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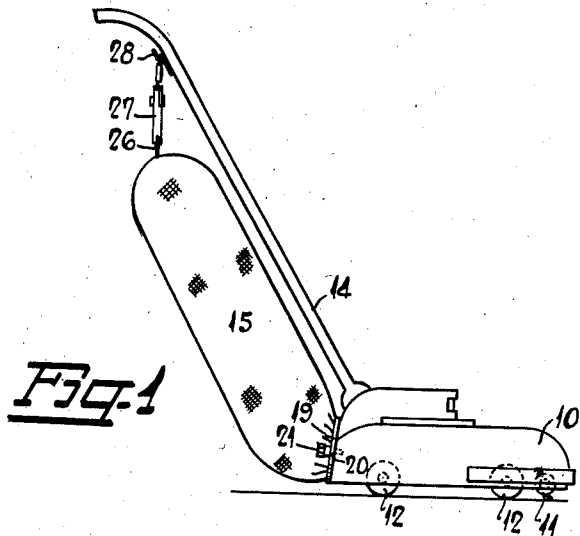
P. B. LEVINGOOD

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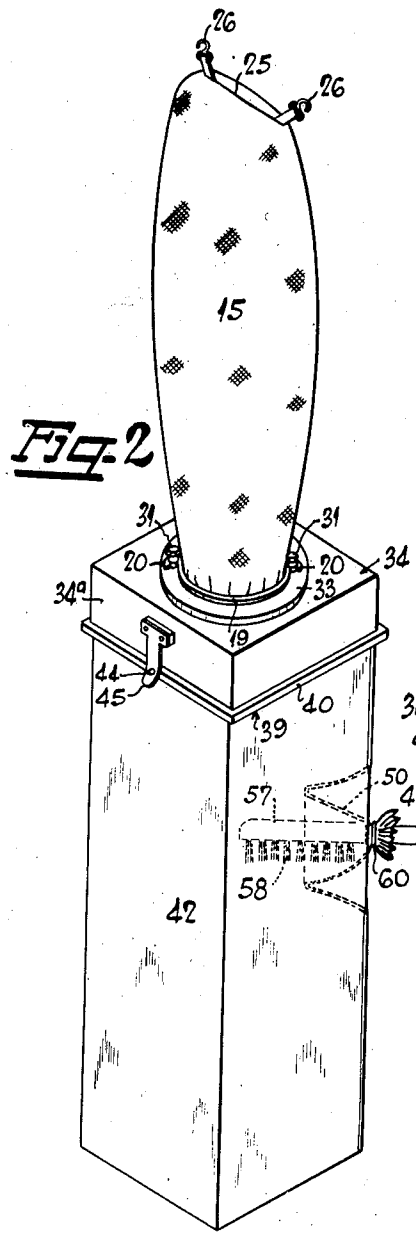
METHOD AND MEANS FOR EMPTYING VACUUM CLEANER DUST RECEPTACLES

Filed May 9, 1941

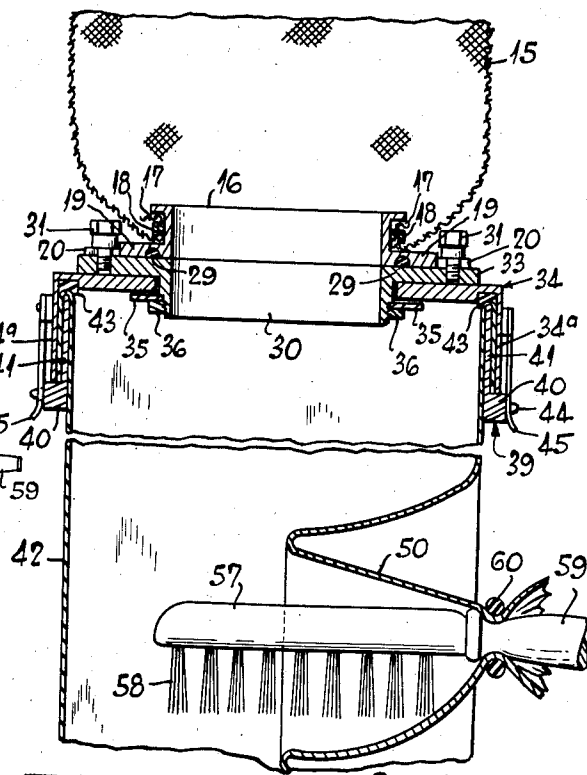
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**Fig. 1**



**Fig. 2**



**Fig. 3**

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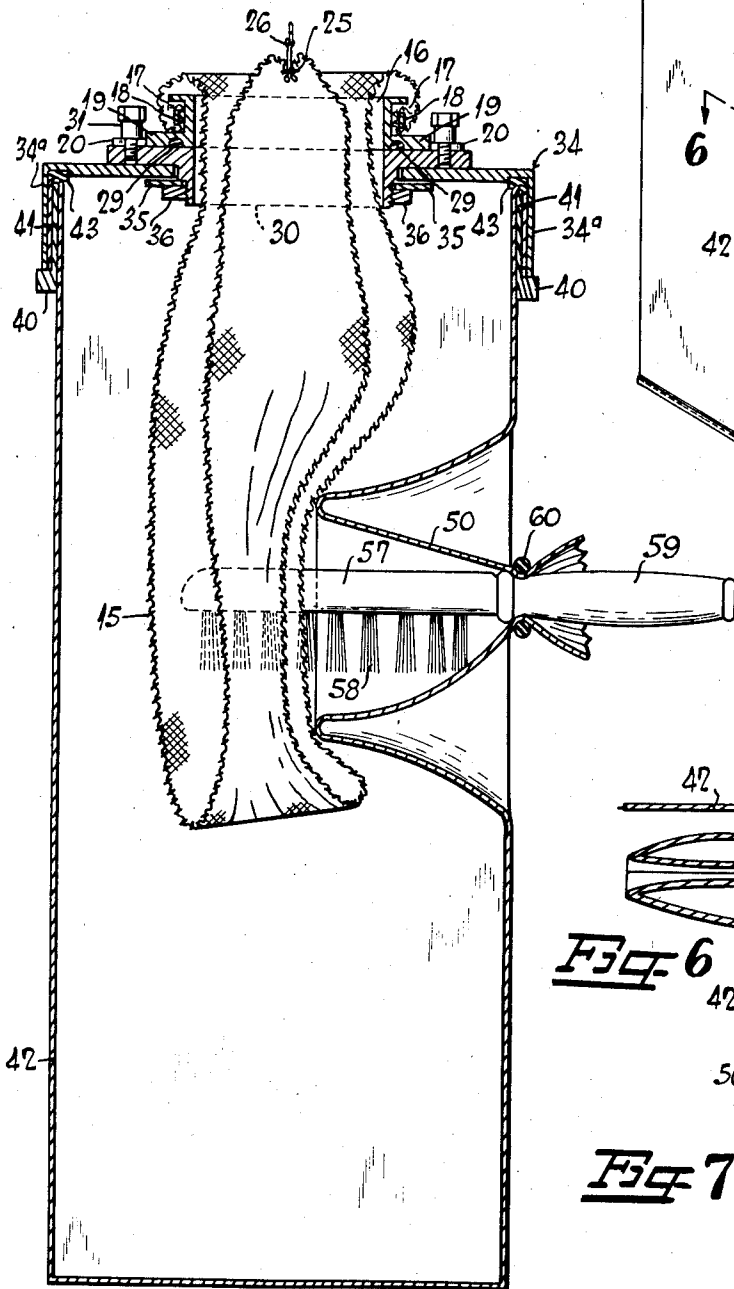
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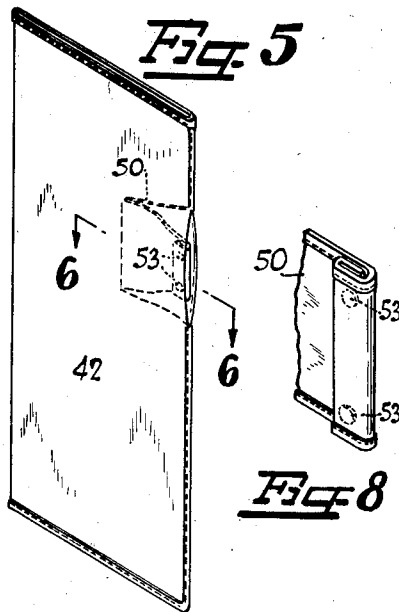
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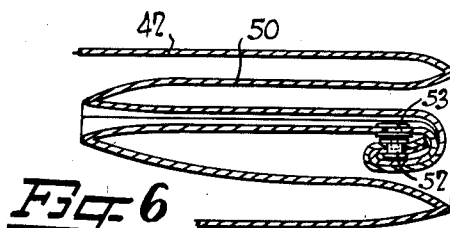
**Fig. 4**



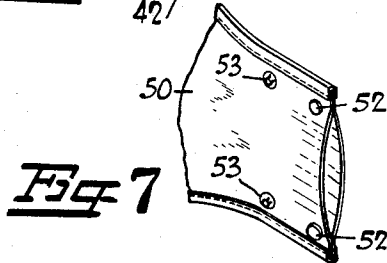
**Fig. 5**



**Fig. 8**



**Fig. 6**



**Fig. 7**

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## UNITED STATES PATENT OFFICE

2,297,835

## METHOD AND MEANS FOR EMPTYING VACUUM CLEANER DUST RECEPTACLES

Paul B. Levensgood, Los Angeles, Calif.

Application May 9, 1941, Serial No. 392,650

7 Claims. (Cl. 15—56)

This invention relates to a method and means for cleaning vacuum cleaner dust receptacles.

The conventional vacuum cleaner dust bag or dust receptacle is made of porous cloth material. During the normal use of the vacuum cleaner, the products of cleaning are deposited in a cloth bag and the pores of the cloth material become clogged. It has been found that many times dust and dirt cannot be satisfactorily removed by shaking the dust bag in the conventional manner, and in many instances it is necessary to turn the cloth bag inside out so that the inside of the bag may be cleaned with a brush or other similar means. This, of course, is an exceedingly dirty operation. To brush the inside walls of the bag without turning the same inside out is practically impossible on account of the cloth material interfering with the brush operation; also the dirt and dust created by such a brushing operation pollutes the atmosphere and the operator. In view of the fact that in many instances it is necessary to turn the bag inside out and brush the inside walls in order to remove all of the accumulated dust and dirt from the inside of the bag, it is necessary to have a special brushing means and a novel method which will hereinafter be disclosed.

It is an object of this invention to provide a cleaning means for cleaning vacuum cleaner dust bags or receptacles, which comprises a specially constructed combination coupling which is removably connected to the vacuum cleaner dust bag and an open-ended depository bag removably connected to the combination coupling. It is proposed to turn the connected vacuum cleaner dust bag inside out through the combination coupling so that the turned bag will be disposed within the depository bag. In this position, the dirt, dust and the like may be transferred from the turned walls of the bag into the depository bag.

It is another object of this invention to provide a novel cleaning means for cleaning the vacuum cleaner dust receptacle after it has been turned as described above. This means comprises a specially constructed combination coupling which is connected to the vacuum cleaner dust bag, and a specially constructed transparent depository bag removably connected to the combination coupling, said bag having an opening therein through which a brush or other cleaning instrument may be inserted. It is proposed to turn the vacuum cleaner dust bag inside out after it is connected to the inlet opening of the combination coupling to remove the dust and dirt from the inside walls

of the vacuum cleaner dust bag, and then manually brush the inside walls of the turned dust bag. The removed dust and dirt will be retained by the transparent bag which is connected to the combination coupling.

It is another object of this invention to disclose a method which will allow a thorough cleaning of the vacuum cleaner dust bag without having the operator come into contact with the dirt, dust and the like as it is being removed from the bag and without allowing the atmosphere to be polluted with dust and dirt during the cleaning operation.

Some of the objects of the invention having been stated, other objects will appear as the description proceeds when taken in connection with the accompanying drawings, in which—

Figure 1 is an elevation of a vacuum cleaner of a standard type with an attached dust receptacle;

Figure 2 is an isometric view showing the dust receptacle removed from the vacuum cleaner and attached to my improved depository receptacle.

Figure 3 is an enlarged sectional detail view showing the connecting means between the dust receptacle and the depository receptacle;

Figure 4 is a sectional view similar to Figure 2 but showing the vacuum cleaner dust receptacle or bag disposed on the interior of the depository receptacle and in a partially reversed position;

Figure 5 is an isometric view of the depository receptacle as it appears prior to attaching the same to the vacuum cleaner bag;

Figure 6 is a sectional detail view taken along the line 6—6 in Figure 5;

Figure 7 is an isometric view showing the end of the depository bag sleeve when in an open position, ready for the insertion of a brush or other cleaning instrument;

Figure 8 is an isometric view showing the end of the depository bag sleeve when closed.

The kinds of vacuum cleaner dust bags in general use may be classified as follows: (a) the kind that is adapted whereby the bag may be emptied through both the inlet opening of the bag and through the discharge outlet at the other end of the bag; (b) the kind that is adapted whereby the bag may be emptied only through the inlet opening of the bag, the other end of the bag being closed; (c) the kind that is adapted whereby the bag may be emptied only through the discharge opening in the top end of the bag, a restricted inlet opening being located in the other end of the bag and not suitable for emptying purposes.

Regardless of the type of bag which is being emptied the same general principles employed in my invention will be used. In other words, the vacuum cleaner dust bag will be attached to a depository receptacle and the dust bag will be reversed or turn inside out through the attaching opening. Of course it is necessary that the attaching opening of the vacuum cleaner dust bag be sufficiently large to permit the bag itself to be inserted therethrough and also to turn the same inside out.

Referring more particularly to the drawings, the numeral 10 denotes a vacuum cleaner of a well-known commercial type, said vacuum cleaner having a rotating brush 11, supporting wheels 12, handle 14, and vacuum cleaner dust bag 15. This vacuum cleaner bag 15 is the type classified under the sub-head (b) in the preceding paragraph, that is, the contents therein may be emptied only through the inlet opening of the bag.

The inlet opening of the bag 15 has a suitable ring 16 secured therein, said ring having a peripheral groove 17 in which the hem of the bag 15 is adapted to fit (Figure 3). This groove 17 is also adapted to receive a suitable ring or band 18 which clamps the hem of the vacuum cleaner bag firmly into contact with the base of groove 17. The ring 16 also has a flange 19 normally projecting on the outside of the bag 15, said flange having integral therewith suitable hooks 20 which are engaged by shoulder screws 21. The shoulder screws 21 are threadably embedded into the vacuum cleaner housing and serve to hold the opening in the ring 16 over the exhaust opening of the vacuum cleaner.

The upper end of the bag 15 is closed by means of a suitable seam 25 (Figure 4). In order to hold the upper end of the bag in upright position as shown in Figure 1, a pair of hook tabs 26 are attached to the upper end of the bag at spaced points in this seam. To these tabs 26, the lower end of a conventional suspension member 27 is removably secured, said suspension member 27 having its upper end secured to a hook 28 on the upper end of handle 14.

In order to insure that the junction of ring 16 with the vacuum cleaner exhaust opening will be leak-proof, a suitable gasket 29 is provided in one face of flange 19.

After a cleaning operation by the vacuum cleaner, it is usually desirable to remove the dirt and dust from the vacuum cleaner bag 15. To perform this operation effectively, without polluting the air and the operator, I propose to loosen the nuts 21 from the vacuum cleaner housing 10 sufficiently to permit the hooks 20 and the associated ring 16 to be removed. The ring 16 is then attached to a rotatable ring 30 by means of suitable shoulder screws 31. These shoulder screws 31 are similar to the shoulder screws 21 previously described and are adapted to clamp the hooks 20 of the ring 16 to hold the parts in the position shown in Figures 2, 3 and 4. When the parts are in this assembled position, the gasket 29 in the flange 18 fits against the upper side of the rotatable ring member 30 so that a leak proof joint will be provided. The rotatable ring member 30 has a flange 33 which is substantially circular, said flange fitting on top of cover 34. The ring member 30 projects through the top of cover member 34 and has disposed therearound, on the projecting end, a suitable ring or washer 35. Member 35 is confined in position beneath the cover by means of a suitable

interiorly threaded ring 36, which ring 36 is threadably mounted on the lower outer periphery of the member 30. With the parts in the position shown in Figures 2, 3, and 4, relative rotation between the cover 34 and the ring member 30 may be had.

The openings in members 16 and 30 coincide with each other so that a passageway will be provided between the vacuum cleaner bag 15 and the depository bag 42. The term "coincide" as related to the openings in members 16 and 30 is to be interpreted as to openings which are matched or partially matched so as to form a passageway.

The construction of the coupling for a depository bag and the ring member 30 is substantially the same as shown and described in my co-pending patent application, Serial Number 376,188. This coupling comprises a frame 39 having a flange 40 extending therearound along its lower edge. Integral with this flange is a relatively thin wall 41 extending upwardly therefrom. A suitable depository bag 42, preferably of non-porous transparent material is adapted to have its open upper end folded outwardly and over the wall 41, after which the down-turned rim 34a of the frame cover is telescopically placed thereover. A suitable gasket 43 is provided in the upper portion of the cover against which the upper rim of the outwardly turned bag 42 is adapted to fit.

In order to hold the frame cover 34 upon the frame 39, suitable projections 44 are provided in the flange 40, and these projections 44 are adapted to penetrate suitable holes in the free ends of spring clips 45, said spring clips having the upper ends thereof attached to outside down-turned wall 34a of the cover 34. Although it is desirable to have transparent bag 42 so that the method hereinafter to be described may be more satisfactorily carried out it is to be understood that any type of non-porous bag may be used without departing from the spirit of the invention. It is, however, especially desirable to have a transparent bag when a very thorough brushing and cleansing operation is desired to be applied to the interior surfaces of the vacuum cleaner bag 15. These transparent bags may be made of any suitable material such as "Cellophane," "Pliofilm" and the like. By having cover 34 telescopically fit frame 39, it is possible to quickly detach a vacuum cleaner dust bag to or from the open end of a depository receptacle such as designated by the reference character 42.

Figures 5, 6, 7 and 8 illustrate receptacle 42 in detail before connecting the same to the vacuum cleaner dust bag 15. It is here seen that the bag 42 has a suitable sleeve 50 integral with one side thereof, a substantial distance below the upper open end. The outer end of the sleeve 50 may be closed by folding the open end of the sleeve from the position shown in Figure 7 to the position shown in Figures 6 and 8 to produce a double fold. Suitable snap fasteners comprising concave expansible buttons 52 and convex buttons 53 are employed to hold the folded end of the sleeve closed. This type of closure prevents dust leakage regardless of how much the sleeve is crushed.

When it is desired to use the bag, the open upper end is inserted over the frame 39 in the manner previously described, and then the fasteners 52 and 53 are unsnapped so that the end of the sleeve may be opened to the position shown in Figure 7. A suitable brush 57 is then inserted within the sleeve so that the bristles 58

will extend on the inside of the depository bag 42 and the handle 59 will project to the exterior of the sleeve. The sleeve is then fastened upon the exterior of the handle 59 by any suitable means such as a rubber band or strap 60.

Especial attention is called to the turning means between the vacuum cleaner receptacle and the depository receptacle. When cleaning the vacuum cleaner bag 15, it is turned inside out on the interior of the depository receptacle in the manner shown in Figure 4. It has been found desirable to be able to rotate the reversed vacuum cleaner dust bag 15 about the longitudinal axis of the opening. By using the rotating means and transparent depository receptacle, the operator can readily turn and observe the vacuum cleaner dust bag while brushing the inside walls. The rotating means also permits the operator to readily contact the entire surface of the vacuum cleaner bag during the brushing operation.

#### *Method of operation*

The vacuum cleaning machines and the respective types of vacuum cleaning dust bags are used in the usual manner to clean floors, rugs and the like. When it is desired to clean the vacuum cleaner dust bag, the following methods are suggested: For a normal general cleaning of the vacuum cleaner dust bag 15, it is preferable to use a conventional open ended paper bag. The paper bag may be either of the conventional gusset type similar to a commercial store bag or it may be the flat type similar to a hat or millinery bag. It is preferable that a non-porous bag be used so as to prevent any of the dust from escaping during a cleaning operation.

As noted above, the transfer depository bag is connected to the combination coupling by means of the frame cover 34 and the frame 39. The open end of the bag 42 is placed on the inside of the frame 39. Before placing the bag into the frame, the open end of the bag should be folded over a short distance, which can readily be done by placing the end of the bag on a flat surface and folding over the end of the bag, and then creasing the bag on both sides. When the bag 42 is opened, it will be found that the ends of the bag can be readily turned outwardly and downwardly by reason of the creases, so that when the bag is placed on the coupling frame 39 the cover 34 may be inserted thereover. This cover is removably fastened to the frame by means of clips 45 and projections 44.

The vacuum cleaner bag 15 is removed from the vacuum cleaning machine 10 in the usual manner, that is, by loosening screws 21 and removing the bag from the exhaust outlet of the machine and from the handle 14 where it is normally carried. When the vacuum cleaner dust bag has been connected to the combination coupling, designated by the reference character 30 to 44 inclusive, and after the depository bag 42 has been connected to the frame and frame cover, the bag 15 may be emptied in the following manner. By taking hold of the end of the bag 15 which has not been connected to the combination coupling, and by holding the coupling with the other hand, the bulky dirt and dust may be readily shaken into the depository bag 42. If any of the bulky material should stick in the inlet opening of the combination coupling the same may be readily pushed through the opening by taking hold of the outside of the dust bag 15 and pushing the material through the opening.

After the bulky dirt has been removed in the

manner indicated, additional shaking of the dust bag will cause a great part of the fine dust and dirt to be removed into the depository receptacle 42. After the bulky dust and dirt has been removed, and if it is not convenient to hold the combination coupling and bag 42, the coupling and bag 42 may be placed on the floor and by folding the bag 42 over where it is connected to the coupling, and at the same time holding the coupling on the floor by using the feet of the operator, the great part of the fine dust and dirt may be shaken into the combination coupling. By raising the coupling, the dust, of course, will drop into the bottom of the bag 42.

Regardless of the amount of shaking it will generally be found that the inside walls of the dust bag 15 are covered with fine dust, lint and the like. To remove this additional dust and dirt, the following method is disclosed:

As heretofore stated, the openings in the vacuum cleaner dust bag 15 and the combination coupling and bag 42 are large enough to permit the dust bag to be turned inside out through the respective openings. In the present embodiment of the invention, the dust bag 15 is turned inside out through the opening in ring 16 and the coinciding opening in the rotatable ring 30. The depository bag 42 which is connected to the combination coupling has also been adapted whereby it is large enough to accommodate the vacuum cleaner dust bag after it is turned inside out therein. When the turned bag is disposed inside of the depository bag there is sufficient additional space for receiving the dust and dirt after it is removed from the dust bag 15.

After the bulky material has been removed from the dust bag in the manner heretofore suggested, the operator may grasp the outside of the bag near a point where it is connected to the inlet opening of the combination coupling and push the bag 15 through the inlet opening. By pushing only part of the dust bag at a time, it will be found that the entire bag may be readily turned inside out into the depository receptacle 42.

The operator may, if desired, keep hold of the end of the bag 15 which has not been connected to the combination coupling and by placing the hand into the inlet opening of the combination coupling and into the interior of the turned bag, the cloth bag 15 may be thoroughly shaken, thus removing an additional amount of dirt by reason of the fact that the inside walls of the bag are now exposed. It should be noted that the hand of the operator is not exposed to the dirt which is in the dust bag 15, but is exposed only to the outside walls of the dust bag, the dust bag having been turned inside out within the bag 42. The operator may hold the bag 42 close to his body and shake and pound the turned bag without breaking the depository bag. It should be noted that after the dust bag 15 is turned inside out it remains connected to the combination coupling.

When the bag is turned inside out, the operator can place his hand in the bag and contact the entire surface of the bag. The entrance of the bag being possible through the inlet opening of the combination coupling.

It will be found that if the above cleaning method is followed, the vacuum cleaner dust bag 15 may be thoroughly cleaned and the operator at no time comes in contact with the dust and dirt, and that the atmosphere is not polluted with the dust during a cleaning operation.

When using the above-named methods, in combination with the depository bag 42 as shown, the end of sleeve 50 is held closed by means of the snap members 52 and 53.

Experience has shown, however, that regardless of the amount of shaking as above suggested that sometimes dust and other particles such as fine lint cannot be removed. Also some of the very fine dust remains in the pores or seams and corners of the cloth bag. Also some dust contains a great amount of grease which sticks to the inside walls of the bag, and in many cases, it has been found that this type of dust can only be removed by thoroughly brushing the inside walls of the dust bag. It has also been found that while the cleaning of the dust bag 15 as above suggested, is satisfactory for general purposes, it is many times desirable to give the dust bag a very thorough brushing, and which cannot be satisfactorily done by reason of the necessity of turning the bag inside out, and exposing the operator to the dust while turning the bag and cleaning the dust therefrom.

The following method is disclosed whereby the inside walls of the dust bag may be thoroughly brushed without the operator coming in contact with any of the dust while turning the dust bag inside out and during the cleaning operation:

The open end of the transparent transfer dust bag 42 is connected to the combination coupling in the manner previously described. The vacuum cleaner dust bag is connected to the combination coupling and the vacuum cleaner dust bag is turned inside out into the transparent transfer bag 42. As noted above, the sleeve of the transparent bag 42 is provided with an opening and the operator places a brush through the opening in the sleeve. The operator then holds the end of the sleeve 50 and pushes the brush 57 and hand into the interior of the depository bag 42, thus making a double fold in the sleeve. The hand of the operator is protected by the transparent material. The opening for the free movement of the operator's hand and brush is automatically provided in the transparent transfer bag where the sleeve joins the body portion of the bag. The operator then places his other hand into the interior of the vacuum cleaner dust bag 15, which has been turned inside out into the transparent bag, holds the dust bag 15 in proper position and the entire interior walls, seams and the like of the dust bag may be thoroughly brushed. By using a transparent material for the transfer bag 42, the operator can at all times see the brushing operation.

If a revolving or rotating coupling member as disclosed above is used for connecting the vacuum cleaner dust bag 15 to the depository bag 42, it will facilitate the brushing operation as it is then possible for the operator to readily engage the entire surface of the dust bag by producing relative rotation between the bags. The dust and dirt, as it is being removed by the brushing operation drops into the bottom of the transparent depository bag. If the vacuum cleaner dust bag 15 is first given a cleaning by using the methods first disclosed in the subject matter relating to the method of operation, the brushing operation will be largely a matter of removing the dirt, dust and other particles which have adhered very closely to the interior surfaces of the bag.

It is preferable to use a brush having fairly stiff bristles. By reason of the particular means

as disclosed, it will be apparent that the dust and dirt of the vacuum cleaner dust bag 15 may be removed without subjecting the operator to any dust during the cleaning operation, and it is also evident that by the use of the transparent transfer depository receptacle 42, the inside walls of the vacuum cleaner dust bag 15 may be thoroughly brushed, and the cleanliness of the bag will depend entirely upon the efforts of the operator.

After the bag 15 is cleaned by any of the methods disclosed above it is removed from the combination coupling and is placed on the vacuum cleaning machine 10. If an ordinary opaque paper is used to construct the depository bag, it is removed from the combination coupling and preferably destroyed. However, transparent transfer bags are usually more costly and therefore it is desirable to empty the same and place the transparent bag away for future use.

In the drawings and specification, there has been set forth a preferred embodiment of the invention and although specific terms are employed, they are used in a generic and descriptive sense only and not for purposes of limitation, the scope of the invention being set forth in the following claims.

I claim:

1. In combination, a vacuum cleaner dust receptacle for receiving the products of cleaning, said receptacle having an opening therein through which the cleanings are adapted to be removed, a coupling having an opening therein removably connected to the vacuum cleaner receptacle opening, a depository receptacle having an inlet opening removably connected to said coupling, said openings being adapted to permit the vacuum cleaner receptacle to be turned inside out there-through, the coupling and dust receptacle being rotatable within said depository receptacle, and a brush disposed within said depository receptacle for engaging the turned inside surfaces of said vacuum cleaner receptacle to remove the dust, dirt and the like therefrom during a cleaning operation.

2. In combination, a vacuum cleaner dust receptacle for receiving the products of cleaning, said receptacle having an opening therein through which the cleanings are adapted to be removed, a coupling having an opening therein mounted in said receptacle opening, a second coupling having an opening therein coinciding with the opening in said first coupling, said second coupling being removably connected to said vacuum cleaner receptacle coupling, a depository receptacle having a rotatable inlet opening removably connected to said second coupling, said openings being adapted to permit the vacuum cleaner receptacle to be turned inside out there-through and to be rotated within said depository receptacle and means disposed within said depository receptacle and movable by means extending to the outside of the depository receptacle for engaging the turned inside surfaces of said vacuum cleaner receptacle to remove the dust, dirt and the like therefrom during a cleaning operation.

3. In combination, a vacuum cleaner dust receptacle for receiving the products of cleaning, said receptacle having an opening therein through which the cleanings are adapted to be removed, a coupling having an opening therein connected to the vacuum cleaner receptacle opening, said openings being adapted to permit the vacuum cleaner receptacle to be turned inside out there-through, a frame cover removably connected to

said coupling, an open ended depository receptacle, a frame over which the open end of the depository receptacle is adapted to fit, means for detachably securing said frame cover to said frame, and movable brush means disposed within said depository receptacle and having operating means extending to the outside of the depository receptacle for engaging the turned inside surfaces of said vacuum cleaner receptacle to remove the dust, dirt and the like therefrom during a cleaning operation.

4. In combination a vacuum cleaner dust receptacle for receiving the products of cleaning, said receptacle having an opening therein through which the cleanings are adapted to be removed, a coupling having an opening therein connected to the vacuum cleaner receptacle opening, said openings being adapted to permit the vacuum cleaner receptacle to be turned inside out therethrough, a frame cover removably connected to said coupling, an open ended depository receptacle, a frame over which the open end of the depository receptacle is adapted to fit, means for detachably securing said frame cover to said frame, means disposed within said depository receptacle and movable with relation to the walls of the depository receptacle for engaging the turned inside surfaces of said vacuum cleaner receptacle to remove the dust, dirt and the like therefrom during a cleaning operation, said cleaner receptacle being rotatable in said depository receptacle.

5. In combination, a vacuum cleaner dust receptacle for receiving the products of cleaning, said receptacle having an opening therein through which the cleanings are adapted to be removed, a depository receptacle having an opening removably connected to the vacuum cleaner receptacle opening, said openings being adapted to permit the vacuum cleaner receptacle to be turned inside out therethrough, and brush means ex-

tending from the exterior to the interior of the depository receptacle for engaging the turned inside surfaces of said vacuum cleaner receptacle to remove the dust, dirt and the like therefrom during a cleaning operation.

6. In combination, a vacuum cleaner dust receptacle for receiving the products of cleaning, said receptacle having an opening therein through which the cleanings are adapted to be removed, a coupling having an opening therein removably connected to the vacuum cleaner receptacle opening, a depository receptacle having an inlet opening removably connected to said coupling opening, said openings being adapted to permit the vacuum cleaner receptacle to be turned inside out therethrough, and movable means disposed within said depository receptacle for engaging the turned inside surfaces of said vacuum cleaner receptacle to remove the dust, dirt and the like therefrom during a cleaning operation.

7. In combination, a vacuum cleaner dust receptacle for receiving the products of cleaning, said receptacle having an opening therein through which the cleanings are adapted to be removed, a coupling having an opening therein mounted in said receptacle opening, a second coupling having an opening therein coinciding with the opening in said first coupling, said second coupling being removably connected to said vacuum cleaner receptacle coupling, a depository receptacle having an inlet opening removably connected to the opening in said second coupling, said openings being adapted to permit the vacuum cleaner receptacle to be turned inside out therethrough, and a brush disposed within said depository receptacle for engaging the turned inside surfaces of said vacuum cleaner receptacle to remove the dust, dirt and the like therefrom during a cleaning operation.

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