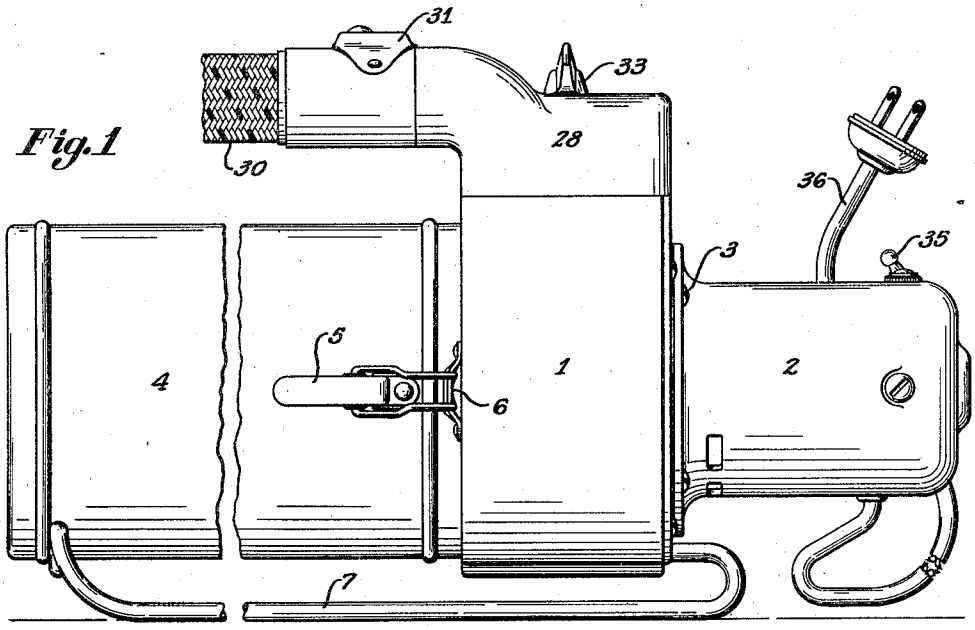
Nov. 16, 1937. D. G. SMELLIE 2,099,377

SUCTION CLEANER

Filed May 24, 1934 2 Sheets-Sheet 1

Fig. 1



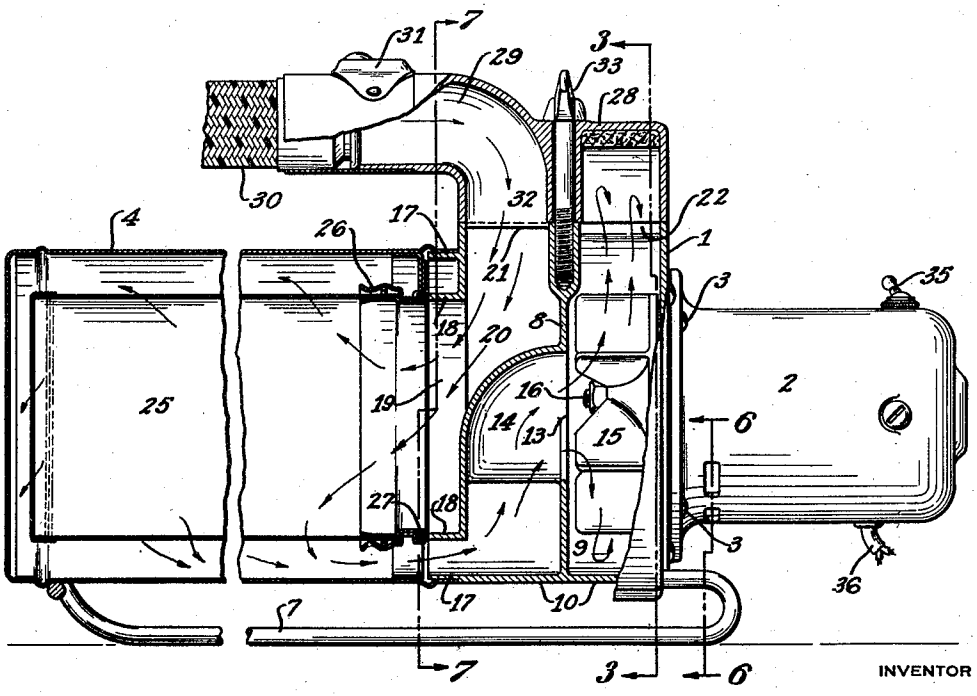


Fig. 2

INVENTOR

Donald G. Smellie

BY

Harry S. Devarse

ATTORNEY

Nov. 16, 1937. D. G. SMELLIE 2,099,377

SUCTION CLEANER

Filed May 24, 1934 2 Sheets-Sheet 2

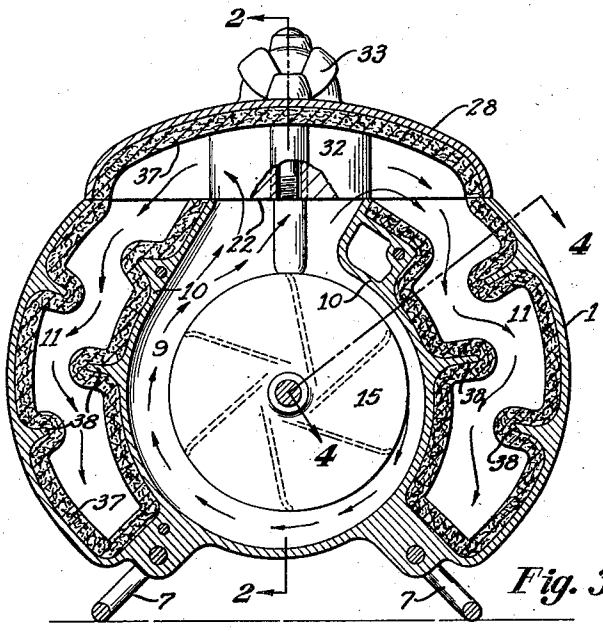


Fig. 3

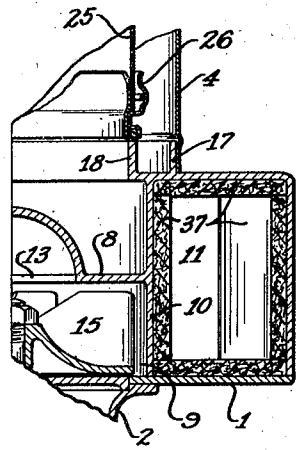


Fig. 4

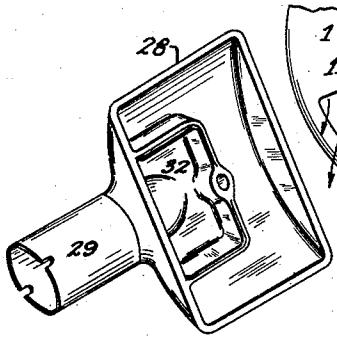


Fig. 5

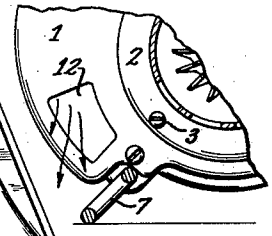


Fig. 6

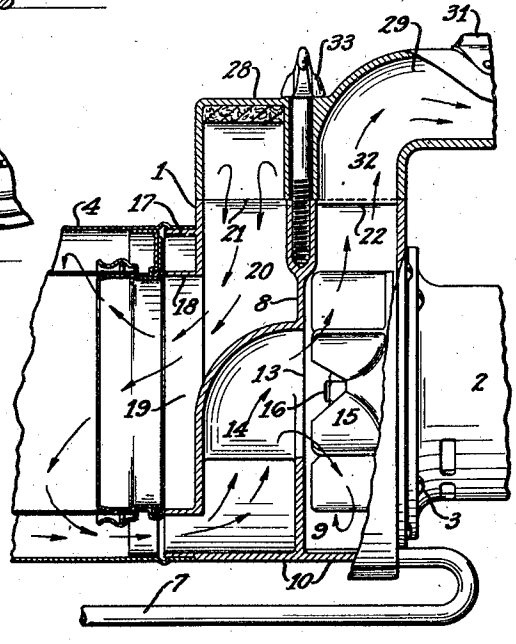


Fig. 8

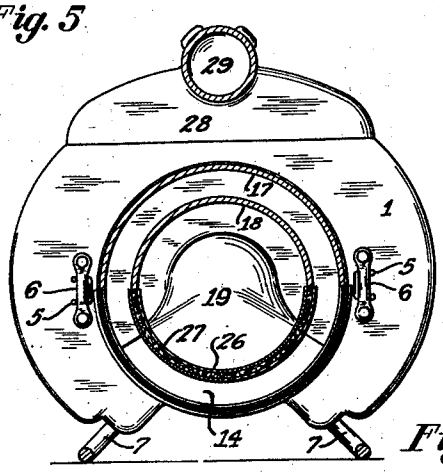


Fig. 7

INVENTOR

Donald G. Smellie

Harry J. Mucaree

ATTORNEY

Patented Nov. 16, 1937 2,099,377

UNITED STATES PATENT OFFICE

2,099,377

SUCTION CLEANER

Donald G. Smellie, Canton, Ohio, assignor to The Hoover Company, North Canton, Ohio, a corporation of Ohio

Application May 24, 1934, Serial No. 727,211

8 Claims. (Cl. 15—14)

The present invention relates to suction cleaners in general and particularly to a new and improved can-type cleaner provided with a permanent converter valve which functions to alter the unit from a blowing unit to a suction unit, or vice versa. More specifically the invention comprises the combination of a can-type suction cleaner, an elongated dusting tool hose, a permanently incorporated converter valve, and sound-deadening means which reduce the noise of operation of the unit.

It is an object of the invention to provide a new and improved suction cleaner unit of the can-type. A further object is the provision of a can-type cleaner provided with a permanently incorporated converter valve. Another object is the provision of a can-type suction cleaner incorporating sound-deadening means. A further object is the provision of a can-type suction cleaner incorporating a sound-deadening muffler. Still another object is the provision of a suction cleaner of the can-type in which a muffler acts as the exhaust outlet when the machine functions as a suction-creating unit, and as the intake when the unit functions as a positive-pressure-creating unit. A still further object is the provision of a suction cleaner of the can-type in which the same dusting tool hose attachment is used in both blowing and in sucking. These and other more specific objects will appear upon reading the following specifications and claims and upon considering in connection therewith the attached drawings to which they relate.

Referring now to the drawings in which a preferred embodiment of the present invention is disclosed:

Figure 1 is a side elevation of a suction cleaner constructed in accordance with the present invention;

Figure 2 is a longitudinal cross section through the cleaner shown in Figure 1, being taken upon the line 2—2 of Fig. 3;

Figure 3 is a transverse cross section upon the line 3—3 of Figure 2;

Figure 4 is a partial section through the cleaner upon the line 4—4 of Fig. 3;

Figure 5 is a view in perspective of the manually movable valve element removed from the cleaner;

Figure 6 is a fragmentary view of the cleaner casing, looking in the direction of the arrows upon the line 6—6 of Figure 2;

Figure 7 is a section through the cleaner upon the line 7—7 of Figure 2;

Figure 8 is a section similar to Figure 2, but with the valve positioned in the blowing relationship.

The present invention relates to that type of suction cleaner which includes a portable body comprising a suction-creating unit which need not be moved over the surface covering in order to accomplish the cleaning operation. This type of cleaner remains where placed while the cleaning nozzle, which is attached to the unit by means of an elongated flexible tubular hose, is moved over the surface covering to perform the cleaning function. The suction-creating unit normally employs skids to support it so that it can be moved or pulled by a force exerted through the tubular hose. In the cleaner constructed in accordance with the present invention means have been provided to reduce the operating noise of the unit and also to provide means for easily converting the unit from a suction-creating unit, the usual relationship, to a positive pressure or blowing unit.

Referring again to the drawings, the cleaner is seen to embody and comprise a casing which is readily sub-divided into three parts. The main central part of the casing is indicated by the reference character 1 and comprises a plurality of parts as will hereinafter be fully set forth. At one side of the body portion 1 is the motor casing 2 which is secured to a side wall of casing 1 by means of screws 3, 3, etc. At the other side of the main body casing 1 is a cylindrical can or container 4. The inner end of container 4 is removably secured to casing 1 by means of a manually operable latch 5 which cooperates with a seat 6 formed on the body portion 1. A plurality of these latches and seats may be provided if necessary. The major axis of the cylindrical container 4 and, of the main body portion 1, and of the motor casing 2, are practically the same and the entire cleaner casing forms an elongated unit which is supported at a relatively small height above the supporting surface by means of a U-shaped skid 7 the ends of the two arms of which attach to the main body portion 1 on its motor casing side and are curved downwardly and forwardly therefrom extending substantially the entire length of the cylindrical container 4.

The main body portion 1 is formed interiorly in a definite manner. An internal curved wall 10 extends substantially parallel to the wall of body 1, is identical with the body wall at the bottom of the body, and is spaced therefrom to form chambers or pockets 11, 11 which extend substantially the entire length of the body 1. These two chambers 11, 11 are open to atmosphere through two

openings 12, 12 which face the motor end of the cleaner.

A fan chamber 9 is formed in body 1 by a transverse wall 8 which extends only to the wall 10. The inlet or eye 13 of the fan chamber 9 is positioned in wall 8 and opens into a downwardly and forwardly extending passageway 14. A suction-creating fan is positioned in the fan chamber, being rotatably carried by the extended end of the motor shaft 16.

The forward end of the body portion 1, that end facing the container 4, is spaced from the transverse wall 8 and is formed with two radially spaced circular flanges 17 and 18, the outer flange 17 serving as a seat for the inner and open end of the container 4. An arcuate sector of this forward wall is omitted between the flanges 17 and 18 which opens directly into the passageway 14 leading to the fan chamber 13. The inner flange 18 defines an opening 19 into the casing 1 and to the upwardly directed passageway 20 which is sealed from the eye of the fan chamber by the downwardly directed wall of passageway 14.

The walls of body portion 1 and also walls 10 and 8 are intersected by, and end in, the same horizontal plane, as is clearly evident in the drawings. By this construction the chambers 11, 11 are left open at their tops and openings 21 and 22 are formed into the passageway 20 and chamber 9. Opening 22, being at the periphery of fan chamber 9, functions as the exhaust outlet of that chamber.

Within the container 4 is removably carried an air pervious dust bag 25 of smaller diameter than the container and formed of fabric or similar suitable filtering material. A bag-carrying ring 26 is seated in the inner end of the container 4 and is provided with an air seal 27 at its forward edge which contacts the edge of the flange 18, when the container 4 is secured in place. The bag 25 itself is so shaped that it extends substantially the entire length of the container 4 and is of such dimension that when expanded it substantially fills the container but is spaced from the walls thereof by an appreciable distance, as is clearly shown in Figure 2. The filtering bag is of ordinary material and is adapted to be removed from container 4 and cleaned and replaced if desired.

The open-topped casing 1 is closed by a valve member 28 the peripheral edges of the valve making line contact with the casing and enclosing the tops of chambers 11, 11 and the openings 21 and 22. The valve is formed with an inlet 29 provided with a spring-pressed detent 31 which functions to removably lock in place the elongated flexible dusting tool hose 30. The inlet 29 opens into an inner valve chamber 32 in the member 28, which in fact is the mouth of the hose 30, and which is so shaped that its edges are adapted to seat upon and make contact with the edges of either opening 21 or exhaust opening 22. The interior of member 28 outside of chamber 32 is shaped as a connecter passageway so that with chamber 32 overlying either opening 21 or 22 the remainder of the valve interconnects the other three openings.

Valve member 28 is rotatably mounted on the casing 1 by means of a manually operable bolt 33 which extends downwardly through the member to seat in screw-threaded relationship in the central transversely extending wall 8. The valve may assume either of two positions which are spaced 180 degrees, as shown in Figures 2 and 8, the bolt being provided with a winged head to enable the operator to unscrew it or to rotate it to clamping position. As the edges of valve 28 and of the open top of the casing all lie in a single plane it is obvious that the rotation of the valve is easily accomplished.

With the cleaner in operation, a result accomplished by closing the motor switch 35, the rotating fan draws air from the inlet passageway 14, through its eye 13, and then exhausts it through the exhaust port 22. The reduced pressure in passageway 14 effects a reduction of pressure in container 4 and air is drawn through the inlet opening 21, through the passageway 20, and through the air-pervious bag 25.

If the operator desires that the cleaner function as a blowing unit he temporarily unscrews the bolt 33 sufficiently to permit the manual rotation of the valve 28 so that the chamber 32, the mouth of the dusting tool hose, seats over the exhaust opening 22 of the fan chamber. When the cleaner is so inter-related the air enters the openings 12, 12 of the chambers 11, 11, passes through those chambers into the main part of the valve 28 and is directed thereby into the opening 21 leading to the passageway 20. Passageway 20 directs the air into the bag 25 and container 4 from whence it passes into the passageway 14 leading to the fan chamber. The rotating fan exhausts the air through the outlet 22 and into the dusting tool conduit 29 via the chamber 32.

To convert the cleaner from a blowing to a suction-creating unit, the operator need only adjust the valve by rotating it 180 degrees angularly about the bolt 33, so that the chamber 32 seats on the opening 21 which is connected, as set forth supra, to the eye or low pressure point of the fan chamber. With the valve so positioned the air exhausted from the fan chamber exhaust port 22 is directed by the main part of valve 28 into the chambers 11, 11 from whence it escapes to atmosphere via the ports 12, 12.

To aid in the quiet operation of the machine the chambers 11, 11 are lined with a sound-deadening lining 37 which is wear resistant and embodies sound-absorbing qualities. Also the main part of valve chamber 28, the part which always opens to the chambers 11, 11, is lined with this material. Further noise elimination is accomplished by providing projections 38, 38 etc. in the chambers 11, 11 which serve to form a tortuous pathway for the air in traversing the length of the chambers. The presence of the sound-deadening lining and of the projections making the tortuous passageway serves to give to the chambers 11, 11 the function of mufflers.

I claim:

1. In a portable suction cleaner, the combination of a fan chamber having an inlet and an outlet, a fan in said fan chamber, a motor for driving said fan, a dust bag, a sealed container enclosing said dust bag and having an intake passageway connected with the interior of said bag and an opening directly to the inlet to said fan chamber, a sound-deadening air passageway open at one end to the atmosphere and adapted to have its opposite end connected to said intake to or said outlet from said fan chamber, and valve means having a dusting tool connection and adapted to be positioned to connect said hose connection with said outlet or said inlet.

2. In a portable suction cleaner, suction-creating means, a muffler, a dusting tool hose connection, and valve means to connect selectively said hose connection to the high or low pressure points

of said suction-creating means and said muffler to the remaining point.

3. In a portable cleaner, a casing having its major axis extended horizontally, said casing having two upwardly facing openings substantially midway between its ends, a suction-creating and air-filtering unit in said casing with its suction and pressure points connected to said openings, a muffler open to atmosphere having an opening adjacent said openings, a manually adjustable valve element seated on said casing at said openings, a dusting tool hose connected to said element, said element selectively connecting said hose to one of said two openings and said muffler to the other.

4. In a portable suction cleaner, suction-creating means, air-filtering means connected to the suction side of said means, movable valve means connected to the intake of said filtering means and to the pressure side of said suction-creating means and including a hose connection, and a dusting tool hose connected to said connection and movable with said valve means, said valve means being adjustable to connect said hose to the intake of said filtering means or to the pressure side of said suction-creating means, and a sound deadening air passageway connected to said valve means and adapted to be connected thereby to the intake of said air-filtering means or to the pressure side of said suction-creating means when the hose is connected to said pressure side or to said intake respectively.

5. In a portable suction cleaner, suction-creating means, air-filtering means connected to the suction side of said means, movable valve means connected to the intake of said filtering means and to the pressure side of said suction-creating means, and including a hose connection, a dusting tool hose connected to said connection and movable with said valve means, and a muffler connected to said valve means, said valve means being adapted to connect said hose and said muffler to the pressure side of said suction-creating means and to the intake of said air-filtering means, respectively, and vice versa.

6. In a portable suction cleaner; a central body portion including a fan chamber with inlet and exhaust ports, a first air passageway, a second air passageway connected to said inlet port, and a muffler; a motor casing carried at one side of said central body portion; a drive shaft extended into said chamber; a fan on said shaft; a sealed container upon the opposite side of said central body portion from said motor casing and open to said air passageways; a filter member in said container and positioned functionally between it and said first air passageway; said second air passageway connecting said container exteriorly of said filter member to the inlet port of said fan chamber; and valve means provided with a dusting tool hose connection and connected to said first air passageway, to said exhaust port, and to said muffler; said valve being adapted to connect selectively said first air passageway or said exhaust port to said muffler, and said hose connection to said exhaust port or to said first air passageway, respectively.

7. In a suction cleaner of the type having suction-creating means, an inlet passageway and an outlet passageway connected to said means, and a muffler; a valve having a dusting tool hose passageway and a connecter passageway, and means movably mounting said valve, said connecter passageway of said valve being adapted to connect either said inlet or outlet passageway to said muffler and said dusting tool passageway being adapted to connect to either said inlet or outlet passageway.

8. In a suction cleaner, the combination of a cylindric casing including a fan chamber, a dirt receptacle communicating with said fan chamber, a filter member interposed between the interior of said receptacle and said fan chamber, said casing being provided with an intake passage leading to said receptacle, an outlet passage leading from said fan chamber and a muffler chamber communicating with the atmosphere, said chamber together with the outer end of the intake passage to said receptacle and the outlet passage from said fan chamber terminating in adjacent ports in the wall of said casing, and a combined valve member and hose connection seating over said ports and adapted to be shifted from one position in which said muffler chamber is connected with the outlet from said fan chamber and said hose connection with the intake port to said receptacle, to another position in which said connections are reversed.

DONALD G. SMELLIE.