May 7, 1935. W. LEATHERS 2,000,854

TUBULAR FILTER

Original Filed Dec. 12, 1930

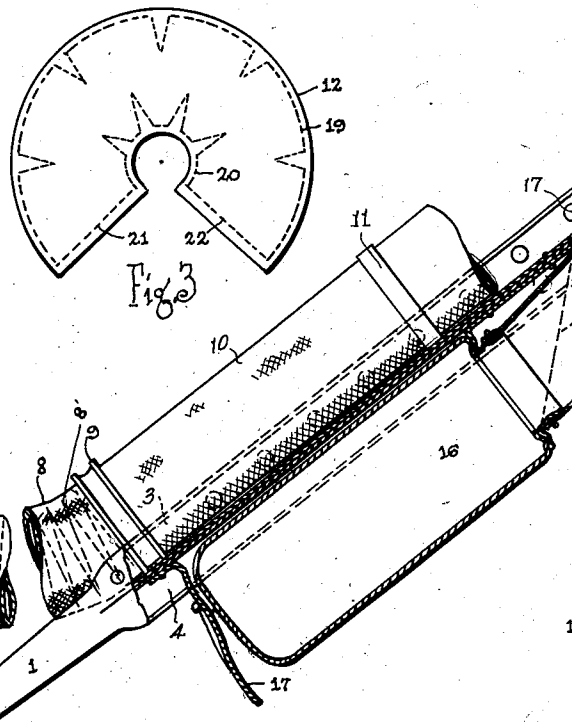


Fig. 3

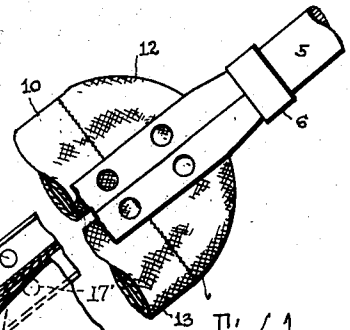


Fig. 1

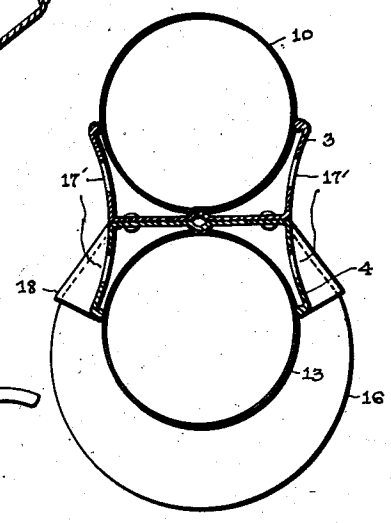


Fig. 2

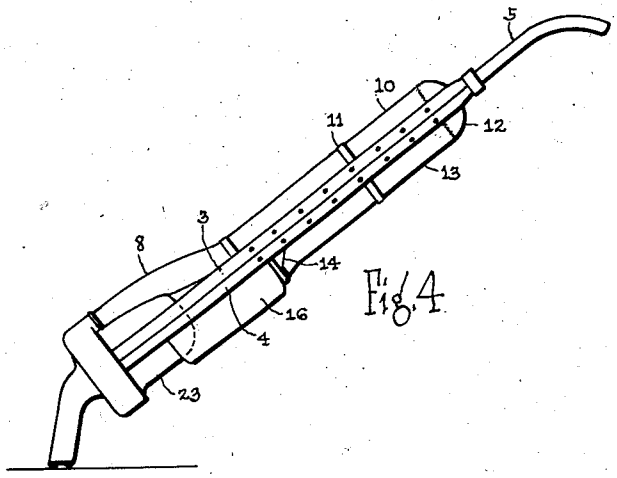


Fig. 4

INVENTOR.

Wm Leathers

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TUBULAR FILTER

Ward Leathers, Haworth, N. J., assignor to The Quadrex Corporation, a corporation of Connecticut

Application December 12, 1930, Serial No. 501,876
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3 Claims. (Cl. 183—36)

The object of my invention is to produce an inexpensive filter and dirt disposal mechanism applicable to all types of vacuum-cleaners.

I accomplish this object by the simple means of carrying the dirt-laden air upward along the handle in a filtering sleeve, or hose, to a point where the direction of the stream is reversed and carried downward through a similar sleeve or hose to a dirt receptacle.

In order to set forth my invention so that all those familiar with these arts may understand, I have prepared the following specification and appended drawing of which—

Figure 1 is a partially broken side view of my tubular filter and dirt receptacle.

Figure 2 is a typical cross-section of the tubular filter, looking downward.

Figure 3 is a detail of the fabric tube.

Figure 4 is a modification of the mode of application of the filter.

In Figure 1, 1 is a conventional yoke for joining the handle of the vacuum-cleaner to the conventional type of motor-blower unit which rests on the floor. The yoke is shown made of two stampings, one joined, as by rivets, to either side of a handle structure which consists of two stamped channels 3 and 4. The channels 3 and 4 are brought together in compressed or developed form, so that they may be conveniently and permanently attached to a handle 5. The said juncture, if desired, may be covered with a decorative ferrule 6. A practically continuous tube 10—12—13 of filter material, normally collapsible, but distended by the air pressure from the blower, is operably joined to the blower in any desired manner as shown at 7. A flexible portion thereof 8, owing to handle movement flexures, may be reenforced by a wire helix 8' if desired. The continuous filter tube 10 may be carried under a supporting loop 9, which loop may be joined to the channel 3, if desired, by the same attaching means that joins 1 to 3 and 4. The continuous filter tube passes upward as at 10 in the embrace of the channel 3. Loops of tape 11, or other flexible material may be provided at desirable points. The upper portion of the tube, 10, may be joined as by sewn parts 12, or in other suitable manner, to a lower portion of said continuous tube 13. 13 may be joined to 12 in similar manner. The bottom end of the lower section of the tube, 13, may be attached to a suitable bracket 14, by tying, or by clamps, or other suitable means. The bracket 14 is attached by rivets or spot welding or other means to the channel 4, and contains an opening therethrough for the disposal of the dirt into a receptacle 16. The bracket 14 also has on its underface, means for the proper holding, centering, and latching of the receptacle 16. The receptacle 16 is disposed within the embrace of the channel 4. It makes a substantially tight joint between itself and the bracket 14, by means of felt washers, or other suitable material, and is shown latched in place, and so held, by a spring 17 riveted to the inner faces of the channels 3 and 4. Any means of latching and holding the receptacle 16 may be provided.

Figure 2 shows a transverse cross-section of my tubular filter, looking downward. The numbers used clearly indicate the corresponding parts. The channels 3 and 4 may be joined together, as desired, by spot weld, rivets, or otherwise, or indeed the structure may be built up of other sections if desired, and the sides are provided with holes or ports 17' for emitting the filtered air from the inner periphery of the filter tubes. Thus the channels 3 and 4 constitute a rigid separator disposed between the two interconnected air filtering ducts whose upper end supports the handle 5. The channel 4 has its sides flared out as at 18 to form a larger embrasure where it is used as a centering support for the dirt receptacle 16.

Figure 3 shows a pattern for the part 12 (Figure 1), where the reversing portion of the continuous filter tube is made of fabric. Two pieces, similar to that shown in Figure 3 may be stitched together on the periphery 19 and to the inner circle 20. The gores shown, may be stitched in such manner that the adjacent sides are stitched to each other to form a semi-circular elbow 12 (see Fig. 1) with both ends open and adapted to be aligned and connected with the upper ends of the tubes 10 and 13. This connection is made by sewing or stitching the elbow 12 to the tubes 10 and 13 along the seams 21 and 22. At the seams 21 and 22, the tubes 10 and 13 are sewn in. In proper manufacture, the stitching may be done, and the parts turned so that the seams may be inside, if desired.

Figure 4 shows the application of my tubular filter to the type of vacuum-cleaner which supports the motor on the handle. In this case the channels 3 and 4 may be split and flattened, at their lower end portion, and joined in suitable maner, to the motor-blower unit 23.

Having set forth my invention in clear terms, I wish it understood that the principles involved may be applied in many and devious forms of design without departing from the spirit thereof.

I claim:

1. In a vaccum cleaner, a handle member including a longitudinal rigid separator and support, air filtering tubes disposed on opposite sides of said separator, said air filtering tubes communicating at their upper end, and a dirt receptacle in operable engagement with the lower end of one of said filtering tubes.

2. In a vaccum cleaner, a handle member including a longitudinal rigid separator and support, two air filtering tubes disposed with said separator therebetween, said separator having side portions provided with ports for exhausting air from the surfaces of said air filtering tubes, said air filtering tubes being in communication with each other at their upper end, and a dirt receptacle in operable engagement with the lower end of one of said filtering tubes.

3. In a vaccum cleaner, a handle member including a longitudinal rigid separator, a plurality of air filtering tubes, said separator being substantially H-shaped in cross section with said air tubes positioned within the same, on the opposite sides thereof said air filtering tubes communicating with each other at their upper ends, and a dirt receptacle in operable engagement with the lower end of one of said air filtering tubes.

WARD LEATHERS.