 10 provided with a casing 11 having a nozzle 12 and an exhaust passageway 13. Detachably supported on the casing 11 is a motor housing 14 adapted to receive a motor for driving an unshown suction creating fan in the cleaner casing 11 to draw air through the nozzle 12 and discharge the same through the cleaner exhaust passage 13 into the usual suction cleaner bag. Suitable wheels 15, only one of which is shown, support the cleaner which is propelled over the floor covering by means of a handle 16 pivotally mounted on the cleaner casing.

The demonstration dirt trap 21 comprises an elongated cylindrical casing 20 the opposite ends of which are supported in annular members 22 and 23. Secured to the cylindrical casing 20 are oppositely disposed members 25 provided with laterally extending hook-like portions 26, 26 which are adapted to be removably supported upon a pair of studs 27, 27 projecting rearwardly from the casing 11. The dirt trap is detachably secured to the flange 28 at the discharge end of the cleaner casing by means of clamping nuts 29, 29 threaded onto the studs 27, 27, the nuts normally securing the lower end of the usual cleaner filter bag to the flange 28 for communication with the exhaust outlet 13. The end member 22 of the dirt trap is provided with an annular recess for the reception of a sealing gasket 31 to provide an air tight joint between the exhaust flange 28 and the dirt trap.

A closure plate 33 is pivotally secured to the end 23 of the casing 20 by means of a hinge construction 34. The cover 33 is normally locked to the casing 20 by a latch construction comprising a bolt 36 pivotally secured to the end member 23 and a keeper 37 on the closure plate 33, a knurled knob 38 being threaded on the bolt 36 and engageable with the keeper 37. The cover 33 is provided with a longitudinally extending cylindrical portion 40 to which a metal screen 41, or other suitable filtering material, is secured by means of an annular band 42. Removably disposed between the end wall 23 and the cover 33 is a filtering member 44 such as lintine, or similar filtering material, which is clamped in place between the cover 33 and the end wall 23 of the casing 20.

The cylindrical casing 20 is provided with an opening 45 along its top surface which extends along the latter in an arc of substantially 180°. The opening 45 is covered by a transparent material 46 which is secured to the casing 20 by arrangement in the rabbeted ends 24 in the opposite end members 22 and 23. The transparent member 46, or observation glass, cooperates with the casing 20 and filter 44 to define a dirt collecting chamber 48, which communicates with the discharge passageway 13 in the cleaner casing 11. The cleaner exhaust passageway 13 is disposed at an angle, not shown, with respect to the dirt collecting chamber 48 and accordingly, the air exhausted from the cleaner, will be discharged at an angle into the dirt collecting chamber 48 to cause the dirt-laden air to swirl therein.

In order to demonstrate the cleaning effectiveness of the cleaner the usual suction cleaner filter bag is removed and the accessory dirt trap is at-

tached to the exhaust of the cleaner by manipulating the clamping nuts 29, 29 thereby placing the discharge passageway 13 and the dirt collecting chamber 48 in air tight communication. The cleaner motor is energized to rotate the fan which creates suction and as the cleaner is propelled along the floor covering the dirt-laden air is drawn through the nozzle 12 and is discharged through the exhaust passageway 13 into the dirt collecting chamber 48.

Foreign matter in the dirt laden air will collect in the dirt chamber 48 and clean air will pass through the filter member 44 and through the holes in the screen or perforated disc 41 into the outer atmosphere. All foreign matter is removed from the dirt-laden air by the filter member 44 so that only clean air is discharged into the atmosphere. As the foreign matter is discharged into the dirt chamber 48 it swirls in the latter due to the tangential discharge of the dirt-laden air into the dirt chamber. Since the dirt trap is attached to the exhaust end of the cleaner it is very simple for the prospective purchaser to propel the machine over the floor covering in the normal manner of operating the cleaner and at the same time look downwardly through the window 46 and observe the accumulation of all the foreign matter removed from the surface being cleaned.

After the cleaning operation the dirt trap accessory is disconnected from the cleaner, and the nut 38 is manipulated to open the cover 33. The mass of foreign matter in the chamber 48 is then easily removed and the filtering member 44 is removed by grasping an exposed clean portion 50. The part of the filter 44 exposed to the dirt-laden air will be covered on one side with a deposit of foreign material, clear evidence, in addition to the mass of foreign material in the chamber 48, of the total amount of dirt which has been removed by operating the suction cleaner. A clean filter is used for each demonstration.

It is to be understood that the device functions without the usual dust filtering bag, and does not take the place of the latter, in the normal use of the cleaner. The device is an accessory for the purpose of determining and observing the cleaning effectiveness of the cleaner, and the observing of the progressive accumulation of all the foreign matter removed from the surface being cleaned.

I claim:

1. An accessory for demonstrating the cleaning effectiveness of a suction cleaner comprising, a casing having an air passageway and adapted to have one of its ends attachable to the exhaust of the suction cleaner to cause dirt-laden air to pass into said passageway, closure means pivotally secured to the opposite end of said casing, filter means secured between said casing and closure means in a plane normal to the direction of flow of said dirt-laden air and cooperating with said casing to define a dirt chamber, and to remove foreign material from said dirt-laden air to retain said foreign material in said dirt chamber, and a window in said casing normal to said filter means for observing the accumulation of said foreign material in said dirt chamber as said cleaner is moved over the surface being cleaned.

2. An accessory for demonstrating the cleaning effectiveness of a suction cleaner comprising, a casing having an air passageway and adapted to be detachably connected to the suction creating means to cause dirt-laden air to pass therein, a filter in said passageway normal to the direction of flow in said dirt-laden air and cooperating with said casing to define a dirt collecting chamber, said filter removing foreign material from the dirt-laden air and retaining the same in said dirt chamber, and a window in said casing normal to said filter for observing the accumulation of said foreign material in said dirt chamber.

3. An accessory for demonstrating the cleaning effectiveness of a suction cleaner comprising, a casing having a dirt chamber, means on said casing for the detachable connection of said casing to the exhaust of the suction cleaner in place of the usual cleaner filter bag, a filter for removing foreign material from dirt-laden air exhausted by said cleaner and to retain the same in said dirt chamber, and a window normal to said filter and carried by said casing, said filter and window being arranged with respect to said dirt chamber for the casing to support the accumulating foreign material removed from the surface being cleaned within the view of an observer looking through said window.

4. In a suction cleaner having an exhaust passageway, an exhaust flange on said cleaner for connection to the usual cleaner filter bag, a casing having a dirt chamber, means on said casing for detachably connecting one end thereof to said exhaust flange in place of the usual cleaner filter bag, said dirt chamber being relatively larger in cross section than said exhaust passageway to dispose a portion of said dirt chamber below said exhaust passageway to form an enlarged expansion chamber for the dirt discharged from said exhaust passageway, a filter at the opposite end of said casing for removing foreign material from the dirt-laden air discharged through said exhaust passageway and to retain the same in said dirt chamber, and a window carried by said casing, said filter and window being arranged with respect to said dirt chamber for the casing to support the accumulated foreign material removed from the surface being cleaned within the view of an observer looking through said window.

5. An accessory for demonstrating the cleaning effectiveness of a suction cleaner comprising, a casing having means at one end for detachable connection to the exhaust passageway of the suction cleaner in place of the usual cleaner filter bag, said casing having a dirt chamber of greater cross-section than said exhaust passageway whereby the dirt in said chamber settles below the periphery of said exhaust passageway, a filter at the opposite end of said dirt chamber and normal to the longitudinal axis of said casing and to the direction of flow of the dirt-laden air discharged by said cleaner, said filter removing foreign material from the dirt-laden air and retaining the same in said dirt chamber, and a window along the top wall of said casing and forwardly of and normal to said filter for observing the accumulation of said foreign material in said dirt chamber.

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