

March 18, 1969

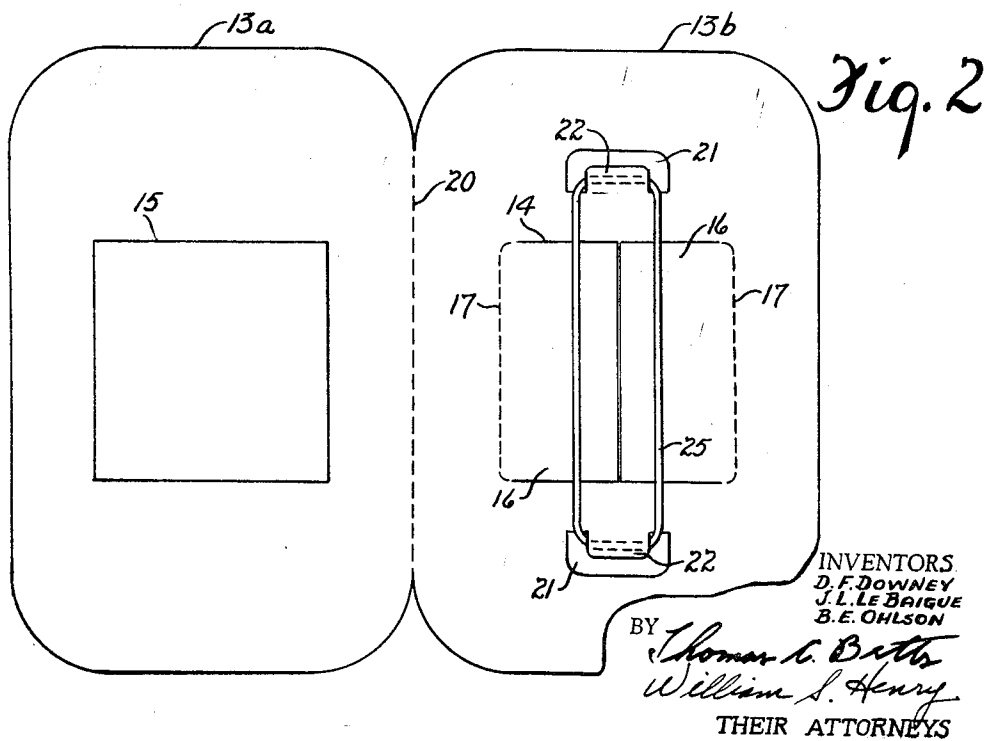
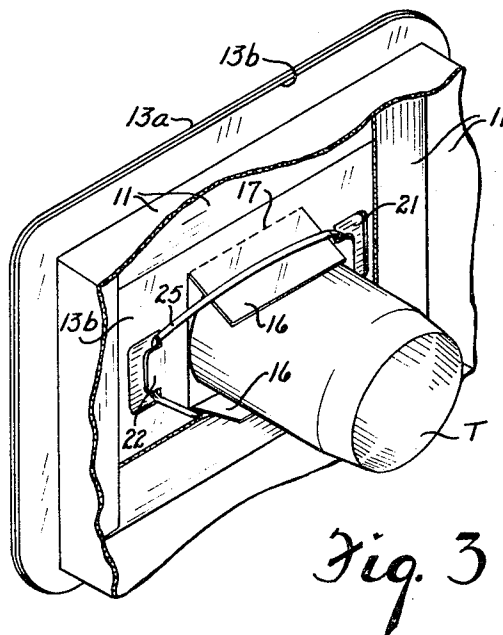
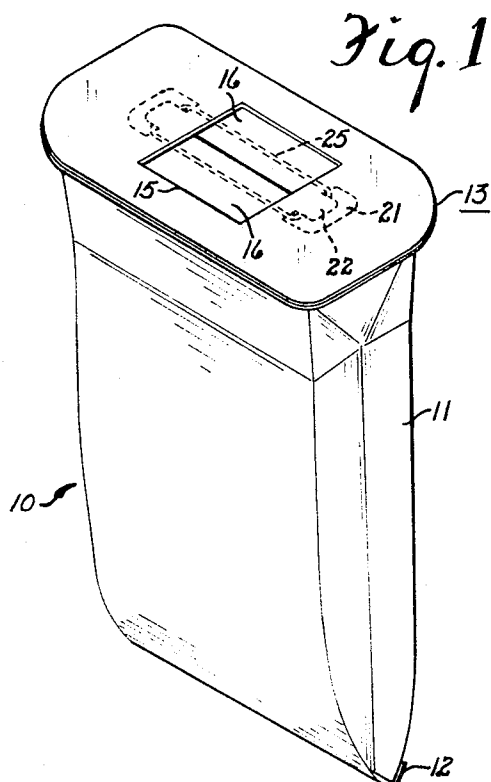
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3,432,997

END CLOSURE FOR A DISPOSABLE VACUUM CLEANER DUST BAG

Filed March 6, 1967

Sheet 1 of 2



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Fig. 5

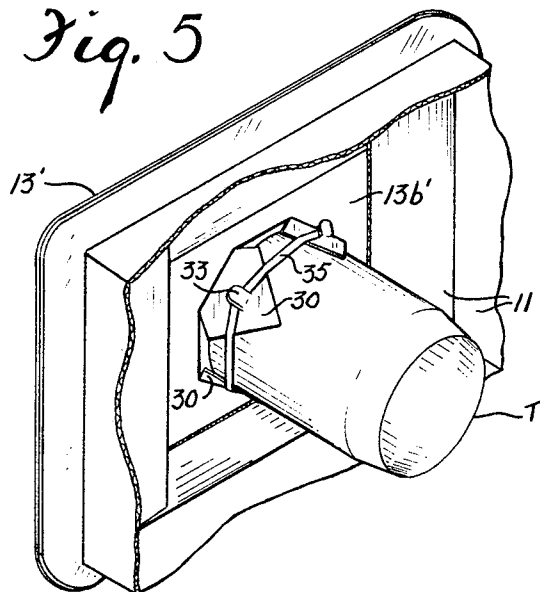
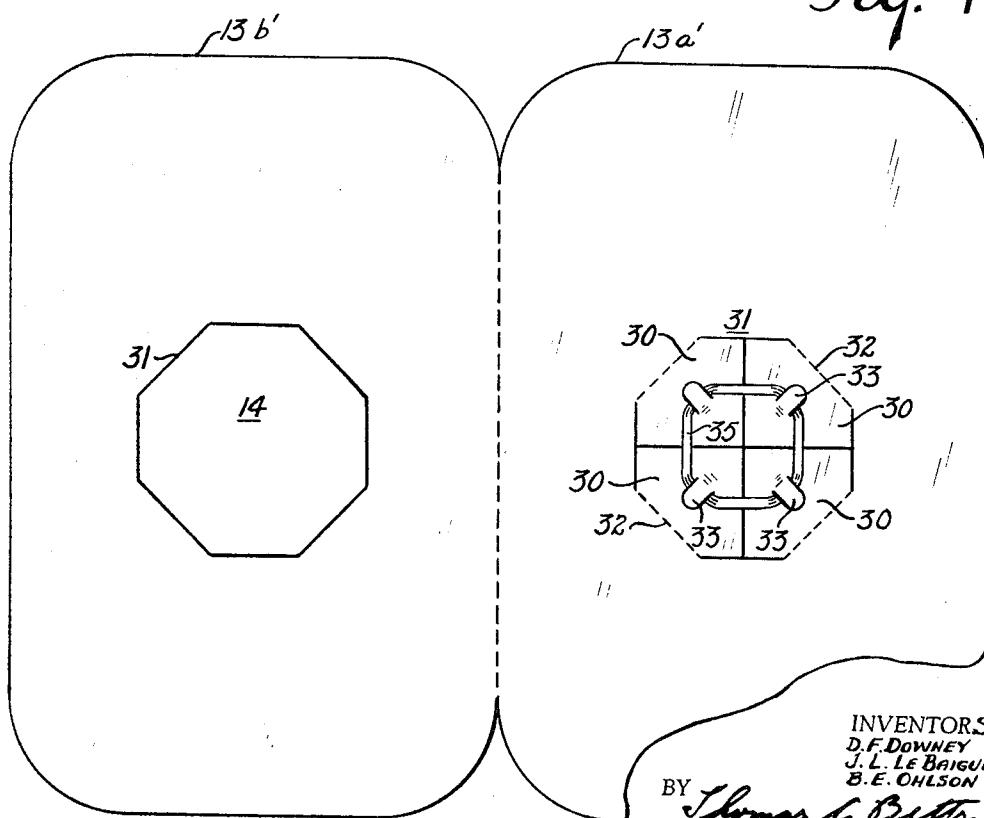


Fig. 4



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END CLOSURE FOR A DISPOSABLE VACUUM CLEANER DUST BAG

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Filed Mar. 6, 1967, Ser. No. 620,930

U.S. Cl. 55—367
Int. Cl. B01d 29/10

5 Claims

ABSTRACT OF THE DISCLOSURE

An end closure for a dust collector or filter bag having a plurality of flaps which are moved from a closed to an open position by the suction tube of a vacuum cleaner when it enters into the associated dust bag. The flaps are urged to a closed position by a rubber band which is either secured directly to the flaps by tabs struck from the flaps, or by attaching the elastic band to a pair of lugs formed by cutting a pair of U-shaped openings in the end closure remote from the flaps and over which the elastic band is hooked so that it overlies the flaps and urges them to closed position.

Background of the invention

Disposable vacuum cleaner dust bags are known from U.S. Patents 2,596,806, 2,596,807 and 2,596,808. Essentially they comprise a filter bag for collecting dust and dirt and an end closure in the form of a cardboard plate attached to an open end of the filter bag. The end closure serves to hold the bag in its operative position in a vacuum cleaner and is provided with one or more latex rubber sheets which close to prevent spillage of dust and dirt when the bag is removed from the machine. While the bags according to the foregoing patents are completely satisfactory in operation they are expensive due to the use of latex rubber sheets.

Summary of the invention

The relatively large size latex rubber membranes or patches according to the prior art must consist of an expensive rubber formulation because of the high localized stresses the membranes are subjected to in use. In addition these latex rubbers membranes must be held in place by gluing which requires time for the glue to set before the end closure can be considered completed and removed from the manufacturing machine. Securing the latex membranes to the end closure by stapling is time consuming and produces ruptures in the membrane which may cause a tear to develop. Further, the membranes can be pretensioned only with difficulty and this is not done in practice.

In accordance with this invention the flaps of an end closure are rapidly closed by means of inexpensive, pretensioned rubber bands which are utilized in such a way as to minimize localized stresses and the bands are anchored in place on the closure or the flaps in a positive manner without the requirement for time to allow glue or adhesive to set. Further, the rubber bands according to the invention do not engage the inlet pipe of the vacuum cleaner so that the band cannot be severed or torn by the inlet pipe resulting in failure of the dust bag to be closed when removed from the vacuum cleaner.

An object of the invention therefore is to provide a disposable dust bag for a vacuum cleaner which is less expensive than present disposable dust bags.

Another object of the invention is to provide an end closure for a dust bag which utilizes inexpensive material but which is nevertheless reliable in operation.

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Another object of the invention is to provide a pretensioned dust bag closure means of elastic material.

Further objects, features and advantages of this invention will become apparent from the following description of the drawing illustrating embodiments of the invention.

Brief description of the drawing

FIG. 1 is a perspective view of a disposable paper filter bag or dust bag having an end closure according to this invention;

FIG. 2 is a plan view of an end closure according to the invention showing details of construction thereof and prior to folding and gluing the two halves of the end closure together as shown in FIG. 1;

FIG. 3 is a partial sectional view showing a suction inlet conduit protruding through the end closure of a dust bag as shown in FIG. 2;

FIG. 4 is a plan view similar to FIG. 3 illustrating a second embodiment of the invention;

FIG. 5 is a partial sectional view similar to FIG. 3 of the second embodiment shown in FIG. 4.

Detailed Description of the drawing

In FIG. 1 reference numeral 10 refers generally to a disposable dust collector used in a vacuum cleaner of the type shown in the above mentioned patents. The dust collector 10 comprises a porous, paper filter bag 11 which is closed at one end by a fold 12 and is attached at its other end to an end closure plate 13 of relatively stiff material such as cardboard. The bag 11 may be attached to the closure plate 13 in any manner, i.e. stapling, stitching riveting, etc., but preferably these two members are secured together with a known adhesive as set forth in U.S. Patent No. 2,779,255. The end of the paper bag 11 is attached to the closure plate 13. The end closure plate 13 manufactured with an opening therein is provided with an opening 15, which is aligned with the opening in the dust bag 11, for receiving a suction tube of the vacuum cleaner which projects into the bag 11 as is known from the prior art. The opening 15 is closed by a pair of flaps 16 as seen in FIGS. 1 and 3. The opening 15 and flaps 16 may define a circular opening as well as the rectangular opening shown.

As shown in FIG. 2 the end closure 13 is preferably comprised of a pair of discs 13a and 13b which are folded about line 20 and glued together to form the composite end closure plate 13 as shown in FIG. 1. The disc 13a (FIG. 2) comprises the outer exposed surface of the end closure and the disc 13b comprises the inner surface of the closure to which the bag 11 is secured as indicated in FIG. 3. The disc 13b is provided with a pair of flaps 16 which are pivotally hinged thereto by a score line 17, and a pair of configured apertures 21. The flaps 16, score line 17 and apertures 21 are formed in a single operation by die cutting the disc 13b. The U-shaped apertures 21 define a pair of lugs 22 over which an elastic band 25 is hooked so that the band bears against each of the flaps 16 as shown.

In operation (FIG. 3) the suction tube T of a vacuum cleaner is introduced into the bag 11 through the opening 15 (FIGS. 1 and 2) pushing the flaps 16 into their open position and stretching the elastic band 25. When the suction tube T is withdrawn the flaps 16 are snapped closed by the elastic band 25 thus preventing escape of dirt from the bag when removed from the cleaner for disposal.

A modified form of the invention is shown in FIGS. 4 and 5. In this embodiment the end closure plate 13' comprises a pair of discs 13a' and 13b' (FIG. 4) which are folded and glued to form the composite end closure similar to that shown in FIG. 1. Four flaps 30 are formed in the outer disc 13a' instead of the inner disc shown in

the first embodiment and the inner disc 13b' is provided with an opening 31 which is slightly enlarged so that the flaps can enter into the opening 31. Each of the flaps is hinged on the disc 13a' by a score line 32. A tab 33 is struck from each flap in known manner and a rubber band 35 is hooked over each of the tabs as shown in FIG. 4. The filter bag in the second embodiment is attached to the underside of disc 13b' as is shown in FIG. 4 so that the opening of the bag 11 is in register with the opening 31 in the disc 13b'. The disc 13a' is folded over the disc 13b' so that the elastic band 35 is located in the plane of the opening 31.

As shown in FIG. 5 the flaps 30 are pushed through the opening 31 of the inner disc 13b' and into the bag 11 by the suction tube T and the elastic band 35 is stretched as a result. When the tube T is removed the elastic band snaps the flaps closed and the contents of the bag cannot escape.

The foregoing description of a presently preferred embodiment of the invention is given by way of example and it is not intended that the invention be limited to the exact details noted above.

What is claimed is:

1. An article of manufacture comprising an end closure for a filter bag wherein the improvement comprises end closure means including a pair of disc members normally juxtapositioned with one disc overlying the other, one said disc member having an aperture therethrough, the other of said disc members having a plurality of flaps integral therewith, said flaps being defined by die cut lines in said other disc and score lines hingedly connecting said flaps on said other disc, said flaps in a closed position normally closing said aperture in said one disc and when said flaps are pivoted into an open position about said score lines an opening through said end closure means is defined by said aperture and said flaps in said open position; an endless band of elastomeric material, hook means integral with one of said disc members; said endless band being looped over said hook means on the associated disc for engagement with each of said flaps in said open position whereby said flaps are urged into closed position by said endless band, said hook means being spaced apart a distance for placing said endless band under tension when looped over said hook means and with said flaps in said closed position.

2. An article of manufacture according to claim 1 wherein said hook means comprises a pair of opposed U-shaped openings, said openings in one of said discs defining a lug over which said endless band is hooked.

3. An article of manufacture according to claim 1

wherein said hook means comprises a tab struck from each of said plurality of flaps over which said endless band is hooked.

4. An article of manufacture according to claim 3 wherein said discs are juxtaposed one upon the other with said one disc having said aperture therethrough overlying said other disc for placing said endless band substantially within said aperture; a filter bag, said bag being connected to said disc having said aperture whereby said flaps in their open position extend through said aperture and into said bag.

5. An article of manufacture according to claim 1 with the addition of a filter bag, said bag being connected to the surface of said end closure means over which said elastic band extends in engagement with said flaps.

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U.S. Cl. X.R.

55—377, 378; 229—62.5; 251—149.2; 137—525.1, 527.4; 285—7; 220—24; 150—9