May 29, 1945. H. B. WHITE 2,377,060

SUCTION CLEANER

Filed May 16, 1942 2 Sheets-Sheet 1

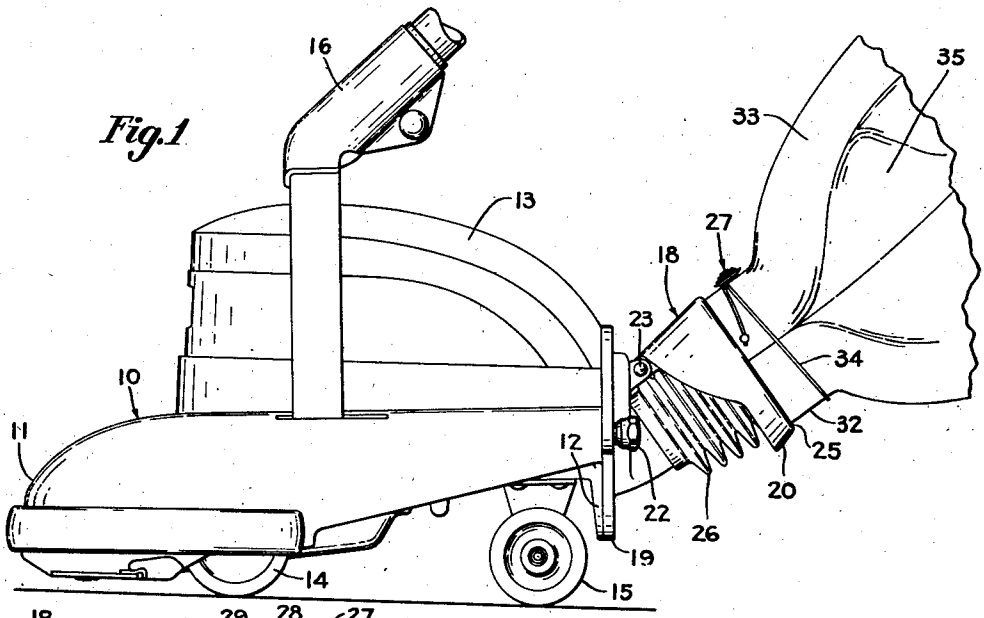

Fig. 1

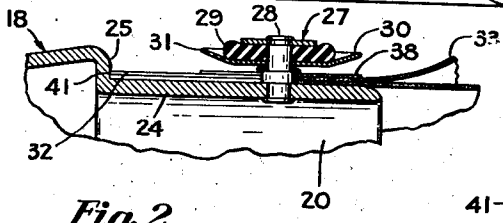

Fig. 2

Fig. 3

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SUCTION CLEANER

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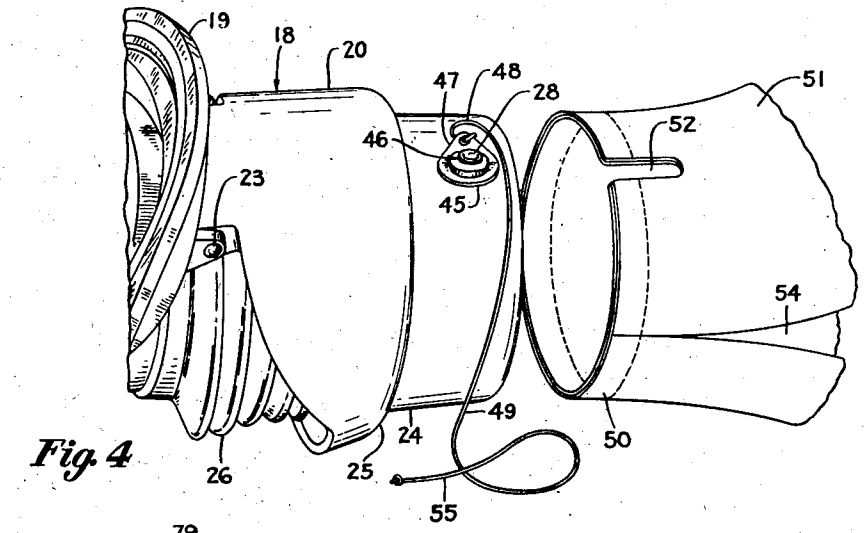

Fig. 4

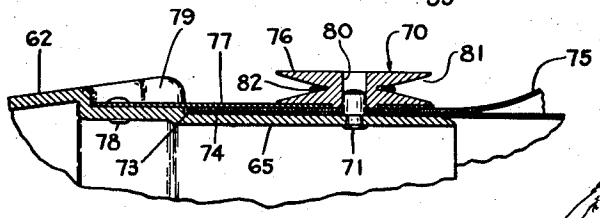

Fig. 6

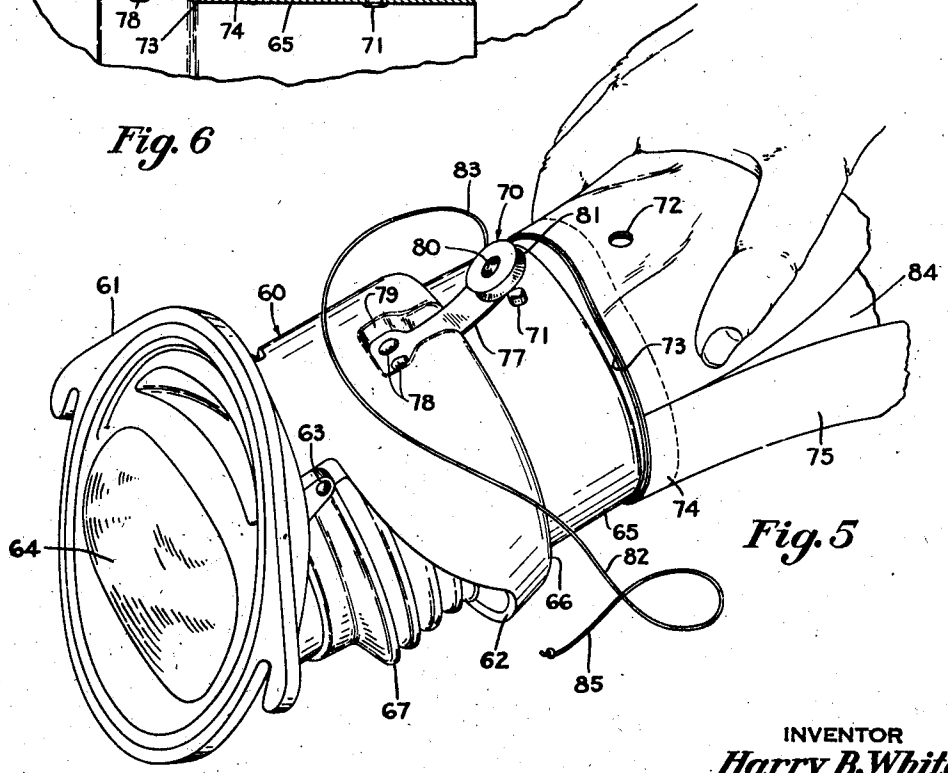

Fig. 5

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UNITED STATES PATENT OFFICE

2,377,060

SUCTION CLEANER

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Application May 16, 1942, Serial No. 443,253

5 Claims. (Cl. 285—71)

The present invention relates to suction cleaners and more particularly to a device for detachably connecting a dirt bag to the discharge nozzle of a suction cleaner.

An object of the invention is to provide a new and improved suction cleaner. Another object is to provide a detachable connection between the discharge nozzle of a suction cleaner and the dirt receiving bag. A further object is to provide a detachable connection between a discharge nozzle of a suction cleaner and the dirt bag, the joint between these parts being substantially fluid type. Another object is to provide a detachable connecting device that is permanently mounted on the cleaner discharge nozzle, whereby the connecting device is not mislaid and the dirt bag can be of inexpensive manufacture. Other objects and advantages of the invention will become apparent from the following description and attached drawings wherein:

Figure 1 is a side elevational view of the suction cleaner showing one embodiment of the invention;

Figure 2 is a section of the connecting device between the discharge nozzle and the dirt bag;

Figure 3 is an exploded perspective view of the embodiment in Figure 2 showing the discharge nozzle and dirt bag disconnected;

Figure 4 is an exploded perspective view of another embodiment of the invention showing the discharge nozzle and dirt bag disconnected;

Figure 5 is an exploded perspective view of still another embodiment of the invention showing the discharge nozzle and dirt bag disconnected, and

Figure 6 is a section of the connecting device illustrated in Figure 5 and showing the dirt bag connected to the cleaner discharge nozzle.

Figures 1 to 3 disclose one embodiment of the invention in a suction cleaner comprising a cleaner body 10 including a nozzle 11 communicating with an unshown fan chamber connected to an exhaust passageway which terminates in a flange 12. An unshown motor is supported on the body 10 and is enclosed in a motor housing 13, the motor driving an unshown fan in the fan chamber to draw dirt-laden air from the surface being cleaned through the nozzle 11 and to discharge the dirt-laden air through the exhaust passageway. The body 10 is supported on front and rear wheels 14 and 15 respectively, and is propelled over the surface to be cleaned by a handle 16 pivotally mounted on the body 10.

Removably attached to the exhaust flange 12 is a bag adaptor 18 comprising stationary and movable members 19 and 20, respectively, the former being provided with an opening 21 which communicates with the exhaust passageway when the member 19 is rigidly attached by means of a pair of nut and bolt connections 22 to the exhaust flange 12 of the cleaner body 10. The movable member 20 is pivotally mounted at 23 on the stationary member 19 and is provided with a discharge nozzle 24 having a reduced diameter to form an annular shoulder 25, and the discharge nozzle 24 communicates with the opening 21 by means of a flexible bellows 26.

Permanently mounted on the discharge nozzle 24 is a cord anchoring means 27 forming part of the bag connecting device, and includes a stud 28 which is rigidly mounted on and projects outwardly from the discharge nozzle 24. Rigidly secured to the outer end of the stud 28 is a rubber or plastic disc 29 which is provided along its inner surface with a metal apron 30 having a flared periphery 31, and the apron 30 is spaced from the exterior surface of the discharge nozzle 24 to admit therebetween the mouth 32 of a dirt bag 33 and a cord 34 which may be of resilient material.

The dirt bag 33 is of flexible dirt filtering material and includes at its lower end the constricted open mouth 32, and is provided at its upper end with an unshown dirt emptying opening closed by a removable clamp, and extending from the bag mouth 32 longitudinally the length of the bag are diametrically opposed pleats 35. The upper end of the bag 33 is supported by the handle 16, and movement of the latter causes the lower end of the bag and discharge nozzle 24 to pivot about the axis 23. A marginal opening 36 is provided in the upper wall of the bag mouth 32 midway between the opposed pleats 35 and the inner portion 37 of the opening is reinforced by a member 38 rigidly mounted on the bag mouth by rivets 39, and permanently attached to the member 38 is one end 40 of the cord 34.

When it is desired to connect the bag 33 to the cleaner body 10, the bag mouth 32 is telescoped about the discharge nozzle 24 with the opening 36 in register with the stud 28 and the lower marginal edge 41 of the bag mouth abuts the shoulder 25. The cord 34 is then wrapped around the bag mouth 32 to squeeze the latter tightly about the discharge nozzle 24 in substantially air-tight relation, and the free end 42 of the cord is wrapped about the stud 28 between the bag mouth 32 and the apron 30 in order to hold the cord tightly about the bag mouth and retain the latter on the discharge nozzle 24. Since the cord anchoring

means 27 is permanently attached on the discharge nozzle 24 and the cord 34 is secured to the bag 33, a connecting device is provided which prevents disconnection of the bag 33 from the discharge nozzle 24 under the force of the dirt-laden air stream exhausted from the fan chamber against the interior surface of the bag. The stud 28 acts as a pilot to position the bag 33 so that the bag pleats 35 are disposed in planes substantially parallel to the direction of handle movement whereby when the bag is inflated, the pleats will unfold to increase the bag size in opposite directions transverse to the direction of handle movement to prevent the handle 16 from interfering with the inflated bag.

The connecting device shown in Figure 4 is similar to that described in connection with Figures 1 to 3 with the exception that the apron 45 on the cord anchoring means 46 is provided with a tap 47 to which one end 48 of a cord 49 is permanently attached, and the mouth 50 of the bag 51 is provided with a marginal opening 52 which is placed in register with the stud 28.

In order to connect the bag 51 to the cleaner, the bag mouth 50 is telescoped about the discharge nozzle 24 with the opening 52 in register with the stud 28 to properly position the bag pleats 54 with respect to the cleaner handle 16. Thereafter the cord 49 is wrapped around the bag mouth to squeeze the latter against the discharge nozzle 24 in substantially air-tight relation, and the free end 55 of the cord 49 is wrapped about the stud 28 between the apron 45 and the bag mouth 50 to hold the bag on the discharge nozzle 24.

Figures 5 and 6 disclose another embodiment of the invention comprising a bag adaptor 60 comprising a stationary member 61 to which a member 62 is pivotally connected at 63, the member 61 having an opening 64 which communicates with the exhaust passageway when the member is detachably mounted on the cleaner body 10. The movable member 62 is provided with a discharge nozzle 65 having an annular shoulder 66 and is connected to the opening 64 by a flexible bellows 67. The bag connecting device includes a cord anchoring means 70 and a pilot 71, the latter being rigidly mounted on and projecting from the discharge nozzle 65 to receive an opening 72 spaced from the marginal edge 73 of the mouth 74 of a bag 75. The cord anchoring means includes a member 76 rigidly secured to the free end of a resilient metal bracket 77 having its opposite end permanently mounted by rivets 78 in a depressed wall 79 of the discharge nozzle 65. The member 76 has a port 80 adapted to be received by the pilot 71, and is also provided with an annular groove 81 to receive a cord 82 one end 83 of which is permanently secured to the member 76.

In order to connect the bag 75 to the cleaner body, the bag mouth 74 is telescoped over the discharge nozzle 65 so that the pilot 71 projects through the opening 72, whereby the bag pleats 84 are properly positioned with respect to the cleaner handle. The resilient bracket 77 is then depressed causing the pilot 71 to enter the port 80 in the member 76, and the cord 82 is wound about the bag mouth 74 to gather the latter and squeeze it about the discharge nozzle in substantially air tight relation, thereafter the free end 85 of the cord is wrapped in the groove 81 to hold the cord tightly about the bag mouth and retain the latter on the discharge nozzle 65. When it is desired to disconnect the bag, the free end of the cord 82 is removed from the annular groove 81 and unwound from about the bag mouth 74 whereby the resilient bracket 77 will move the member 76 away from the pilot 71 to permit disconnection of the bag.

I claim:

1. A device for removably connecting a dirt bag to the discharge nozzle of a suction cleaner comprising, cord anchoring means supported on a resilient member permanently mounted on the discharge nozzle, the dirt bag having a mouth removably telescoped about the discharge nozzle, the wall of said bag mouth being disposed between the discharge nozzle and said resiliently supported cord anchoring means, and a flexible cord having one end permanently attached to said cord anchoring means, said cord being of sufficient length to be removably wound about the circumferential exterior of said bag mouth to force the latter into engagement with the discharge nozzle and to depress said resiliently mounted cord anchoring means against the bag mouth, the other end of said cord being removably secured to said cord anchoring means on said resilient member to retain the bag on the discharge nozzle.

2. A device for removably connecting a dirt bag to the discharge nozzle of a suction cleaner comprising, cord anchoring means permanently attached to said discharge nozzle, a pilot permanently attached to said discharge nozzle, a mouth in said dirt bag removably telescoped about said discharge nozzle, an opening in the wall of said bag mouth in register with said pilot to position said bag on said discharge nozzle in predetermined relation with the latter, and a cord removably wound about said bag mouth to force the latter into sealing relation against said discharge nozzle, an end of said cord being removably secured to said cord anchoring means on said discharge nozzle to retain said bag on said discharge nozzle.

3. A device for removably connecting a dirt bag to the discharge nozzle of a suction cleaner comprising, a ported cord anchoring means supported on a resilient member permanently mounted on said discharge nozzle, a pilot permanently mounted on said discharge nozzle and adapted to receive said ported cord anchoring means, a mouth on said dirt bag removably telescoped about said discharge nozzle, an opening in the wall of said bag mouth for register with said pilot to position said bag in predetermined relation with said discharge nozzle, and a cord having one end permanently attached to said ported cord anchoring means, said cord being of sufficient length to be removably wound about the circumferential exterior surface of said bag mouth to squeeze the latter into sealing engagement about said discharge nozzle and to force said ported cord anchoring means about said pilot, the other end of said cord being removably secured to said ported cord anchoring means to retain said bag on said discharge nozzle.

4. A device for removably connecting a pleated dirt bag to the discharge nozzle of a suction cleaner comprising, cord anchoring means permanently mounted on said discharge nozzle, a pilot permanently mounted on said discharge nozzle, a mouth at the lower end of the dirt bag removably telescoped about said discharge nozzle, pleats extending from said mouth longitudinally of said bag, an opening in the wall of said bag mouth in register with said pilot to position said bag on said discharge nozzle whereby said pleats are arranged in predetermined relation with respect to said discharge nozzle, and a cord remov-

ably wound about said bag mouth to squeeze the latter into sealing engagement with said discharge nozzle and having an end secured to said cord anchoring means to retain said bag on said discharge nozzle.

5. The combination with a discharge nozzle of a suction cleaner adapted to enter the mouth of a dirt bag, cord anchoring means permanently mounted on the discharge nozzle, a pilot mounted on the discharge nozzle and adapted to enter an opening in said bag mouth to position said bag on the discharge nozzle, and a cord of sufficient length to be wound about the exterior circumferential surface of said bag mouth and removably secured to said cord anchoring means to retain said bag on said discharge nozzle.

HARRY B. WHITE.