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SUCTION CLEANERS

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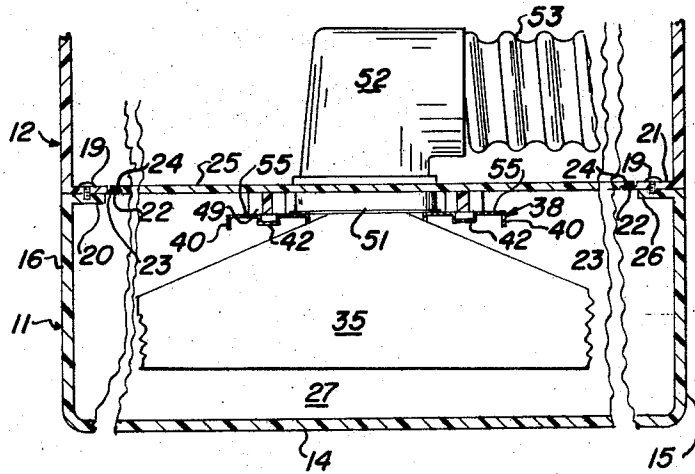


Fig. 2

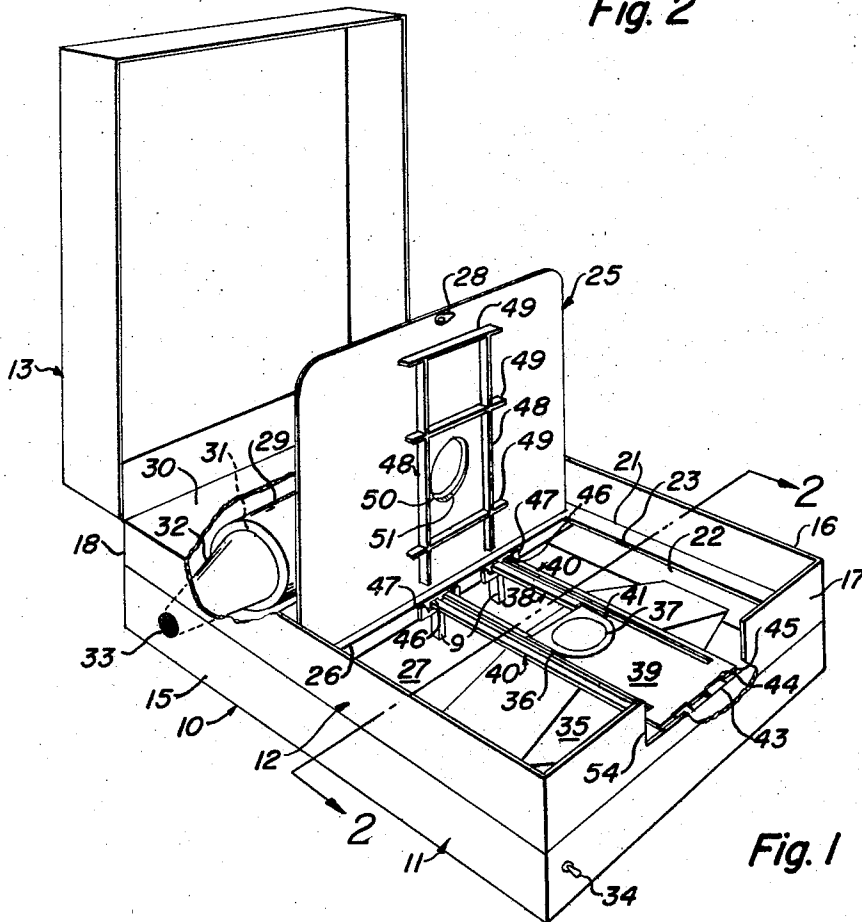


Fig. 1

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SUCTION CLEANERS

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The present invention relates to canister type suction cleaners and more particularly to a support for a dirt filter, the filter support also reinforcing the suction chamber cover against the force of suction pressure created by the motor-fan unit.

An object of the invention is to provide a suction cleaner with a walled body cooperating with an enclosure having a cover to define a suction chamber and a support to prevent collapse of the cover against the suction pressure developed in the suction chamber. Another object is to provide the foregoing suction cleaner with a cover support which also mounts a dirt filter in the suction chamber. A further object is to provide reinforcing means on the enclosure cover to assist in withstanding the collapsing force of the suction creating means. Still another object is to provide a suction cleaner with a suction chamber having a cover formed of inexpensive material relatively weak in a structural sense to the force of suction pressure to which it is subjected, and a dirt filter support in the suction chamber and which also supports the cover to reinforce the latter and prevent its collapse from the suction pressure. Other objects and advantages of the invention will become apparent from the following description and drawing, wherein:

FIGURE 1 is a perspective view of the cleaner showing the appearance and suction chamber covers in open position, and

FIGURE 2 is a section along the line 2—2 in FIGURE 1 with the suction chamber cover closed and the hose rotated 90° from its normal position to more clearly illustrate the construction.

The embodiment of the invention herein disclosed comprises a walled body 10 including a base 11 upon which is mounted an enclosure 12 provided with an appearance cover 13. The base 11 has a bottom wall 14 and its vertical walls cooperate with the vertical walls of the enclosure 12 to form opposite side walls 15 and 16, a front wall 17 and a rear wall 18. The appearance cover 13 is suitably hinged to the rear wall 18 of the body 10.

The enclosure 12 is formed of plastic and includes a platform 21 extending integrally between the vertical walls 15, 16, 17 and 18. The enclosure 12 is attached to the base 11 in airtight relation by a plurality of screws 19 extending through the platform 21 and threaded into a peripheral flange 20. The platform 21 is provided with a rectangularly shaped opening 22 defined by a marginal flange 23 in which is arranged a gasket 24, as shown in FIGURE 2. A cover 25 for the opening 22 is suitably hinged on the platform 21 adjacent the rear portion 26 of the marginal flange 23. The cover 25 and platform 21 cooperate with the base bottom wall 14 and portions of the vertical walls 15, 16, 17 and 18 to form a suction pressure chamber 27, and the cover 25 controls access thereto through the opening 22. A suitable latch 28 is provided to lock the cover 25 in closed position.

Arranged at the rear of the suction chamber 27 is a suction creating motor-fan unit 29 which extends upwardly into a housing 30 formed in the platform 21 rearwardly of the cover 25. The motor-fan unit 29 is provided at its unshown end with a conventional suction air inlet which communicates with a pressure outlet 31 connected by a conduit 32 to an exhaust opening 33 in the side wall 15 of the base 11 for discharge of air from the pressure side of the motor-fan unit 29 to atmos-

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phere. A switch 34 supported on the base front wall 17 is suitably connected to the motor-fan unit 29 to control operation of the latter.

A dirt filtering bag 35 is disposed in the suction chamber 27 forwardly of the motor-fan unit 29 and includes a collar 36 provided with a dirty air inlet 37 for the bag. A support 38 for the filter bag 35 is formed of metal and includes a front end 39 from which rearwardly extends a pair of spaced elongated members 40 joined adjacent their inner ends with a bag supporting arcuate shoulder 41. In order to reinforce the support 38 a channel 42 is formed in each of the elongated members 40 and the channels 42 extend forwardly into the front end 39 of the support 38. The front end 39 of the filter support 38 has a pair of projecting lugs 43 shaped in the form of hooks and each extend downwardly through an opening 44 in the front portion 45 of the flange 23 of the access opening 22 to provide a hinge whereby the rear ends 46 of the support 38 may be rotated upwardly out of the suction chamber 27 for removable attachment of the filter bag 35. The rear ends 46 of the spaced supporting members 40 each rest on a shoulder 47 provided on the rear portion 26 of the access opening flange 23. Thus the bag support 38 spans the access opening 22 by being supported on the front portion 45' and rear portion 26 of the flange 23 for the opening 22.

Depending from the platform 21 adjacent the rear portion 26 of the marginal flange 23 are a plurality of posts 9 which rest on the base bottom wall 14 to support the platform 21 against the collapsing force of suction pressure developed in the chamber 27 by the motor-fan unit 29. The cover 25 for the suction chamber 27 is formed of inexpensive material, such as plastic, and is relatively weak structurally so that it cannot withstand the suction pressure developed within the chamber 27 when the cover 25 is closed and the motor-fan unit 29 is operating. In order to prevent the cover 25 from collapsing it is provided with a pair of elongated reinforcing ribs 48 and a plurality of transverse ribs 49 projecting from the underside of the cover 25. The transverse ribs 49 seat on the upper surface of the support 38 and span the reinforcing channels 42 to support the cover 25 against the suction pressure in the chamber 27.

A suction air inlet 50 is provided in the chamber cover 25 and is aligned with the bag inlet 37 when the cover 25 is in closed position. A soft resilient gasket 51 is attached to the inner surface of the cover to form an airtight seal between the cover inlet 50 and the bag collar opening 37. Rotatably mounted in the cover inlet 50 is the elbow 52 of a suction cleaner hose 53 only partly shown and which is provided, in the usual manner, at its opposite end with a surface cleaning nozzle. The hose 53 when attached to the suction air inlet 50 extends through a marginal recess 54 in the body front wall 17 and when the appearance cover 13 is closed it retains the hose in the recess 54.

In order to operate the suction cleaner, the hose 53 is connected to the suction air inlet 50 and the switch 34 is moved to its "On" position to energize the motor-fan unit 29 which creates suction pressure in the chamber 27 and in the hose 53 to remove dirt from the surface being cleaned. The dirt-laden air is conveyed by the hose 53 into the bag 35 which filters the dirt from the air and the latter passes through the motor-fan unit 29 and is discharged under pressure through the exhaust outlet 33.

The suction pressure created by the motor-fan unit 29 in the suction chamber 27 exerts a sucking force on the interior of the cover 25 and which force exceeds several hundred pounds in the event the cleaning tool

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nozzle is closed to form a substantially sealed suction condition.

The filter support 38 mounts the bag collar 36 for air sealed connection with the suction air inlet 50 and also rests on the marginal flange 23 of the chamber opening 22 to engage and support the chamber cover 25. The transverse ribs 49 on the cover 25 rest on the top surface 55 of the filter support 38 to prevent collapse of the cover 25 against the force of suction pressure. It will be noted the cover support 38 spans the entrance to the suction chamber 27 and is supported at the rear portion 26 and front portion 45 of the flange 23 defining the opening 22. The support 38, since it spans the chamber opening 22, reinforces a large area of the cover 25 and thereby permits the latter to be manufactured from inexpensive material to thus reduce the cost of production.

When it is desired to remove the bag 35 the chamber cover 25 is opened and the rear ends 46 of the support 38 lifted to rotate the latter clockwise on its lugs 43, as viewed in FIGURE 1, to vertical position. The bag collar 36 can then be grasped and dislodged from the arcuate shoulder 41 and removed from between the spaced elongated members 40. A new bag may then be attached to the support 38 and the latter pivoted to its operating position wherein the rear ends 46 of the support 38 rest on the shoulders 47 and the extremity of the front portion 39 rests on the marginal flange 23.

While I have shown and described but one embodiment of the invention, it is to be understood that this embodiment is to be taken as illustrative only and not in a limiting sense. I do not wish to be limited to the particular structure shown and described but to include all equivalent variations except as limited by the scope of the claims.

I claim:

1. A suction cleaner comprising: a substantially rectangular walled body including vertical side walls, a substantially rectangular enclosure overlying said body and cooperating with said side walls of said body to define a suction chamber, a motor-fan unit arranged in said suction chamber and communicating therewith for creating suction pressure in said chamber, means defining an opening in said overlying enclosure to provide access to said suction chamber, said enclosure including as a part thereof a movably mounted suction chamber cover for said access opening and overlying said suction chamber and having a suction air inlet adapted to receive one end of a hose, dirt filtering means having a dirty air inlet connected with said suction air inlet to receive one end of a hose, dirt filtering means having a dirty air inlet connected with said suction air inlet when said suction chamber cover is closed, support means spanning said opening beneath said suction chamber cover for supporting said dirt filtering means in said suction chamber, said support means arranged with respect to said suction chamber cover for engagement with the underside thereof to support said cover, said enclosure in-

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cluding means removably supporting one end of said filter support means and hinge means rotatably mounting the other end of said support means in its said spanning relation to said opening, whereby said support means may be rotated about said hinge means to gain access to the interior of said suction chamber.

2. A suction cleaner as described in claim 1, and an exterior cover movably mounted on said enclosure and overlying said suction chamber cover and said suction air inlet.

3. A suction cleaner comprising: a substantially rectangular walled body including vertical side walls, a substantially rectangular enclosure overlying said body and cooperating with said side walls of said body to define a suction chamber, a motor-fan unit arranged in said suction chamber and communicating therewith for creating suction pressure in said chamber, means defining an opening in said overlying enclosure to provide access to said suction chamber, said enclosure including as a part thereof a movably mounted suction chamber cover for said access opening and overlying said chamber and having a suction air inlet adapted to receive one end of a hose, dirt filtering means having a dirty air inlet connected with said suction air inlet when said suction chamber cover is closed, support means in said opening beneath said suction chamber cover for supporting said dirt filtering means in said suction chamber, said support means arranged with respect to said suction chamber cover for engagement with the underside thereof to support said cover, said enclosure including means movably mounting said support means in said opening, whereby said support means may be moved to gain access to the interior of said suction chamber, means defining an opening for extension of the hose from said suction air inlet to the exterior of the cleaner, and an exterior cover movably mounted on said enclosure and overlying said suction chamber cover and the hose end connected to said suction air inlet.

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