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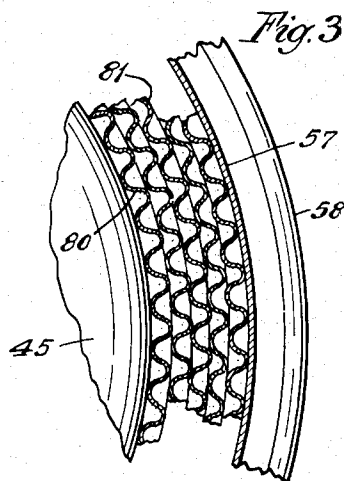
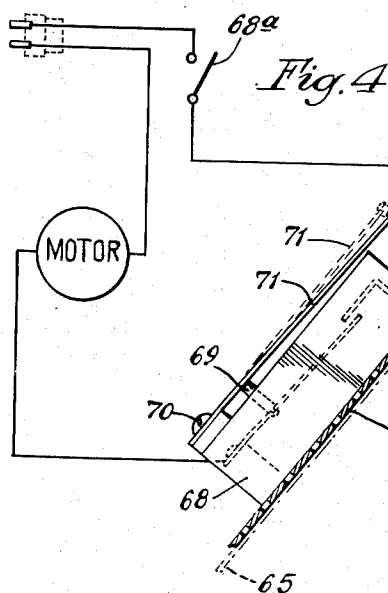
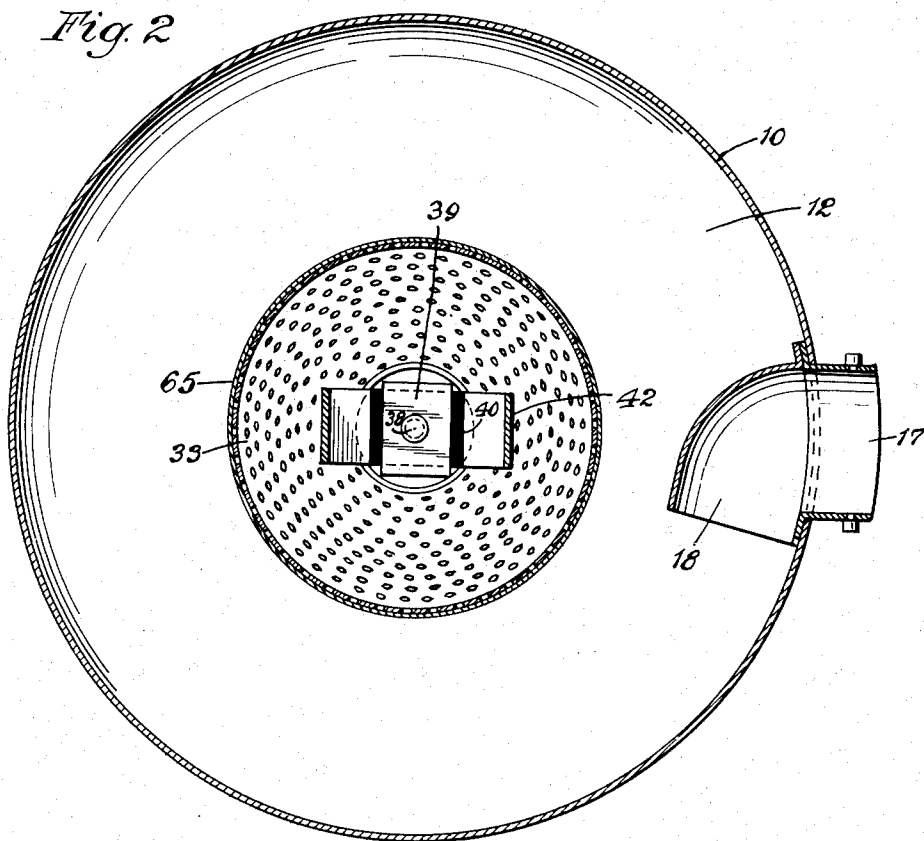
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SUCTION CLEANER

2,656,897

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2 Sheets-Sheet 2

Fig. 2



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SUCTION CLEANER

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Original application March 20, 1948, Serial No. 16,111, now Patent No. 2,587,565, dated February 26, 1952. Divided and this application November 24, 1950, Serial No. 197,361

1 Claim. (Cl. 183—37)

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This invention relates to a suction cleaner and is an improvement upon the suction cleaner disclosed and claimed in my Patent 2,198,568, granted April 23, 1940. The suction cleaner disclosed and claimed in such patent is of the tank type wherein a dust retaining pan is provided with an inlet nozzle for dirt laden air. Resting on top of the pan and closing the same is a filter and blower assembly. The filtering medium proper is a conical sheet of paper disposed vertically with the tip near the pan bottom and through which air is sucked permitting dirt to fall to the bottom of the pan.

The invention disclosed herein is an improvement upon the above cleaner and provides a construction which is simple and economical to manufacture and assemble.

For a more complete description of the invention, reference will be made to the drawing wherein

Figure 1 is a sectional elevation of a cleaner embodying the present invention.

Figure 2 is a section on line 2—2 of Figure 1.

Figure 3 is a sectional detail on line 3—3 of Figure 1.

Figure 4 is a circuit diagram with the automatic switch and its mounting shown.

Figure 5 is a detail of the corrugated paper silencing means.

Figure 6 is a perspective of the coupling means.

The cleaner comprises pan 10 having a circular open top bounded by beaded edge 11. Pan 10 has bottom 12 the center part of which is deformed to provide internal annular ridge 14. Ridge 14 defines central conical region 15 for supporting a paper cone. The entire pan may be formed of steel, aluminum or any other suitable material. Air inlet 17 is disposed at the side of the pan and has suitable nozzle 18 for directing the incoming blast properly.

Disposed over beaded edge 11 is molded rubber gasket 20 of the shape shown. Gasket 20 has top surface 21 and inner surface 22 for purposes to be described later. Resting on surface 21 of gasket 20 is a cover assembly generally indicated by numeral 25. Cover assembly 25 comprises annular support member 26 having trough shaped rim 27 in which is disposed rubber gasket 28. Gasket 28 is pressed into trough 27 and has bottom surface 29 resting upon gasket surface 21 in sealing engagement therewith when the cleaner is assembled as shown.

Frictionally retained in slot 31 of gasket 28 is the large edge of conical backing member 33. Backing member 33 may be formed of metal or

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any other suitable material either inherently rigid or provided with stiffening means and is suitably perforated or formed as a foraminous backing member through which air may readily pass. Member 33 is preferably formed of perforated metal although metal screen may be used. At the small end of backing member 33 is reinforcement 35 of solid metal or other material and formed generally as a washer. Thus member 35 has conically shaped part 36 overlying the edge of backing member 33 at the small end thereof. These parts are preferably joined together as by welding or soldering but may be loose if desired.

Member 35 has counter-sunk portion 37 suitably apertured for receiving bolt 38. Bolt 38 extends upwardly as seen in Figure 1 and has nut 39 engaging the same. Nut 39 has spaced spider-like claws 39a extending downwardly toward the bolt head and grips resilient rubber coupling 40. Coupling 40 rests upon washer portion 41 of support 42. The parts of support 42 alternate with claws 39a around the outside of rubber coupling 40. Support 42 has supporting flange 43 attached to motor and blower unit 45. Such units are available on the market and need not be described in detail. In general however unit 45 has air inlet 46 and outlet 47 with air passing through the motor to cool it. Unit 45 has attached thereto, in any suitable manner, annular flange 49 extending outwardly therefrom. Below flange 49 is ring 50 of flexible vibration absorbing material such as sponge rubber or the like. Ring 50 rests upon flange 51 of annular support member 26. Annular support member 26 has generally vertical body portion 52, the rubber ring being disposed within the space formed by flanges 49 and 51 and portion 52.

Disposed on outer portions of annular support member 26 are spring clips 55. Clips 55 are riveted or otherwise secured to annular member 26 at spaced points around the extent of member 26. Normally engaging spring clips 55 is shroud 57 having suitably shaped annular portion 58 for springing over clips 55. At the upper part, shroud 57 has inturned edge 59 defining circular air discharge opening 60. Cover 61 of suitable shape is provided for closing discharge opening 60 when desired. The cover may be maintained in position by any suitable means, such as for example, by bayonet pin and slot means, as shown. When the cover is on, the blower unit discharges air into shroud 57.

Disposed around the outer surface of backing member 33 is conical filter element 65 preferably

of paper of the type disclosed in the patent referred to. Filter paper 65 has its tip within conical region 15 of the pan while the large edge of the cone of the paper rests against surface 22 of the gasket. Tabs 66 on the filter paper may be provided at suitable spots for extending between opposed gasket surfaces 21 and 29 and are adapted to aid in removal and replacement of a paper element.

Disposed against the inside face of backing member 33 is switch 68. This switch is in series with the motor and manual switch 68a for normally controlling the motor circuit. Switch 68 is of the type available on the market and is adapted to open or close in response to a relatively small mechanical movement. Thus one type of such switch is described in Patent 1,960,020 and is available in the market under the trade name "Microswitch." Switch 68 has pin 69 which may be moved inwardly or outwardly a few hundredths of an inch for operating the switch mechanism. Switch 68 has its casing suitably attached to backing member 33. Thus the attaching means may comprise bolt 70. Bolt 70 carries leaf spring 71 carrying finger 72. Finger 72 has free end 73 extending through a suitable aperture in backing member 33. Collar 74 on finger 72 is provided to limit the travel of finger 72 outwardly through backing member 33 in response to the bias of leaf spring 71. Free end 73 of the finger is rounded and is adapted to bear lightly against the inner surface of filter paper 65. In the dotted line position shown in Fig. 4, filter paper 65 keeps finger 72 in a retracted position and permits switch 68 to be "on." In the event that no paper is present, finger 72 will assume the solid line position in response to the bias of leaf spring 71 and turn the switch to "off" position. This will prevent the motor from starting. Thus dirt will not be blown into the blower and motor.

Disposed between annular portion 52 and a part of the casing of blower unit 45 is silencing material which may, in a simple form, comprise corrugated paper 80. Corrugated paper 80 is preferably cut on a bias so that the corrugations define an angle with the vertical axis of the cleaner. Such angle may be as desired and may simply be 45 degrees. A continuous spiral of paper or separate layers may be provided to fill the space. Part of the corrugated paper forms an annular barrier 81 extending under shroud 57. Barrier 81 of the corrugated paper is so shaped as to define annular space 83 communicating with the atmosphere. It will be evident that the corrugated paper provides a large number of parallel air discharge conduits. The length of the parallel conduits will be determined by the angle at which the paper is cut. A silencing action will thus result.

Suitable latches 85 may be attached at opposite sides to dust pan 10 and cooperating portions 86 of the latch may be attached to assembly 25. Handle 87 attached to two points upon assembly 25 may be used for carrying or moving the cleaner.

If desired, dust pan 10 may be mounted on or secured to casters for ready movement on a floor. In practice however, the smooth surface of the pan bottom will permit ready manipulation of the cleaner on a floor. It is understood that shroud 57 may be formed either of plastic or sheet metal or a combination of the two. This cover may be removed. Discharge opening 47 is preferably similar to inlet opening 17 so that attachments may be coupled to either or both of these openings.

The features herein relating to automatic switch operation for disabling the cleaner in the absence of a filter paper and air silencing construction are claimed in my application Serial No. 16,111, filed March 20, 1948, now Patent 2,587,565, granted February 26, 1952, of which this application is a division.

What is claimed is:

1. A suction cleaner comprising a cylindrical dirt receiving pail having a dirt laden air intake at the pail side and having an annular rim, said pail having means for supporting an inverted paper filter cone in vertical position, a suction assembly disposed upon the pan rim, said assembly comprising a rigid air permeable conical backing member having a rim portion for resting upon the pan rim, said backing member having a generally flattened tip portion vertically spaced above the filter paper tip, a motor blower unit above the backing member, said unit having a bracket depending therefrom toward the flattened backing member tip portion, said unit having an annular flange, a solid annular support member having the inner edge disposed below the motor blower flange and having the outer edge disposed above the rim portion of the backing member, a gasket between the annular flange of the motor blower unit and inner edge portion of the annular support member, a gasket between the outer edge portion of the annular support member and rim portion of the backing member, said motor blower unit and annular support member being freely removable from each other, said motor blower unit having an air intake below the annular support member and having an air discharge above the annular support member, and bolt means extending between the flattened tip portion and bracket constituting the sole means for maintaining as an assembly the motor blower unit, annular support member and backing member.

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2,587,565	Yonkers	Feb. 26, 1952