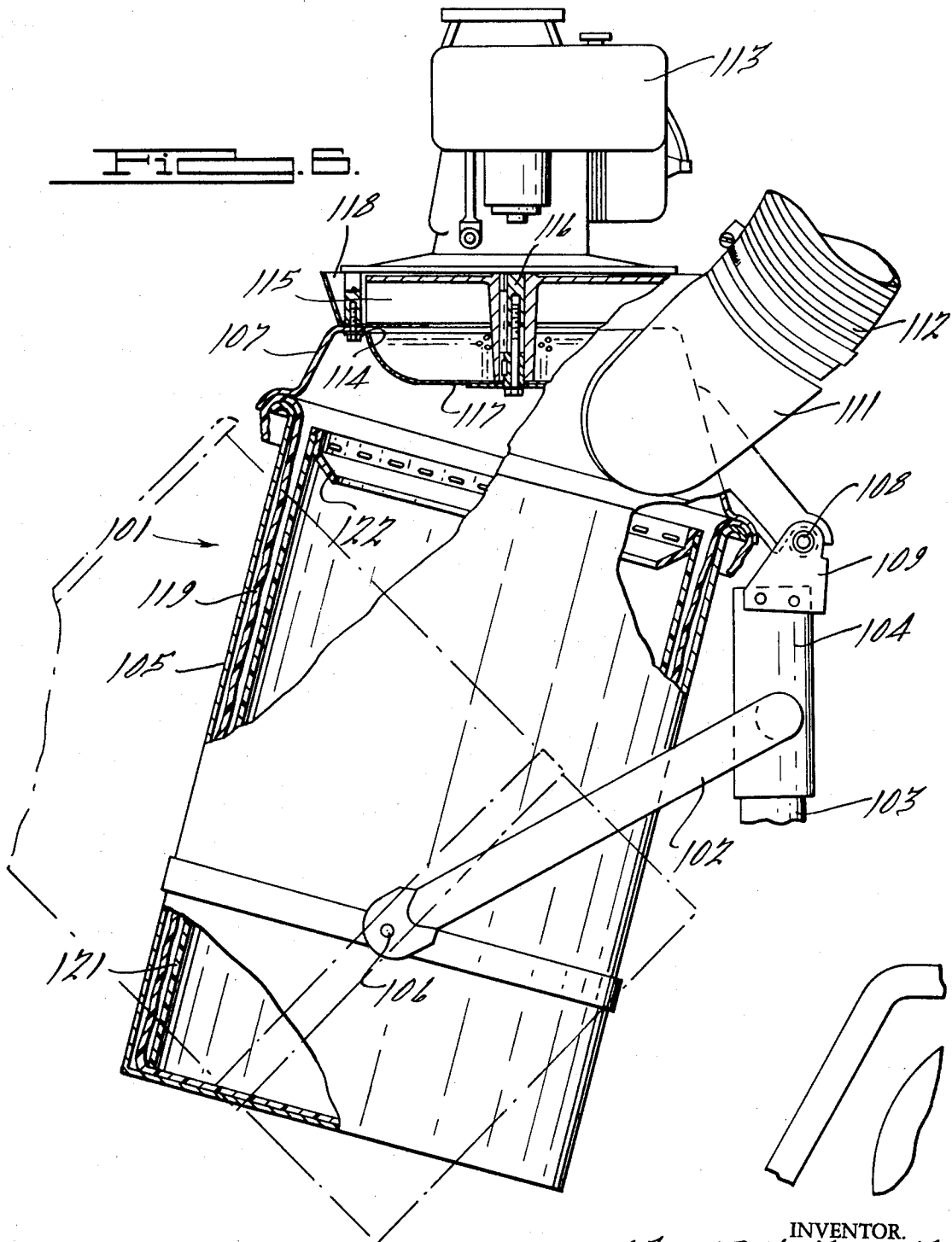


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VACUUM TRASH COLLECTOR

BACKGROUND OF THE INVENTION

1. Field of the Invention

The invention relates to vacuum trash collectors used for sweepings, leaves or other debris. These collectors are various types, but have in common a cylindrical bin connected to a pick-up hose and having a vacuum blower at its upper end. It is common practice to line the bin with a plastic bag before use so that the bag may be removed and sealed after it is filled, for efficient disposal. However, the air being drawn out of the bin at the top will cause the plastic bag to collapse and be drawn against the outlet, thus blocking flow and preventing proper operation.

2. Description of the Prior Art

A search has revealed no prior art pertaining to a plastic bag restrainer in a vacuum cleaning device in which air is circulated through a bag to collect trash. Goodrich U.S. Pat. No. 576,782 and Kaiser U.S. Pat. No. 791,472 are typical of the patents discovered, which pertain to construction for maintaining the form of bags when they are hand filled.

BRIEF SUMMARY OF THE INVENTION

According to the invention, a rigid cylindrical liner is provided, in one embodiment having an annular deflecting lip at one end. In use, the liner is placed inside the bag (with the deflecting lip, if present, at the outer end) and the assembly then placed inside the bin. During operation, the liner will prevent collapse of the bag and insure efficient trash collection. When the container is filled, the liner may be slipped out of the bag and the latter then removed from the bin and sealed. The liner may then be re-used.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side elevational view of a vacuum trash collector incorporating the invention, parts being broken away.

FIG. 2 is an enlarged cross-sectional view in elevation taken along the line 2—2 of FIG. 1, parts being broken away.

FIG. 3 is a side elevational view, partially sectioned, of the cylindrical liner.

FIG. 4 is a side elevational view showing the liner partially assembled into a plastic bag.

FIG. 5 is a side elevational view showing the insertion of the liner and bag into the bin, and

FIG. 6 is a side elevational view, partly sectioned, showing another embodiment of the invention in which the liner has a deflecting rim and is used with another type of mobile trash collector.

DESCRIPTION OF THE PREFERRED EMBODIMENT

A vacuum trash collector is generally indicated at 11. The collector has a cylindrical bin 12 with a bottom 13 and a rimmed top 14 on which rests a lid 15. The lid is securable to bin 12 by clamps 16 so as to seal the outer end 17 of a flexible bag 18 between the cover and lip 14. Bag 18 is of a size sufficient to line the entire bin. Cover 15 is further provided with an inlet connection 19 having a flexible hose 21 leading to a nozzle (not shown) for picking up trash such as sweepings or other debris. A vacuum blower 22 is secured to the underside of lid 15 and has an inlet 23 extending downwardly into

bin 12 and an outlet 24 extending upwardly through the cover. Blower 22 is electrically operated by connection to a power source through a cord 25 so as to draw air from bin 12 and blow it out through outlet 24. The result will be that debris-laden air will be drawn through hose 21 into container 19 and will settle therein. It should be observed that unit 11 is merely one of a number of different types of vacuum trash collectors on the market, some of them having different air flow arrangements than that shown. The principles of the present invention are applicable to these other types.

It will be noted that the vacuum created by blower 22 would ordinarily have a tendency to cause bag 18 to collapse, that is, to be drawn upwardly and inwardly and due to its flexible nature to at least partially block inlet 23. This would defeat the purpose of the unit since it would greatly reduce or completely stop the suction ability at hose 21.

According to the present invention, a rigid cylindrical liner 26 is provided, this liner being only slightly less than the full bag diameter in its expanded condition. Liner 26 may be fabricated of any of a number of suitable materials such as plastic or cardboard, formed as a cylinder and secured longitudinally at 27. The height of liner 26 is substantially the same as or slightly less than the height of bin 12 from bottom 13 to lid 15.

In use, liner 26 will first be placed inside a plastic bag 18, for example by inverting the bag as shown in FIG. 4 and slipping it over the liner. The bag will then be placed bottom first in bin 12 as shown in FIG. 5. The outer edge 17 of bag 18 will be laid over rim 14 of the bin and lid 15 placed thereon and clamped so that the lid is sealed to the bin.

Blower 22 will then be operated while the nozzle attached to hose 21 is used to pick up the debris. Air will be drawn from bag 18 through inlet 23, exiting through outlet 24. It will be observed that, were it not for liner 26, the bottom 28 and the sides of bag 18 (FIG. 2) would be drawn against inlet 23, blocking or at least partially obstructing the air flow and rendering the device ineffective, if not resulting in motor burnout.

The presence of liner 26, however, will prevent this from happening. The debris will be drawn into entrance 19 and will collect in the bag. After it is filled, blower 22 will be shut off and lid 15 removed. Liner 26 may then be easily slipped out of the bag by grasping it on opposite sides around its top edge. The debris in bag 18 will, of course, hold it down while the liner is being extracted. The liner may then be placed aside and bag 18 removed from the bin. Liner 26 is then available for use with another bag.

FIG. 6 shows another embodiment of the invention in which the liner is especially adapted for mobile trash collectors of the type having a blower inlet above the top of the cylindrical bin. Such a collector is shown, for example, in my co-pending application, Ser. No. 152,223, filed June 11, 1971. The unit is generally indicated at 101 and has a U-shaped frame 102 mountable on a post 103 of a vehicle (not shown) by means of a socket 104. A bin 105 is rockably mounted at 106 between the arms of frame 102, and a lid 107 is pivoted at 108 to a bracket 109 secured to socket 104. The lid has an inlet 111 connected to a flexible hose 112 the outer end of which carries a pickup nozzle (not shown). Inlet 111 leads tangentially downwardly into lid 107 so as to create a swirling effect, separating the debris by centrifugal force.

A vacuum blower 113 is mounted on lid 107, the top of which has an opening 114 for inflow of air into the blower. The blower fan 115 is on a shaft 116 extending downwardly through opening 114 and carrying a perforated dish-shaped baffle 117 to prevent debris from entering the blower. Blower 113 has an outlet 118 leading to the atmosphere.

Ordinarily, a plastic bag 119 mounted in bin 105 would have a tendency to be drawn upwardly due to the vacuum created by blower 113. This might tend to block passage of air through rotating baffle 117. According to the present invention, a rigid cylindrical liner 121 is provided which fits within bag 119. The bag and liner could be assembled in the manner described previously, and then inserted in bin 105 while the latter is in its dot-dash line position. The bin would then be swung back into its full-line position and lid 107 clamped thereto. The liner would then prevent the bag from being drawn upwardly, insuring efficient operation.

The embodiment of the invention shown in FIG. 6 is further provided with an annular frustoconical lip 122 secured to its upper edge and extending inwardly therefrom. The purpose of this baffle or guard is to entrap debris which descends into liner 121, thus preventing it from being drawn upwardly toward baffle 117.

In operation, liner 121 will be withdrawn from bag 119 after it is filled, in the same manner as previously.

This would be done after unclamping and lifting lid 107, and swinging bin 105 to its dot-dash line position. Bag 119 may then be withdrawn from the bin, and liner 121 used for additional bags.

I claim:

1. In combination, a vacuum trash collector comprising a bin, a lid surmounting said bin, a collection inlet leading into said bin, a vacuum blower having an inlet exposed to the interior of the bin and an outlet leading to the atmosphere, a disposable bag lining the interior of said bin and subjected at its interior to the vacuum created at the inlet of said blower so that the bag would ordinarily have a tendency to be drawn against and block said inlet, and a rigid cylindrical liner having a diameter slightly less than that of said bag, said liner being disposed within said bag to prevent the bag from being drawn up against said blower inlet, the liner being manually withdrawable from said bag after it has been filled.

2. The combination according to claim 1, said blower inlet being disposed above said bin, the top of said liner being further provided with a frustoconical annular lip extending downwardly and into the liner so that debris will be trapped by said lip and prevented from entering the blower inlet.

3. The combination according to claim 1, said bag being impervious.

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