June 30, 1936. W. LEATHERS 2,046,172

VACUUM CLEANER

Original Filed Aug. 26, 1930

Fig. 2.

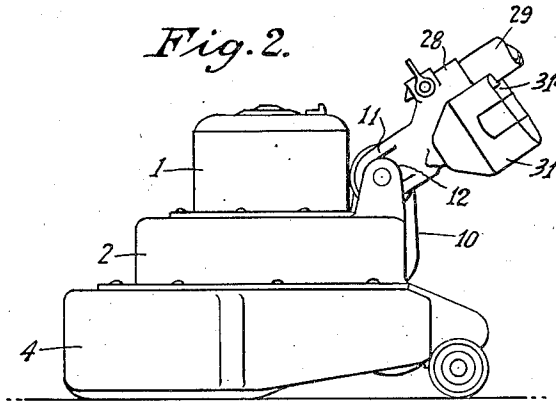


Fig. 1.

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UNITED STATES PATENT OFFICE

2,046,172

VACUUM CLEANER

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Application August 26, 1930, Serial No. 477,832
Renewed May 15, 1935

5 Claims. (Cl. 183—36)

My present invention relates to improvements in vacuum cleaners which accomplish particularly the more efficient collection and easier removal of the dirt picked up by the cleaner.

The invention comprises a novel construction including novel interrelations between the filter, the detachable dirt receptacle and the dirt laden air conduit to the filter, and other elements including the operating handle.

The accompanying drawing shows a preferred form of my improvements illustrative of the invention but without intending to limit the invention to said form or to the details thereof, except as required by the appended claims.

In the drawing:

Fig. 1 is a side elevation of a vacuum cleaner embodying my herein improvements, the middle portion of the filter and handle being omitted as superflous in order to save space, and the upper part of the filter and handle being shown partly in vertical section.

Fig. 2 is a fragmentary view consisting of the lower portion of the vacuum cleaner of Fig. 1 and shows the dirt receptacle broken off to reveal its cross sectional shape and its relation to the likewise broken off combined dirt-laden air conduit and handle.

Referring to the drawing, 1 is the motor-housing, and 2 is the fan-housing. A casing 4 preferably of sheet metal is united to the aforesaid housings, and constitutes a suction mouth piece connected with the fan-housing which in turn connects with the hollow air duct 11 and a tubular handle 29 and delivers the dirt laden air into and up through said duct and handle.

The articulation between the rigid bracket 12 and the hollow bracket 10 is shown at 27. The hollow bracket 10 communicates with the hollow part 11 which at 28 is joined to and communicates with the hollow handle member 29, preferably of hard fibre preferably about 1½" in diameter. On the part 11 there is a boss 30 provided with a pin which engages a recess in the bottom of the dirt receptacle 31.

A hollow part 32, preferably of sheet metal, is rigidly attached to the tubular handle 29, and is so formed that when the dirt receptacle 31 is set against the opening on its underside it will be practically air-tight there. At its upper edge it is provided with means of attaching thereto a tubular filter sleeve of fabric 33 which surrounds the handle 29, and is of such diameter as to give the required air-filter volume depending upon the capacity of the motor suction-unit used. The aforesaid part 32 is so formed on its under-face that it receives and holds the dirt receptacle 31 in an air-tight manner. The dirt receptacle 31 may be tightly drawn up against the part 32 by means of a suitable latching means 34 as illustrated in Fig. 1.

At a suitable point on the upper end of the tubular handle 29 is a housing part 35, preferably of stamped sheet metal, which is shown rigidly attached to the handle and provided at its lower and outer rim with means for attaching the fabric sleeve 33 thereto in similar manner to that on the part 32.

The hollow handle member 29 is provided with ports at 36 whereby all the air from the fan is deflected outwardly into the fabric sleeve 33 from which point it moves downwardly carrying the dirt with it as the air escapes through the filter. The result of this venting from the handle at the top of the filter sleeve is that the dirt travels downwardly by gravity into the dirt-receptacle 31 in the same direction as the air. A suitable solid hand-grip 37 is provided set into the upper end of the tubular handle as shown in Fig. 1. A latch 38 on the part 11 enables the latching of the filter handle in a vertical position to the motor-housing 1 when the cleaner is not in use.

It will be noted that the side of the detachable dirt receptacle 31 is formed at 31a (Fig. 2) with a re-entrant angle which straddles the adjacent dirt-laden air duct 29 when the receptacle is in place, said duct 29 being also part of the operating handle of the cleaner in the particular illustrative device. The re-entrant angled dirt receptacle has increased capacity and at the same time reduces the diameter of the cleaner at this point.

It will be seen that the described improvements enable efficient separation of the dirt from the dirt-laden air and its collection in a properly located maximum size detachable dirt-receptacle without making the combined filter, conduit and dirt receptacle handle-portion of the cleaner cylindrically bulky or cumbersome.

I am aware that this invention may be carried out in modified forms without departing from the scope of the invention as expressed in the claims. Therefore I do not wish to be limited to the exact details of the construction shown and described, but what I claim is:

1. In a vacuum cleaner, the combination of a tubular filter; a tubular handle extending eccentrically or at one side through the bottom of the tubular filter and thence substantially axially through the filter and out through its upper end; a closure for the upper end of said tubular handle; means to deliver dirt laden air into the lower end

of said tubular handle and out through an opening at its upper end into the upper end of the filter; and a dirt receptacle detachably supported under the filter with open mouth at the bottom of the filter in communication with an opening through said bottom.

2. In a vacuum cleaner, the combination of a tubular filter; a tubular handle extending up through the tubular filter and out of its upper end; means to deliver dirt laden air into the lower end of the handle member and out through a port therein at its upper end into the upper end of said filter; a closure for the bore of said tubular handle above said port; and a hand-grip at the upper end of said handle beyond the filter.

3. In a vacuum cleaner, the combination with a motor suction floor-unit of a tubular handle pivoted to said floor unit and arranged to receive up through the handle the dirt laden air from said unit; a tubular filter through which the tubular handle extends, the tubular handle having a port for delivering the dirt laden air into the upper end of said filter; a closure for the bore of said tubular handle above said port; a hand-grip at the upper end of said handle beyond the filter; a dirt receptacle detachably supported under the filter with open mouth at the bottom of the filter in communication with an opening through said bottom.

4. In a vacuum cleaner, the combination of a tubular filter, means to deliver dirt-laden air into the filter comprising a conduit delivering up through the bottom-end of the tubular filter, and an open-mouthed dirt receptacle detachably supported under the filter adjacent said conduit with its mouth in communication with the bottom opening of the tubular filter, the side of the dirt receptacle adjacent the conduit being formed with a re-entrant angle which straddles the conduit when the receptacle is in place.

5. In a vacuum cleaner, the combination of a motor-driven suction-unit and related vacuum-cleaner nozzle, a handle connected with said suction-unit for operating it over the surface to be cleaned, a tubular filter connected with said suction unit and surrounding said handle, and an open-mouthed dirt receptacle detachably supported under the filter adjacent said handle with its mouth in communication with the bottom opening of the tubular filter, the side of the dirt receptacle adjacent the handle being formed with a re-entrant angle which straddles the handle when the receptacle is in place.

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