Nov. 28, 1933. H. E. HOOVER 1,936,761

SUCTION CLEANER

Filed Dec. 11, 1930 2 Sheets-Sheet 1

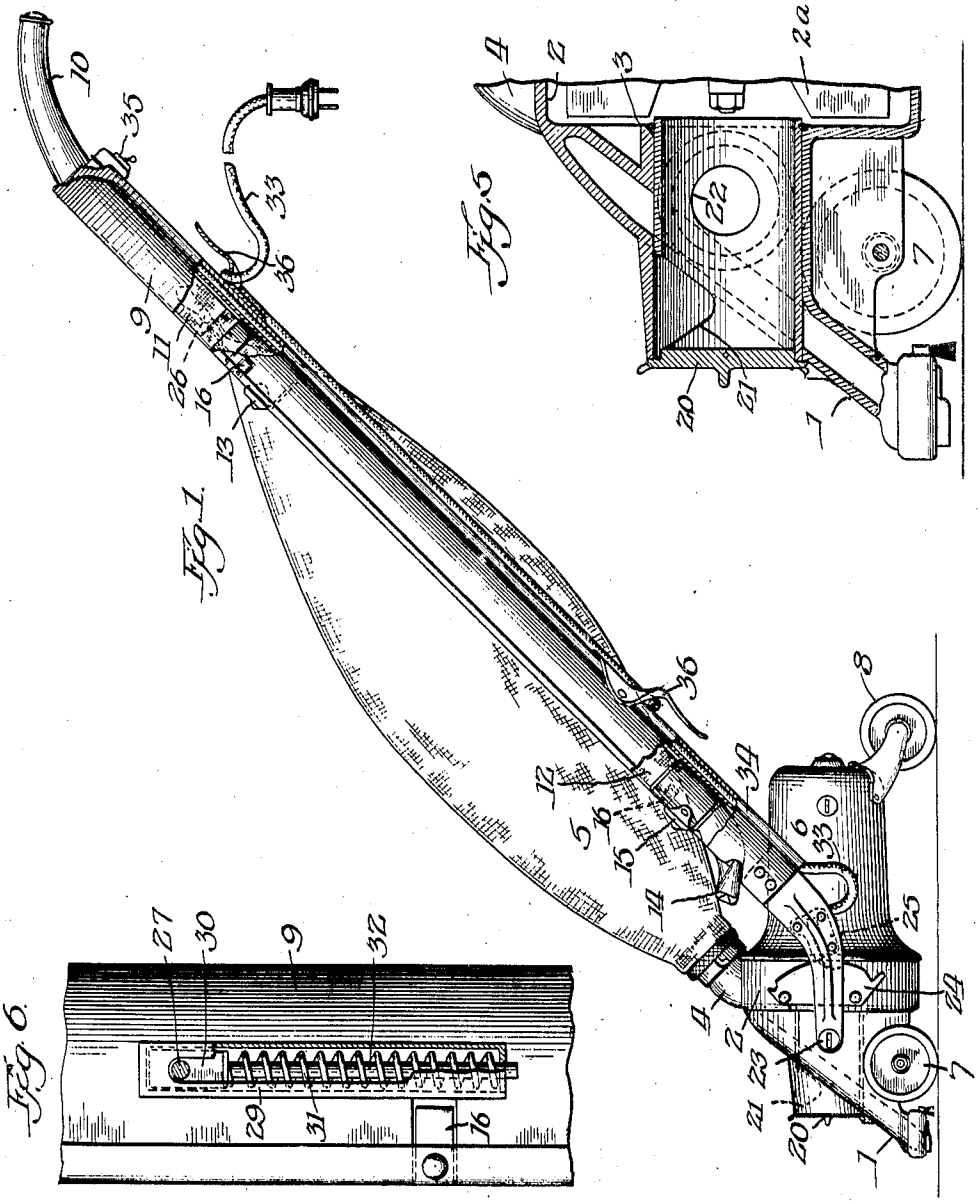


Fig. 1.

Fig. 5

Fig. 6.

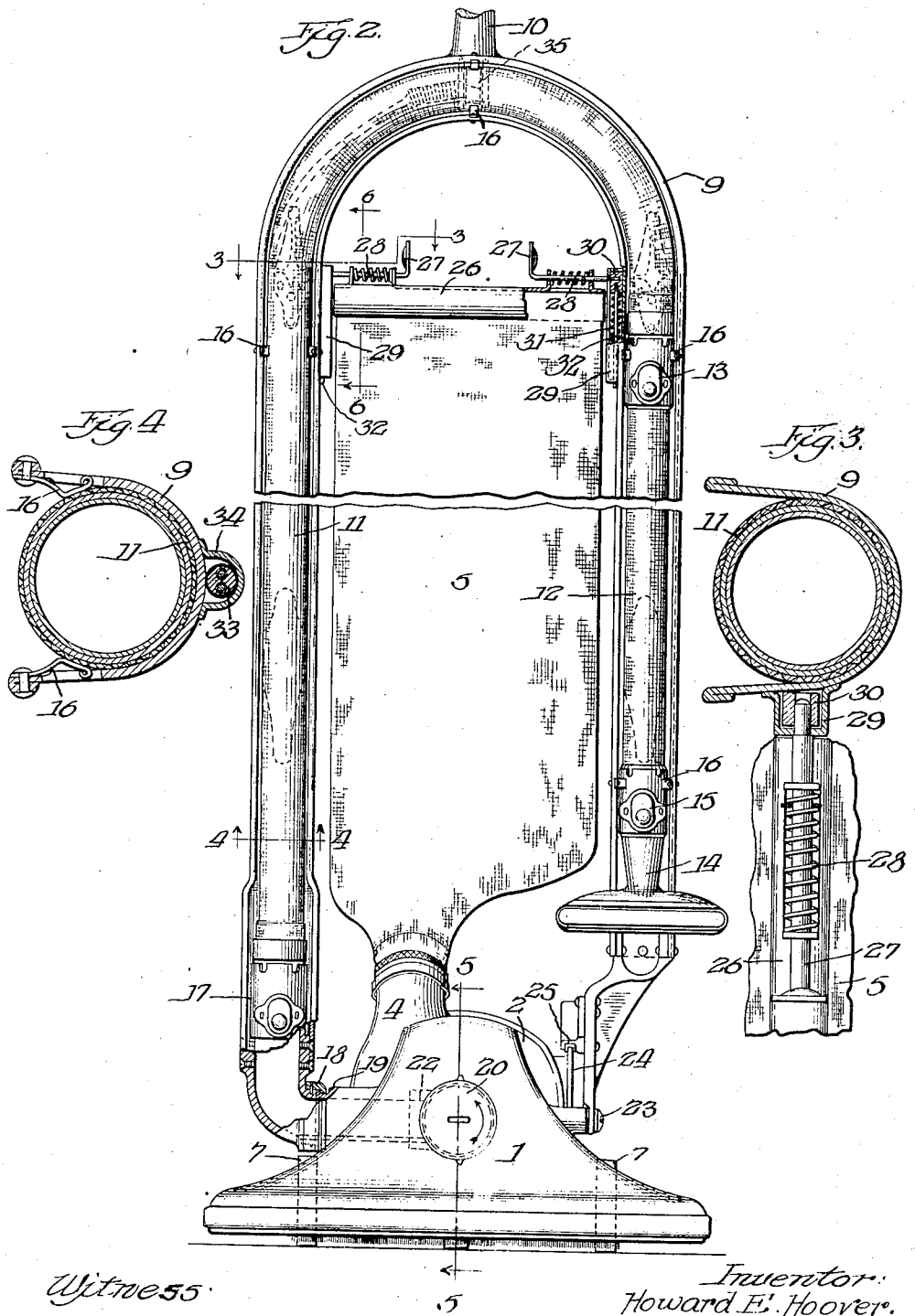
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SUCTION CLEANER

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UNITED STATES PATENT OFFICE

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SUCTION CLEANER

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Serial No. 501,492

5 Claims. (Cl. 15—9)

The present invention relates to suction cleaners in general and particularly to a new and improved suction cleaner construction in which a dusting tool, for use in "off the floor" cleaning, is permanently embodied in the construction. More specifically the invention comprises an improved arrangement of parts in a suction cleaner which embodies both means for "on the floor" cleaning and means for "off the floor" cleaning.

The desirability of having the dusting tool hose permanently attached to the suction cleaner unit where it is readily available for use in cleaning drapes, curtains, and other articles which are positioned above the floor, is well recognized. Heretofore it has been unfeasible to provide a suction cleaner construction in which a suction cleaning unit for "on the floor" cleaning of sufficient size and power for all around general efficiency was combined with a permanently attached dusting tool. According to the present invention a suction cleaner unit of the standard size and construction, in which no sacrifice has been made of cleaning effectiveness for the purpose of making possible the incorporation of the dusting tools, is provided. The dusting tools are permanently attached to the suction-creating unit and are carried in such a manner that they in no way encumber the operator in the use of the machine nor is it necessary to lift or move the machine proper in their use.

It is an object of the present invention to provide a new and novel suction cleaner construction. It is a further object to provide, in a suction cleaner, a new and novel arrangement of parts in which the dusting tools for use in "off the floor" cleaning are attached to, and carried by, the usual suction cleaner construction for "on the floor" cleaning. It is a further object to provide a suction cleaner construction in which the dusting tools are connected to the suction-creating unit and are carried by the handle of the machine. Other and more specific objects will appear upon reading the following specification and claims and upon considering in connection therewith the attached drawings.

In the drawings, in which a preferred embodiment of the present invention is disclosed:

Fig. 1 is a side elevation of a suction cleaner embodying the present invention,

Fig. 2 is a front view of the cleaner disclosed in Fig. 1,

Fig. 3 is a partial section upon the line 3—3 of Fig. 2,

Fig. 4 is a section upon the line 4—4 of Fig. 2,

Fig. 5 is a partial section upon the line 5—5 of Fig. 2,

Fig. 6 is a view upon the line 6—6 of Fig. 2 showing the dust-bag-tensioning mechanism.

In the drawings, a preferred embodiment of the present invention is disclosed and comprises a suction cleaner including a nozzle 1; a fan chamber 2 which houses a fan 2a and is provided with an inlet 3 opening from the nozzle 1, and with an outlet 4 opening to the dust bag 5; a motor casing 6 which houses a suitable driving motor for the suction-creating fan within the fan chamber 2, neither the motor or the fan being shown but being of the usual and well known types; front supporting wheels 7, 7 and a rear supporting wheel 8, which movably support the cleaner upon the surface undergoing cleaning; a handle 9 which is U-shaped, being pivoted upon opposite sides of the nozzle 1 at its lower end, and being provided with a grip portion 10 at its upper end. According to the present invention the pivotally-attached dusting tool can comprise a flexible tubular hose section 11, a rigid metallic section 12 which is detachably connected to the section 11 by suitable and well known securing means 13, and a nozzle 14 which is detachably secured to the opposite end of the rigid metallic unit 12 as by common and well known securing means 15 which are preferably of the spring-pressed detent type. The dusting tool, the name generally applied to the length of hose including the flexible and rigid sections and the nozzle 14, is seated within the arms of the handle 9, which are U-shaped in cross section, and is resiliently and resistingly secured therein by means of spring members 16, 16 etc. which are carried by handle 9 at spaced intervals throughout its length.

At its inner, or suction-cleaner end, the dusting tool is detachably secured, as by means 17, which are similar to the means 13 and 15, to the lower end of the handle 9 which is tubular immediately adajcent the nozzle 1 and carries a sleeve 18 which is rotatably mounted upon the extended end of the transversely-extending conduit 19 within the nozzle 1. Conduit 19 connects to the inlet 3 of the fan chamber at its inner end and forms a passageway between the cleaner-end of the dusting tool and said chamber. In order to prevent the suction-creating means of the cleaner, comprising the suction-creating fan and fan chamber, from drawing air through the dusting tool at all times, a rotatable cylindrical valve 20 is provided in the nozzle 1 which is operable by the user and which, in one position, seals the conduit 19 from the inlet 3 and, thru being provided with a cut-away portion 21, connects the lower end and mouth of nozzle 1 with the inlet 3. When rotated 180 degrees, however, the cut-away portion 21 contacts a wall of the nozzle 1 functioning to seal said portion, and so the interior of valve 20 from the nozzle, and instead an opening 22 in said valve faces the conduit 19 thereby functioning to interiorly connect that conduit, and so the dusting tool, with the fan chamber.

The lower end of the handle 9 carrying the

nozzle 14 is flattened and pivotally mounted on the exterior of the nozzle as indicated at 23. In order that the handle will be retained in any desired position as in the usual suction cleaner, a rigid arcuate member 24, carried by the chamber 2 and provided with suitable seats, is contacted by a detent member 25 carried by handle 9 as in a usual and well known manner.

According to the present invention the dust bag 5 is supported between the arms of the handle 9 there being provided, at its upper end, a frame 26 on which are mounted plungers 27, 27 which are spring-pressed to the sides of the bag by coil springs 28, 28. The outer end of each plunger 27, as is clearly shown in Figures 3 and 6, extends within a vertically extending guideway 29 into a socket member 30 which is resiliently held at the top of guideway 29 by means of a coiled spring 31. A guide pin 32 is attached to each seat 30 and extends downwardly through the lower end of guideway 29 for the purpose of preventing undue tilting or movement of seat 30 and also any misalinement of the spring. The resilient mounting by the seat 30 of plunger 27, and so the frame 26 and the upper end of dust bag 5, is extremely desirable as it permits longitudinal movement of the bag relative to the handle upon the pivoting of said handle, a movement which is very necessary to prevent undue strain in the bag as the handle is pivoted. To disconnect the bag from the handle it is only necessary to force the plungers 27, 27 inwardly against the force of the springs 28, 28 withdrawing them from their seats 30, 30.

In the present suction cleaner the incoming power lead 33 to the motor is carried by the handle in a suitable channel 34 which extends along the underside of one of the arms thereof between the switch 35, adjacent the grip 10, and the motor. The presence of the dust bag 5 between the depending arms of the handle in no way interferes with the disposition of an extra length or coil of the current carrying lead there being provided the usual wrapping posts 36, 36 etc. on the underside of both arms making it possible to wrap an even longer lead thereabout than in the usual suction cleaner construction.

In the operation of the present suction cleaner in its "on the floor" cleaning capacity the rotary valve 20 is positioned so that the nozzle 1 is connected to the fan chamber and the dusting tool sealed therefrom. The dusting tool is positioned within the confines of the handle and offers no obstruction or hindrance to the operator in propelling the machine over the surface covering. Upon completing the cleaning of the carpets and rugs etc. if the operator desires to clean the drapes, curtains and other articles which are positioned above the main supporting surface it is only necessary to manually rotate the valve 20 until the conduit 19 is connected, through the opening 22 in the valve, with the inlet 3 of the fan chamber, which operation also effects the sealing of the nozzle 1 from said inlet. In this relationship the dusting tool is provided with suction and cleaning air is drawn through the nozzle 14. The operator need only exert a slight pull to withdrawn the dusting tool from its seat within the handle against the retaining force of the springs 16, 16, etc. With the dusting tool so withdrawn from its seat it is available for use at all points which can be reached by the nozzle 14, the unit being movable relative to the cleaner through the section 11 of the hose being flexible. If it is desired to extend the nozzle 14 to a still greater distance from the cleaner it is only necessary to insert another section of dusting tool hose at any of the joints found between the sections, as at 13 or at 15. Upon the completion of the work requiring the use of the dusting tool it is only necessary to replace the unit within its seat in the handle, rotate the permanently carried valve 20, and the cleaner is again ready for use upon the surface covering proper.

I claim:—

1. In a suction cleaner of the type comprising a body including a floor nozzle and a passageway, suction-creating means open to said nozzle and said passageway, and means to selectively seal said nozzle or said passageway from said suction-creating means, the improvement comprising a U-shaped handle pivoted at its ends to said body and formed at one end only as a conduit and connected to said passageway, a dusting tool hose connected to the conduit portion of said handle and so to said passageway, and means removably securing said hose to said handle along its length.

2. In a suction cleaner of the type comprising a body including a floor nozzle and a passageway, suction-creating means open to said nozzle and said passageway, and means to selectively seal said nozzle or said passageway from said suction-creating means, the improvement comprising a U-shaped handle pivoted to said body and formed of a U-shaped cross-section, a dusting tool comprising a section of flexible tubular hose, a cylindrical metallic section, and a nozzle, forming the article-contacting end of the tool, operatively connected to said suction-producing means thru said passageway, said tool being of substantially the same length as said U-shaped handle and removably seated thruout its length therein, and means removably retaining said tool in place on said handle.

3. In a suction cleaner including a body and suction-producing means, the improvement including a passageway in said body connected to said suction-producing means, a flexible dusting tool hose movably connected to said passageway, a rigid handle pivotally connected to said body, said hose being adapted to lie along said handle and being easily displaceable laterally therefrom, and means to removably retain said hose in place on said handle.

4. In a suction cleaner including a body and suction-producing means, the improvement including a permanently attached dusting tool hose connection interiorly connected to said suction-producing means and movably mounted on said body, a handle pivotally carried by said body concaved on one side to seat an elongated member, a dusting tool hose connected to said connection and lying along said handle, and means to prevent accidental displacement of said hose from said handle.

5. In a suction cleaner including a body and suction-producing means, the improvement comprising a tubular connection rotatably mounted on said body and interiorly connected to said suction-producing means, a U-shaped handle pivotally connected to said body about the same axis as said connection, a dusting tool hose detachably connected to said connection and lying along said handle, and means removably securing said hose to said handle.

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