

June 29, 1937.

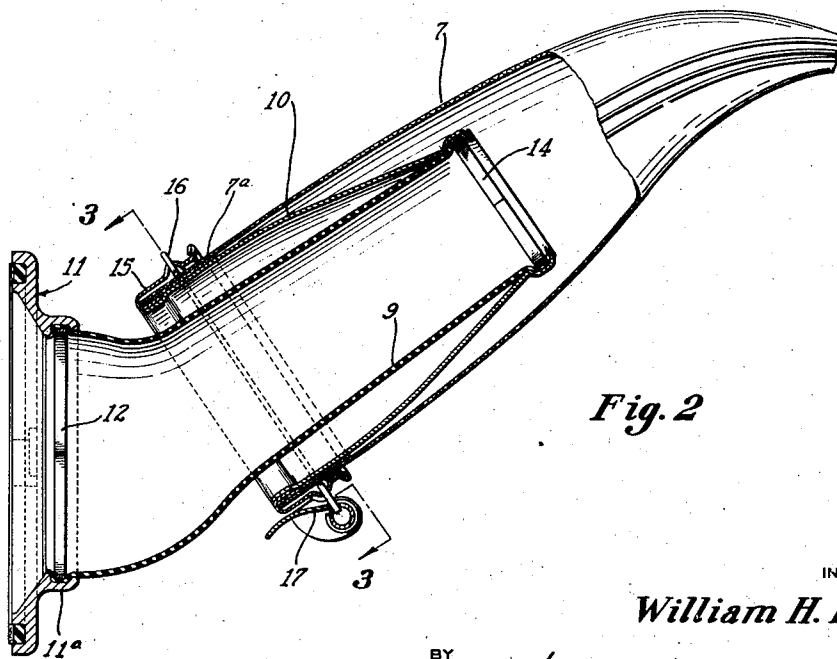
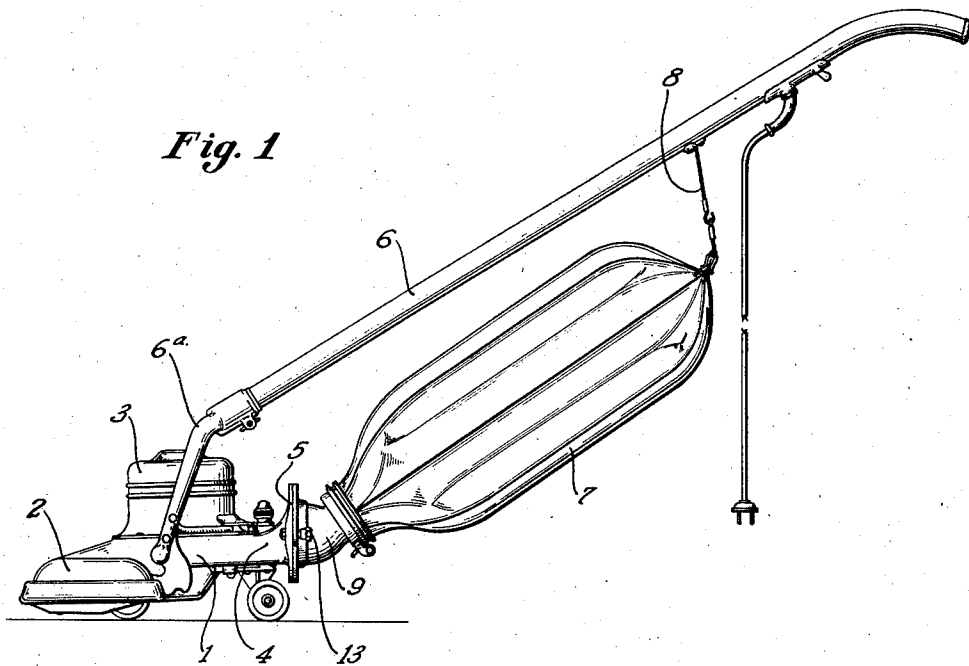
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2,085,702

SUCTION CLEANER

Filed Nov. 7, 1936

2 Sheets-Sheet 1



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SUCTION CLEANER

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2 Sheets-Sheet 2

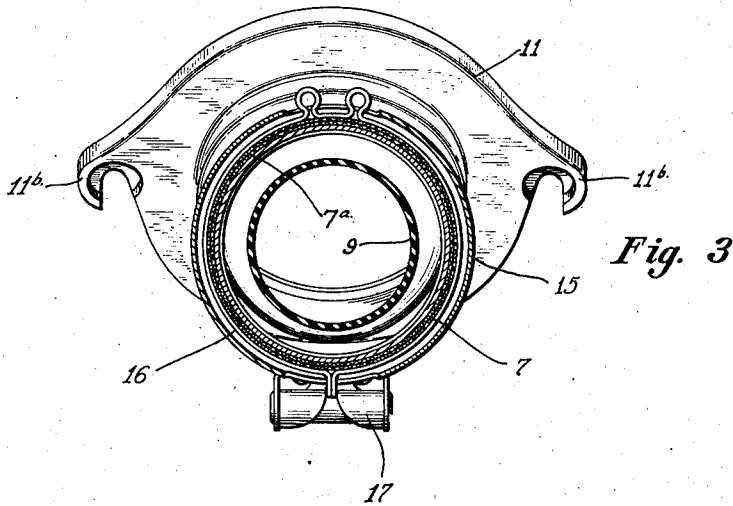


Fig. 3

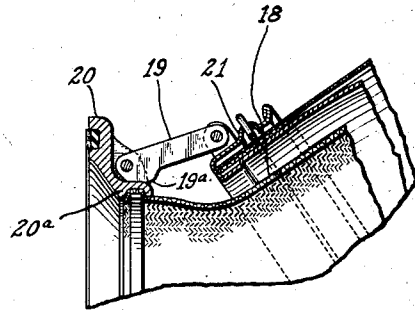


Fig. 5

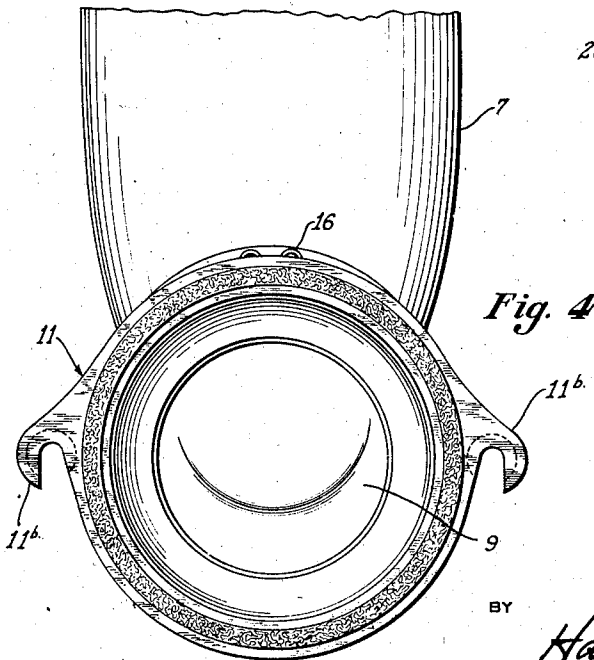


Fig. 4

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SUCTION CLEANER

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7 Claims. (Cl. 183—36)

This invention relates to improvements in suction cleaners and more particularly to a new and novel mounting for the dirt bag of a suction cleaner of the portable handle-maneuvered type, in which the inlet end of the dirt receiving bag is connected to the exhaust outlet from the cleaner casing and the closed end of the bag is suspended from the handle.

The foregoing arrangement, more or less standard in suction cleaners of the type indicated, does not afford the ideal mounting for the dirt bag for the reason that one portion thereof swings or moves with the handle whereas the other or lower end portion is relatively fixed so that the lower portion of the bag is continually undergoing a bending and flexing movement which is not conducive to long bag life, particularly, if the bags are of paper or like fibrous materials not having the strength of the more commonly used woven fabric for this purpose.

It is therefore the object of the present invention to provide an improved mounting for the lower end of the dirt bag having the general form of flexibly connected telescoping members, one being attached to the outlet connection from the cleaner and the other clamped around the mouth of the bag.

The novel feature of the bag mounting in its preferred form is disclosed in the accompanying drawings in which:

Figure 1 is a general view in side elevation of a suction cleaner showing the improved mounting intermediate the mouth of the bag and the outlet connection;

Figure 2 is an enlarged detail view in vertical section showing the bag mounting member or "adapter", as it may be called, removed from the cleaner and with a non-inflated bag attached thereto;

Figure 3 is a view in cross-section through the bag connecting member taken on line 3—3 of Figure 2;

Figure 4 is a view in front elevation of the bag connecting member removed from the cleaner, and;

Figure 5 is a fragmentary view in vertical section the upper edge portion of the bag-ring showing the addition of a connecting link between the ring and the bag clamping collar to support the latter when a fabric or other cloth bag material is used.

Referring briefly to the general design and construction of the suction cleaner for which the improved bag mounted device is adapted, the

same comprises a wheeled casing 1 having a nozzle 2 extending transversely across its forward end and surmounted by a dome-like casing 3 in which is housed an electric motor driving a suction-creating fan located within a fan chamber communicating with nozzle 2 and also with exhaust outlet 4 opening rearwardly in a vertically arranged flange connection 5. A handle 6 is pivotally connected with the casing 1 through a U-shaped bail 6a which straddles the motor casing 3 and permits the handle to swing in an arc and upwardly or downwardly from the rearwardly extending and inclined position for maneuvering the cleaner over the carpet surface, as shown in Figure 1. The dirt bag 7 which for the purpose of this disclosure may be assumed to be of paper or other light fibrous material, rather than the ordinary fabric or cloth generally used for this purpose, is located immediately below the handle and as already suggested is connected at its mouth or lower end with the outlet connection 5 of the cleaner casing with the nozzle connecting member or adapter presently to be described in detail, and at its upper end is suspended from the handle by means of a flexible and preferably extensible connecting member 8.

The flexible bag mouth connector or adapter, consists primarily of two connected tubular members, one telescoping within the other; the internal member 9 being of a flexible material such as a relatively soft rubber sleeve of substantially uniform diameter throughout its outer end portion, whereas the outer or external sleeve member 10 is made of a relatively stiff material such as light metal and, doubling back over the internal member, diverges or tapers outwardly to a substantially increased diameter at its free end, with the result that an annular space separates adjacent ends of the telescoping sleeves.

As clearly shown in Figure 2 the inlet of the internal flexible sleeve 9 is suitably connected to a solid ring 11 by means of a clamping ring 12 which locks the edge of the sleeve into an internal seat formed in a laterally projecting flanged portion 11a of the ring. The clamping ring 11 is adapted to be applied against the flanged outlet connection 5 from the cleaner casing and to be detachably held in place by a pair of clamping bolts 13, 13 one on each side of the outlet connection and adapted to be engaged by ears 11b, 11b, formed integral with the clamping collar 11.

Immediately beyond the ring 11 to which the flexible sleeve member 9 is fixed, the latter assumes a somewhat enlarged or bulbous form, thence converging to its major portion of uni-

form diameter extending rearwardly and upwardly at an angle of substantially 45 degrees to the vertical plane of the clamping ring 11. The outer end of the flexible sleeve 9 is clamped to the smaller end of the tapered external sleeve 10, by an extensible clamping ring 14 seating in an internal annular groove around the end of the external sleeve with the edge of the flexible sleeve between.

From the outer end of the flexible sleeve 9, the external sleeve 10 extends toward the inlet end of the adapter, but terminates short of the attaching ring 11. A clamping collar 15 is provided at the free edge of the external sleeve 10, this collar preferably having the form of a wide marginal portion of the sleeve doubled back upon itself to form a U-shaped channel. Thus, assuming that the mouth of the bag is fashioned to slip over the sleeve 10 and to seat in the U-shaped channel formed by the collar 15, a resilient clamping ring 16, surrounding the collar and provided with a suitable clamping lever 17, clamps the bag to the sleeve with a firm and air-tight connection and yet permitting the replacement of the bags as they wear out in use. If desired, the mouth of the bag may be reinforced by a relatively stiff collar or cuff 1a of cardboard or like material although this is a matter of choice. Moreover, as is shown in Figure 2, the collar 15 is preferably a separate ring welded to the edge of the sleeve 10, as it would be impractical to fold the margin of the sleeve back upon itself as the structure suggests.

With the connecting device or adapter introduced between the outlet connection of the cleaner and the mouth of the bag, it follows that the external sleeve to which the mouth of the bag is clamped, assumes a more or less concentric position relative to the internal flexible sleeve 9, but at the same time there is sufficient flexibility and freedom of movement between the two to produce a sort of floating connection between the mouth of the bag and the outlet connection of the cleaner casing. In this manner, the bag is free to move with the handle without subjecting the lower or reduced neck portion thereof to any appreciable bending or buckling as would otherwise occur.

As a modified arrangement, the internal sleeve 18 may be made of a woven fabric or of the regular bag cloth, in which case it would afford little or no support for the mouth of the bag, and consequently additional support is necessary. Thus, in Figure 5 there is shown a link 19 connected at one end to a point on the edge of the external sleeve 21 immediately opposite. This link 19 is preferably provided at its ring connected end with a stop lug 19a which engages the shoulder formed by the rearwardly extending flange 20a of the ring, so as to maintain a concentric relation between the bag supporting end of the external sleeve 21 and the attaching ring 20. Manifestly the presence of the link reduces somewhat the flexibility and freedom of movement afforded by the adapter, but it does not in any material respect reduce the effectiveness of the arrangement, inasmuch as the link 19 swings in the same vertical plane as the handle.

However, this arrangement is especially desirable, if not necessary, in case the internal sleeve of the adapter is made of a woven fabric or other material not having sufficient bodily stiffness to support the lower portion of the bag.

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

1. In a bag mounting for suction cleaners, the combination with a casing having an exhaust outlet and a dirt bag adapted to be attached at said outlet, of an intermediate connector comprising a flexible sleeve connected at one end with said outlet and forming an extension thereof, and another sleeve of relatively stiff material fixed to the outer end of said flexible sleeve and embracing a portion thereof in telescopic relation, the free end of said last mentioned sleeve being of increased diameter and adapted to have detachable connection with the mouth portion of said bag.

2. In a bag mounting for suction cleaners, the combination with a casing having an exhaust outlet and a dirt bag adapted to communicate with said outlet, of an intermediate connector comprising a flexible sleeve adapted to be connected at one end with said outlet to form an extension thereof, and a relatively stiff sleeve of greater diameter fixed at one end to the outer end of said first mentioned sleeve and surrounding a substantial portion of the length thereof in telescopic relation, and means for securing the mouth portion of said bag around the free end of said last mentioned external sleeve.

3. In a bag mounting for suction cleaners, the combination with a casing having an exhaust outlet and a dirt bag adapted to communicate with said outlet, of an adapter for the purpose described, comprising a sleeve of flexible but relatively stiff material adapted to be attached at one end to said outlet connection and forming a short extension thereof, and an external sleeve of stiff material fixed at one end to the outer end of said first mentioned sleeve and diverging from said outer end enclosing a substantial portion of said first mentioned internal sleeve, said external sleeve being provided with a clamping means at its free end to receive the mouth portion of said bag for air-tight connection therewith.

4. In a bag mounting for suction cleaners, the combination with a casing having an exhaust outlet and the dirt bag adapted to communicate with said outlet, of an intermediate connector comprising a flexible sleeve adapted for attachment at one end to said outlet and forming an extension thereof, a sleeve of stiff material surrounding said flexible sleeve in radially spaced relation therewith and secured at the outer end thereof, and means at the free end of said external sleeve to receive the mouth portion of said bag in clamping engagement therewith.

5. In a bag mounting for suction cleaners, the combination with a casing having an exhaust outlet and a dirt bag adapted to communicate with said outlet, of a flexible adapter intermediate said outlet and the mouth of said bag comprising a pair of telescopically arranged tubular members connected at their outer ends, the internal tubular member being adapted to communicate with said exhaust outlet and said external tubular member being spaced radially from the internal member and adapted to be enclosed by the mouth portion of the bag and to have clamping engagement with the edge thereof.

6. In a bag mounting for suction cleaners having an exhaust outlet and a handle pivotally connected therewith, the combination of the dirt bag adapted to communicate at its lower end with said exhaust outlet and to be supported at

its outer end from said handle, a flexible adapter intermediate said outlet connection and the mouth of said bag, comprising a pair of flexibly connected sleeves, one enclosing the other in telescopic relation, the free end of the internal tubular member being adapted for attachment at the said exhaust outlet and said external sleeve being adapted to be surrounded by the mouth portion of said bag and to have detachable connection therewith around its free end, and means for supporting the mouth of said bag for limited movement with said handle.

7. In a bag mounting for suction cleaners having an exhaust outlet and a handle pivoted thereto, of a dirt bag adapted to communicate

at one end with said exhaust outlet and to be supported at its outer end from said handle, of a flexible adapter having a solid ring adapted for attachment at said exhaust outlet, a sleeve of flexible material attached at one end to said ring, a sleeve of stiff material secured at the outer end of said flexible sleeve and surrounding a substantial portion of the length thereof, means for attaching the mouth of said bag around the free end of said external sleeve and a link connecting said ring with said external sleeve and located in the plane of movement of said handle.

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