

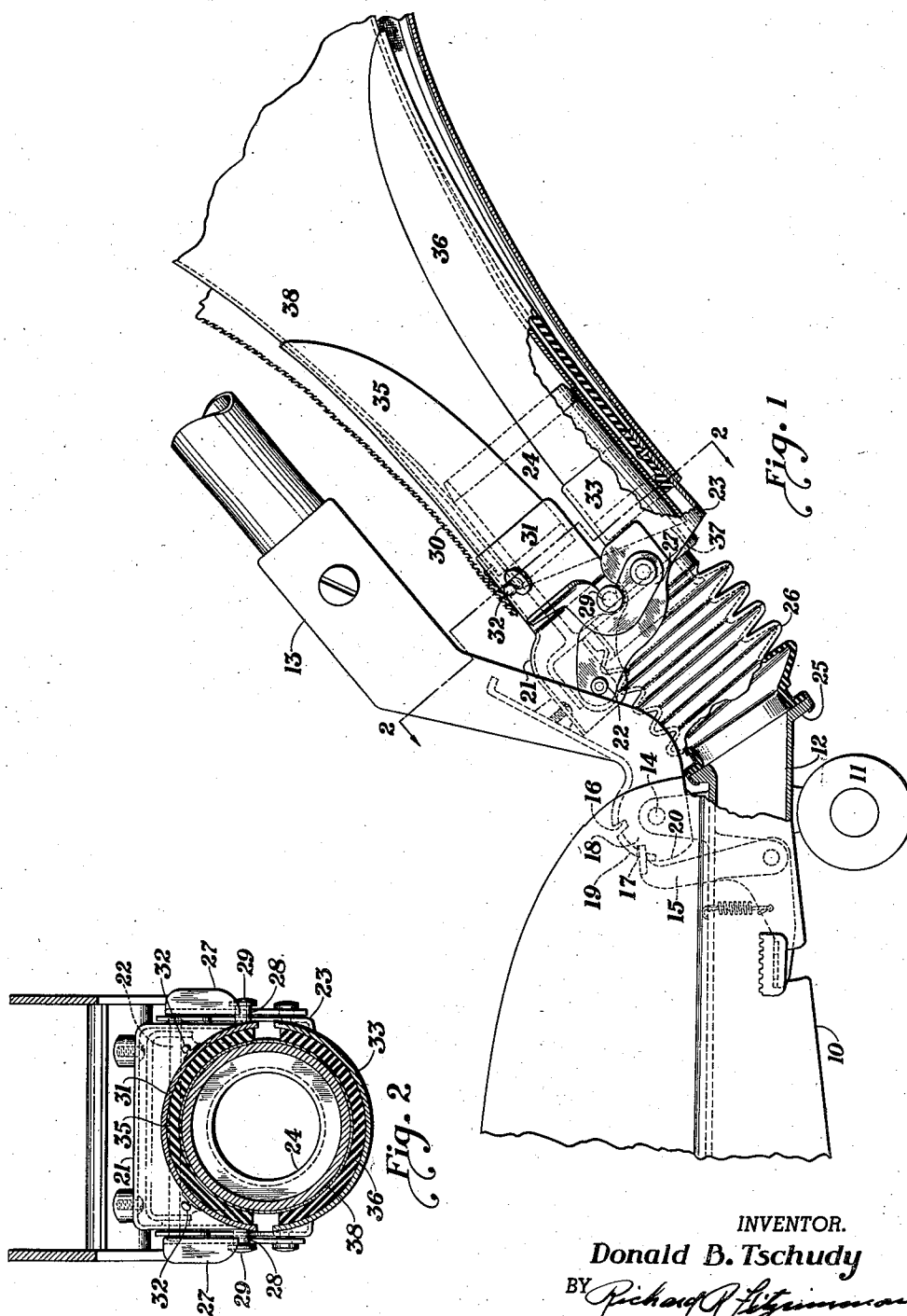
Aug. 25, 1953

D. B. TSCHUDY
SUCTION CLEANER

2,649,925

Filed June 6, 1952

3 Sheets-Sheet 1



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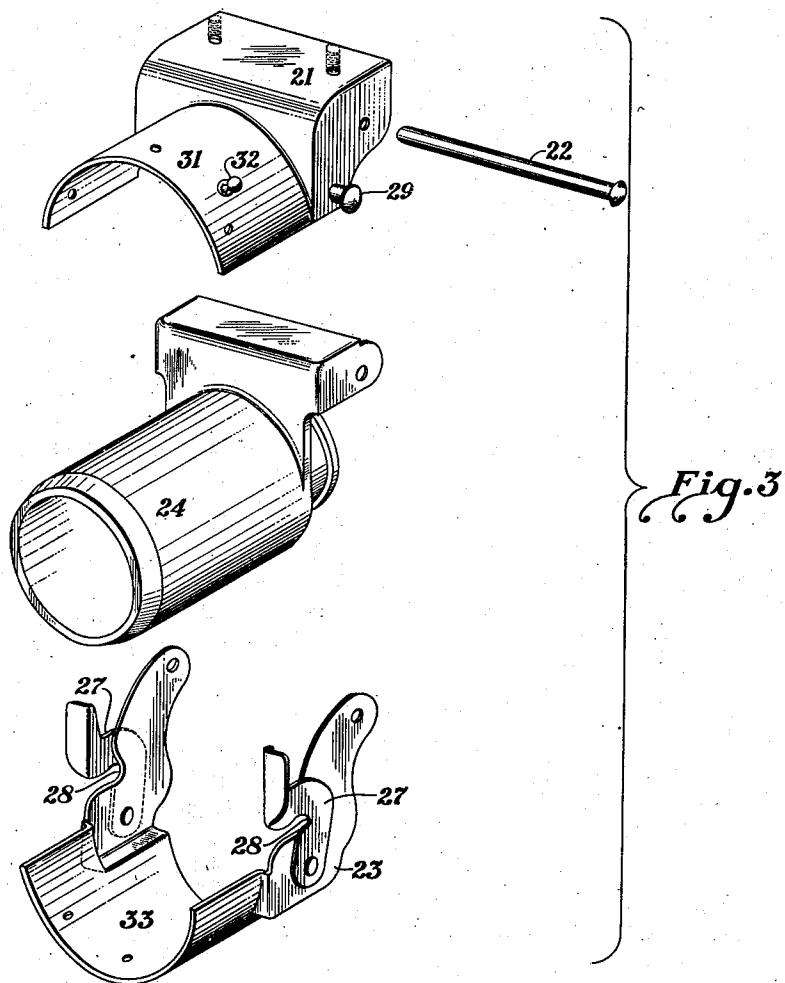
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3 Sheets-Sheet 2



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3 Sheets-Sheet 3

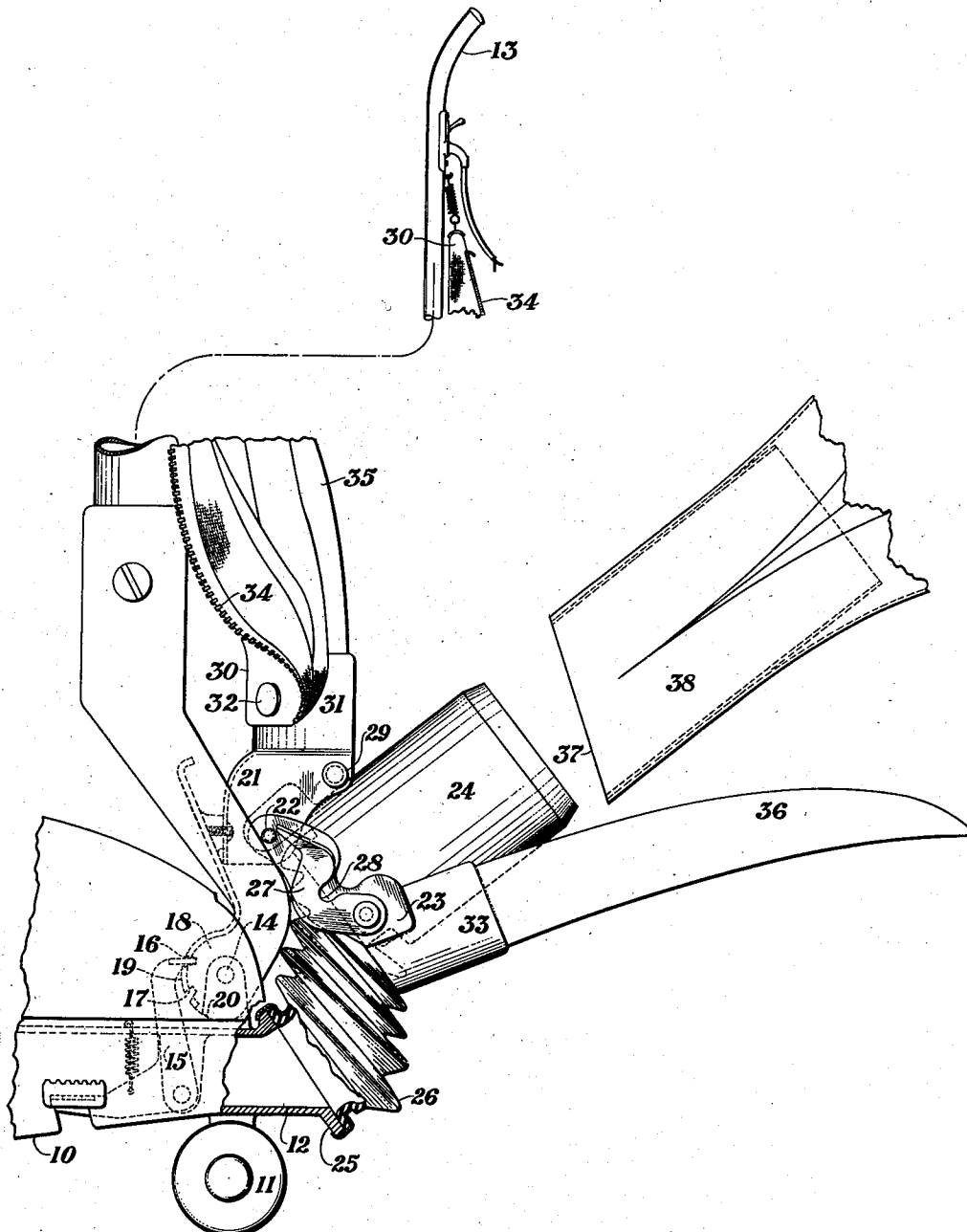


Fig. 4

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SUCTION CLEANER

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10 Claims. (Cl. 183—36)

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This invention relates to suction cleaners and more particularly to an adapter arrangement for connecting a double walled cloth and paper filter bag assembly to the exhaust outlet of an upright on-the-floor type suction cleaner.

It is old in the art to provide a cloth protective envelope or bag over the filter bag proper when the latter is made of a comparatively weak paper filter stock. However, when the upper end of the cloth bag is attached to the handle of the cleaner and a flexible joint is provided between the bag clamp proper and the exhaust nozzle it has been found necessary to provide some means of protecting the paper filter bag from abrasion by its continual movement relative to the cloth bag as the cleaner is propelled about.

In such an arrangement the dirt collects in the paper filter bag at the lower bottom side and when the handle is moved to storage position the paper bag is liable to rupture and empty the dirt into the protective covering.

In the past, a separate cloth girdle has been provided between the paper bag and the cloth bag to support the paper bag and prevent abrasion between it and the cloth bag as the handle is moved up and down in propelling the cleaner and to prevent the paper bag from tearing when the handle is moved to storage position.

According to the present invention the cloth girdle is replaced by upper and lower flexible flaps or shoes secured to the clamp which holds the paper bag to the adapter, which flaps extend beyond the clamp a substantial distance and lie between the cloth envelope and the paper filter bag to protect the latter against abrasion as well as against abrupt flexure when the handle is placed in storage position.

According to another object of the present invention the upper half of the bag clamping means is rigid with the propelling handle, and an adapter pilot tube and the lower half of the clamping means are pivoted to the upper clamp member on a common axis so that the pilot tube can be separated from the upper clamp member and the lower clamp member can be separated from the pilot tube in attaching and removing the paper filter bag.

Other objects and advantages of the present invention will become apparent as the description proceeds when taken in connection with the accompanying drawings in which:

Figure 1 is a view of the rear end of a suction cleaner showing the present invention applied thereto and partly in section to show the details of construction;

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Figure 2 is a sectional view of the cleaner of Fig. 1 taken on line 2—2 of Fig. 1 with the cloth envelope removed;

Figure 3 is a perspective exploded view of the bag clamp of the present invention with the protecting flaps or shoes removed; and

Figure 4 is a side view of the cleaner of Fig. 1 showing the handle in storage position as the paper filter bag is in the process of being applied to the adapter.

Referring to the drawings, the reference numeral 10 represents the main frame of a suction cleaner mounted for ambulatory movement on rear wheels 11 and front wheels (not shown).

The suction cleaner as such is old in the art and in general comprises a downwardly facing suction nozzle connected by a suction passageway to the suction side of a motor driven fan which exhausts in the exhaust passage 12.

In operation the carpet is drawn upwardly against the nozzle by the suction produced by the fan, where it is agitated by a movable agitator in the nozzle whereby dust and dirt is removed from the carpet by the combined action of the air passing through the carpet and the action of the agitator in vibrating the carpet.

The dirt laden air is drawn through the suction nozzle and passageway, through the fan eye and is discharged from exhaust passage 12 into a filter bag assembly which will be described presently.

The cleaner body 10 is propelled about by a propelling handle 13, pivoted to the exhaust passage 12 at 14. The handle 13 is held in upward storage position and in an intermediate position by a spring pressed latch detent 15 coacting with slots 16 and 17 respectively in a handle sector 18. The arcs 19 and 20 of sector 18 determine the high and low operating positions respectively for the handle 13.

An upper clamp member 21 is rigidly secured to the handle 13 in any suitable manner such as that shown. Pivoted to the inner or lower end of the upper clamp member 21 by pin 22 is a lower clamp member 23 and an adapter pilot tube 24, the inner or lower end of the latter being connected to the exhaust flange 25 by a flexible bellows 26. Pivoted to the lower clamp member 23 are a pair of latches 27 having notches 28 which coact with abutments 29 extending outwardly from the sides of the upper clamp member 21 to hold the two clamp members in clamping engagement with the adapter pilot tube 24.

A cloth bag or envelope 30, of the air pervious non-filtering type, has the upper side of its lower

open end detachably secured by snap fasteners 32 to the arc-shaped portion 31 of the upper clamp member 21. The lower side of the bottom end of the bag 30 normally encircles the arc-shaped portion 33 of the lower clamp member 23 and is held in that position by an upwardly slidable "zipper" type slidable fastener 34. The upper end of the bag 30 is secured to the handle 13 near its upper end as shown in Fig. 4.

Suitably secured to the inner surfaces of the arc-shaped portions 31 and 33 of clamp members 21 and 23 are flexible flaps or shoes 35 and 36 respectively. The flaps 35 and 36 extend a substantial distance beyond the upper or outer ends of the clamp members 21 and 23 and beyond the end of the adapter pilot tube 24. As shown the lower flap 36 is longer than the upper flap 35 for a purpose which will presently appear.

The lower open end 37 of a paper filter bag 38 of known construction is clamped between the lower ends of flaps 35 and 36 and the adapter pilot tube 24 when the clamp members 21 and 23 are closed. The upper closed end of the paper bag 38 may be supported from the cloth bag 30 or left loose as desired.

The flaps 35 and 36 may be made of rubber, a thermoplastic material, a treated fabric or any other suitable flexible material, the only limitation being that the flaps are flexible enough to bend when the handle is moved to storage position and stiff enough to be self-sustaining as shown in Fig. 4.

Operation

In applying the filter assembly the handle 13 is moved to storage position as shown in Fig. 4. The upper end of the cloth bag 30 is attached to the handle 13 near its upper end as shown in Fig. 4 and the upper side of the lower end of bag 30 attached to the clamp 21 by fasteners 32, the slide fastener 34 being open.

The lower open bias cut end 37 of the paper filter bag 38 is then slid over the adapter pilot tube 24. The lower clamp member 23 is then pivoted upwardly carrying with it the adapter pilot tube 24 and bag 38 whereby the lower end of the bag 38 will be gripped between the arc-shaped portions 31 and 33 of clamps 21 and 23 and the adapter pilot tube 24. The latches 27 may then be pivoted clockwise to engage the notches 28 over the pins 29 to hold the clamp in engagement with bag 38. The lower side of bag 30 may then be wrapped about the lower clamp 23 and the slide fastener 34 closed.

The bag 38 is preferably of the disposable type which may be discarded periodically as dirt accumulates therein. The arrangement of the present invention is particularly adapted for facilitating the removal of disposable paper filter bags.

The handle is moved to storage position as shown in Fig. 4 and the slide fastener 34 opened. The top portion of the paper bag 38 is removed from the envelope 30 and placed on the floor to the rear of the cleaner and the dirt which has collected worked downwardly away from the pilot tube 24. The latches 27 are then opened and the parts moved downwardly as shown in Fig. 4 to release the end 37 of bag 38 from the pilot tube 24 whereby the dirt filled bag may be discarded and replaced by a clean one as previously described.

The dirt normally collects in the bottom lower side of bag 38. For that reason the lower flap 36 is made longer than the upper one so that it will support the paper bag 38 and the dirt therein

when the handle is moved to storage position and prevent the paper bag from rupturing. The lower flap 36 also prevents the paper bag from being flexed too abruptly which also prevents it from rupturing.

While I have shown but a single embodiment of my invention it is to be understood that that embodiment is to be taken as illustrative only and not in a limiting sense. I do not wish to be limited to the particular structure shown and described but to include all equivalent variations thereof except as limited by the scope of the claims.

I claim:

1. In an ambulant suction cleaner having an exhaust outlet at the rear thereof, a propelling handle pivoted to the cleaner adjacent said exhaust outlet and extending upwardly and rearwardly therefrom, bag clamping means attached to said handle above and to the rear of said outlet, said clamping means including a pilot tube and a clamp surrounding the same, means for flexibly connecting said pilot tube to said exhaust outlet, a paper filter bag having an open lower end clamped between said pilot tube and clamp, a cloth bag envelope having its upper end attached to said propelling handle and its lower end attached to the exterior of said clamping means and flexible flap means attached to said clamp and extending a substantial distance beyond the end of said pilot tube between said paper filter bag and said cloth envelope.

2. In a suction cleaner according to claim 1 in which said clamp includes an upper clamp member secured to said handle and a lower clamp member pivoted to said upper clamp member and in which said pilot tube is also pivoted to said upper clamp member so as to lie between said upper and lower clamp members.

3. In a suction cleaner according to claim 2 in which said upper and lower clamp members include arcuate portions adapted to closely embrace said pilot tube when in closed position and latch means pivoted to said lower clamp member engageable with means on said upper clamp member for holding said clamp members in closed position.

4. In a suction cleaner according to claim 2 in which said cloth envelope is provided with a slidable fastener on its lower side whereby it may be opened to expose said paper bag and said clamping means.

5. In a suction cleaner according to claim 2 in which said flap means includes upper and lower flaps secured to said upper and lower clamp members respectively.

6. In a suction cleaner according to claim 5 in which said lower flap extends beyond said pilot tube a distance greater than said upper flap.

7. In an ambulant suction cleaner having an exhaust outlet at the rear thereof, a propelling handle pivoted to the cleaner adjacent to said exhaust outlet and extending upwardly and rearwardly therefrom, an upper bag clamp rigidly secured to said handle above and to the rear of said exhaust outlet, a pilot tube and a lower bag clamp pivoted to said upper bag clamp on a common axis in such manner that said pilot tube lies between said upper and lower clamp members and said pilot tube may be moved away from said upper bag clamp and said lower bag clamp may be moved away from said pilot tube whereby the lower open end of a filter bag may be clamped between said upper and lower bag clamps and said pilot tube and means for flexibly connecting

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the lower end of said pilot tube to said exhaust outlet.

8. In a suction cleaner according to claim 7 in which the lower open end of a cloth envelope is detachably secured to the outside of said upper bag clamp and surrounds said lower bag clamp and in which the lower side of the cloth envelope is provided with a slidable fastener to expose the filter bag and the upper and lower bag clamps. 5

9. In a suction cleaner according to claim 8 including upper and lower flexible flaps secured to said upper and lower bag clamps respectively and extending upwardly and rearwardly a substantial distance beyond the outer end of said pilot tube between said filter and cloth envelope. 15

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10. In a suction cleaner according to claim 9 in which said lower flap extends a greater distance beyond the end of said pilot tube than said upper flap.

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