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SUCTION CLEANER

Original Filed May 24, 1934

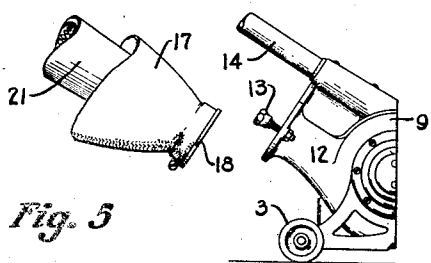
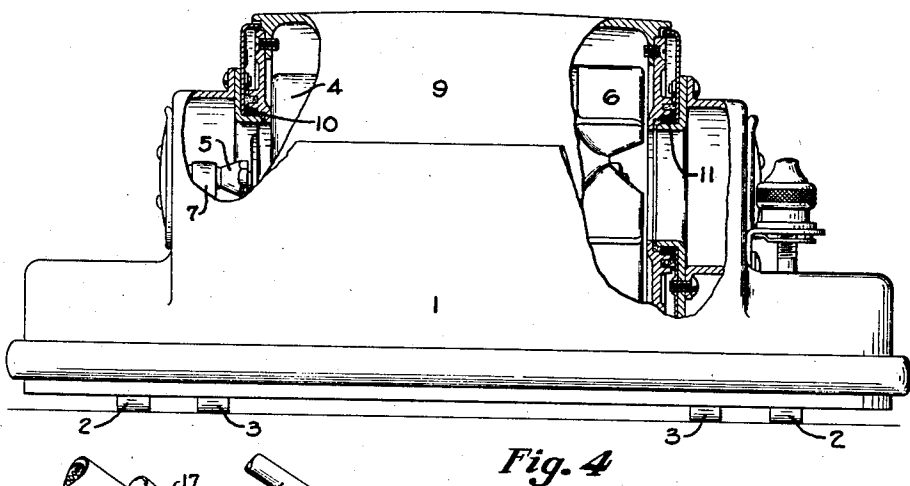
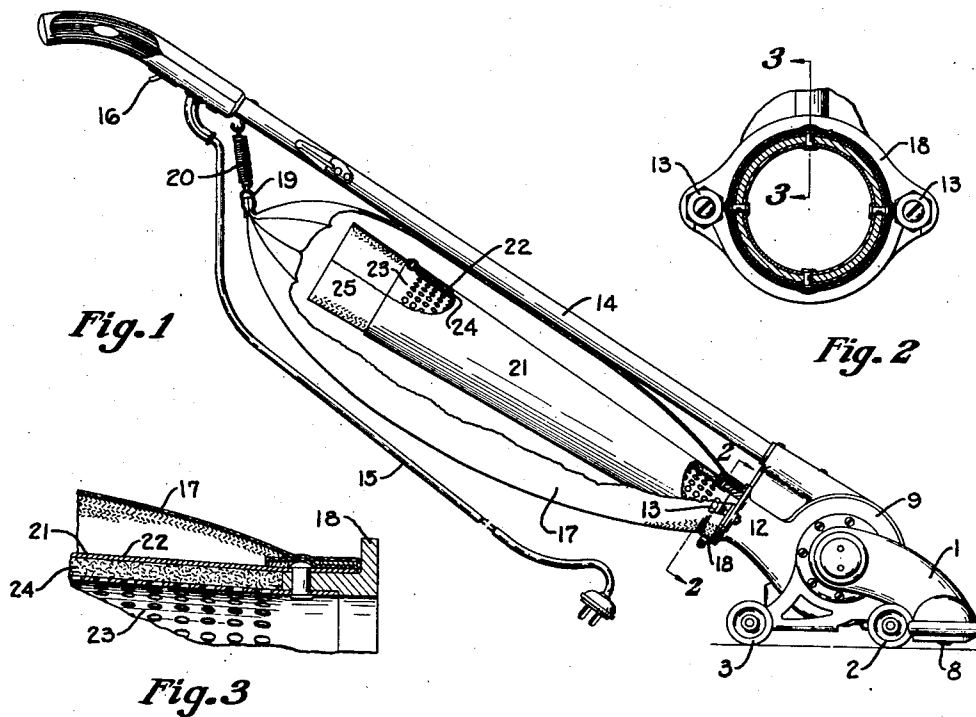


Fig. 4

Fig. 5

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SUCTION CLEANER

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3 Claims. (Cl. 183-42)

This invention relates to improvements in suction cleaners and more particularly to the application of a sound-reducing member or muffler to a suction cleaner and consisting generally of a tubular extension of the exhaust outlet from the body of the cleaner extending longitudinally within the dirt collecting bag or receptacle.

To be effective as a noise-reducing member, the muffler must not only follow a definite contour and internal surface treatment but must also be of such length as to extend throughout a considerable portion of the length of the dirt bag within which it is enclosed. To take advantage of the required length of the muffler it is quite essential that the bag and the muffler be more or less combined as a unit not only for removable attachment to the body of the cleaner but also in their bodily movement with the handle during the operation of the cleaner. Bearing in mind that the ordinary dirt receptacle has the form of an elongated cloth bag supported at one end by the handle and at its other end has connection with the exhaust outlet from the fan chamber of the cleaner, it follows that to maintain a relatively stationary position of the muffler within the bag that the handle and the outlet connection must be so interconnected as to swing together, as the handle must be free to do in the maneuvering of the cleaner over the surface to be cleaned.

It is therefore the primary object of the present invention to provide a construction wherein an effective and efficient muffler may be utilized by providing an arrangement whereby the handle, the dirt bag, and the muffler move together as a unit thereby avoiding the extremely awkward arrangement which would result if the handle and the major portion of the dirt bag were free to swing and the muffler remained relatively stationary.

Other objects of the invention will appear from the following description and in connection with the accompanying drawing.

This application is a division of an application filed May 24, 1934, and bearing Serial No. 727,212.

Referring now to the drawing:

Figure 1 is a side view of the suction cleaner constructed in accordance with the present invention, certain parts being broken away;

Figure 2 is a section upon the line 2-2 of Figure 1;

Figure 3 is a section upon the line 3-3 of Figure 2;

Figure 4 is a front elevation, certain parts

being broken away, of the body of the cleaner shown in Figure 1;

Figure 5 is a partial side view of the cleaner with the bag and muffler unit removed therefrom.

In the operation of the modern high speed suction cleaner the air rushing at high velocity from the cleaner fan chamber is the source of a large part of the cleaner noise. In the suction cleaner constructed in accordance with the present invention it is possible to provide an elongated hollow tubular member into which the air passing from the fan chamber exhausts. This elongated hollow tubular member embodies sound-deadening features and by the time the air has passed through it into the bag the greater part of the vibrations which create the undesirable noise have been eliminated. This construction is possible in the surface covering cleaner constructed in accordance with the present invention because no relative movement takes place between the cleaner fan chamber, the pivoted handle, and the dust bag.

Referring to Figures 1 to 5, inclusive, a preferred embodiment of the invention is disclosed. The cleaner nozzle 1 is mounted upon a frame which is supported by spaced pairs of front and rear wheels 2, 2 and 3, 3, respectively. The driving motor 4 is positioned with its axis parallel to the nozzle 1, and its shaft carries at one end a driving pulley 5 and at its opposite end a suction-creating fan 6. A power-transmitting belt 7 connects pulley 5 to a rotating agitator 8 within the nozzle 1, while the fan 6 is effective, in the operation of the cleaner, to create a reduced pressure in nozzle 1 through being directly connected thereto. The combination motor casing and fan chamber 9 carries the motor 4 and fan 6 and is itself rotatable about the motor axis through being provided with sealed bearings 10 and 11 at its opposite ends on the rearwardly extending side channels of the nozzle 1. The exhaust outlet 12 of the fan chamber is formed rigidly on and extends tangentially from the casing 9 and is provided at its end with a flange and bag-clamping means 13.

The handle of the cleaner is indicated by the reference character 14 and is rigidly connected to the casing 9, as shown in Figure 1. The incoming current leads 15 enter handle 14 near its upper end and are connected through a manually operable switch 16 before passing down the handle to be connected to the motor 4 in any suitable manner.

The cleaner dust bag 17 is provided with a

ring 13 at its lower end which is flanged and formed with ears. Ring 13 seats on the flanged outer end of exhaust outlet 12 and is adapted to be secured thereto in sealed relationship by the manually operable bag-clamping means 13, 13. The open upper end of the bag is folded and held in the closed and sealed relationship by means of an enclosing U-shaped channel 19 which is supported, by means of a spring 20, from the handle.

Rigidly carried by the bag ring 13 is an elongated tubular muffler 21 which is in alignment with the exhaust outlet 12. Muffler 21, in this embodiment, comprises an outer metallic casing 22 and a spaced inner metallic face or sleeve 23 which is perforated. The space between sleeve 23 and the outer casing 22 is filled with sound-deadening material such as felt, which is indicated by the reference character 24. The perforations in the inner sleeve 23 are not sufficiently large to permit the sound-deadening material to pass therethrough yet are large enough that they provide an adequate area to effect vibration dampening. At the end of the muffler a collapsible valve 25, preferably of cloth or fabric, is provided which functions to prevent the return into the muffler of foreign matter by an air current set up by the bag back pressure when the suction-creating fan has ceased to rotate at the end of a cleaning operation.

The operation of the cleaner constructed in accordance with the present invention is easily understood. With the machine positioned upon the surface covering which is to be cleaned, the closing of the switch 15 by the operator causes the motor 4 to rotate the pulley 5 and the suction-creating fan 6. Pulley 5 transmits its rotating torque through the belt 7 to the agitator 3 within the nozzle, and the suction-creating fan 6 withdraws air from the nozzle and exhausts it through the exhaust outlet 12 into the muffler 21 through which it passes into the bag 17 where the suspended foreign matter is removed, the air filtering back into the surrounding atmosphere. Because the parts pivot as a unit about the axis of the motor 4 no relative movement takes place between the fan chamber exhaust outlet 12, the

muffler 21, the bag 17 and the handle 14 as the handle is pivoted by the operator in moving the cleaner back and forth over the surface covering. This relationship is essential as rigid muffler tube 21 must be relatively long in order to be efficient. Were the cleaner of the usual type in which the handle 14 pivots relative to the body of the machine and the bag 17 bends about its point of attachment to the cleaner body as the handle pivots, it would be impossible to use the elongated muffler element.

Upon the use of the machine for a reasonable length of time it becomes necessary for the bag 17 to be cleaned and the foreign matter removed therefrom. To accomplish this operation, it is necessary only to remove manually the bag ring 13 from the securing means 13, 13 and to detach the upper end of the bag from the supporting channel 19. The bag at its upper end can then be pulled down over the muffler into a reversed relationship in which the interior of the bag is upon the outside and all foreign matter can be removed.

Having set forth a preferred embodiment of the invention, I claim:

1. A dust deflector for a suction cleaner bag, comprising an elongated tubular body portion insertable into the mouth of the bag, said deflector being made of material having an element of rigidity for maintaining said tubular form, said body portion having a circumscribing flange at one end thereof, said flange being in angular relation with said tubular body portion.
2. A suction cleaner muffler, comprising an elongated rigid tube forming a passageway for air exhausted from a suction cleaner and having a sound-deadening lining of a relatively soft pliable material, and means at one end of said tube for attaching a dirt collecting receptacle.
3. In a suction cleaner muffler, the combination of an elongated metallic tube forming a passageway for air exhausted from said cleaner and having a sound-deadening lining of a relatively soft pliable material in said tube and a flexible valve at the free end thereof.

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