

July 21, 1942.

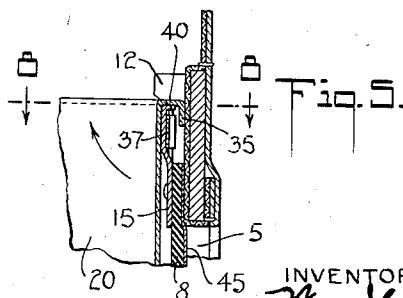
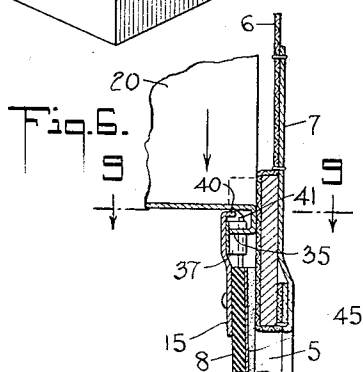
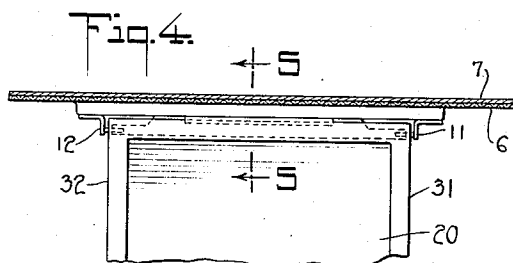
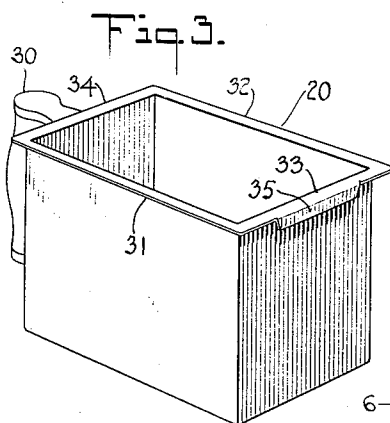
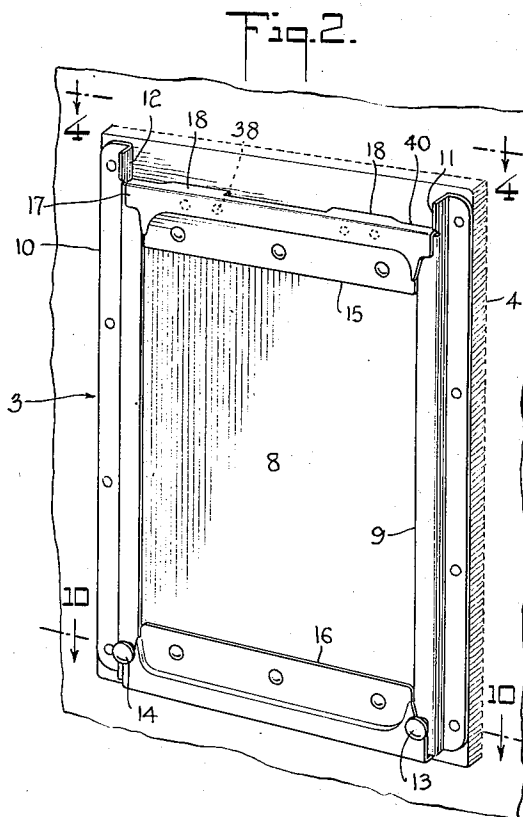
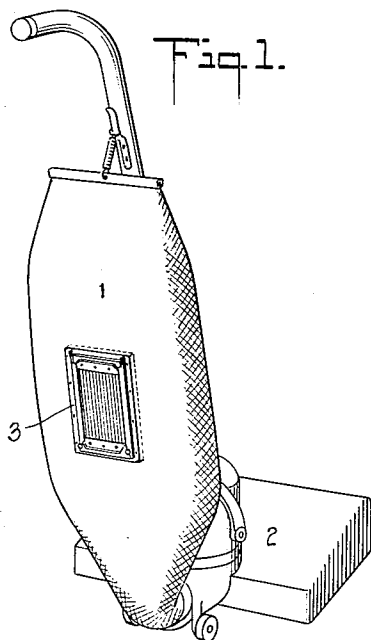
W. LEATHERS

2,290,597

VACUUM CLEANER BAG EMPTYING DEVICE

Filed June 15, 1940

2 Sheets-Sheet 1



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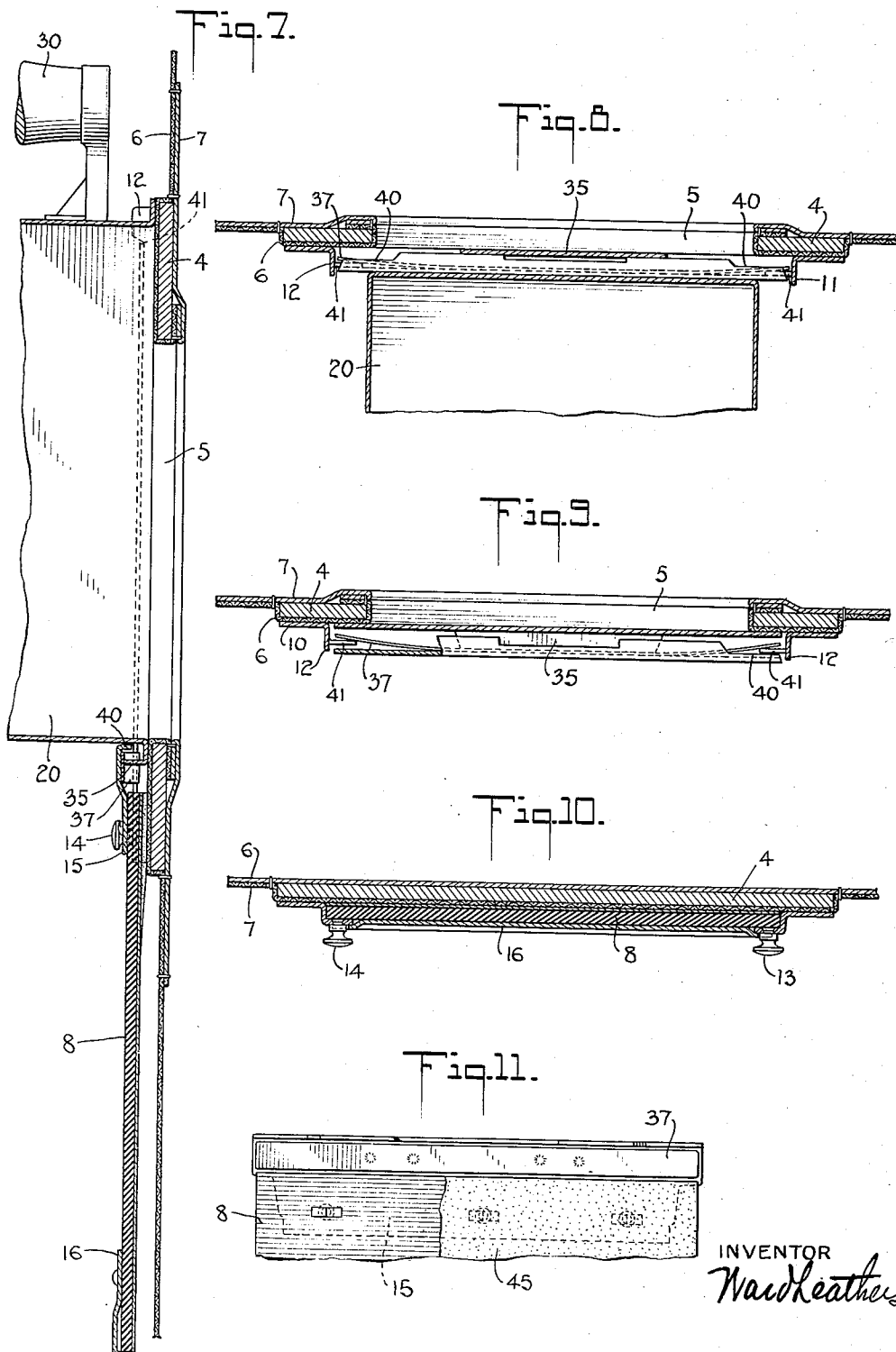
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VACUUM CLEANER BAG EMPTYING DEVICE

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,290,597

VACUUM-CLEANER BAG EMPTYING DEVICE

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Application June 15, 1940, Serial No. 340,707

1 Claim. (Cl. 220-41)

The present invention pertains to the class of device wherein the dirt is removed from a vacuum-cleaner bag without removal of the bag from the cleaner.

Its primary object is to enable the operator to maintain a substantially clean bag which adds so materially to the efficiency of the cleaner, the object being that of maintaining a comparatively empty bag by making it extremely easy to remove the dirt from the bag when a reasonable amount of dirt has accumulated, rather than a bag full or near full, which causes such heavy and functionally destructive back-pressure on the motor-blower.

In order to obtain such advantage, it is necessary that this smaller amount of dirt be removed from the bag with great ease and convenience, and above all, totally free from dust dissemination.

The object of this invention is to obtain such results. It makes it possible to attach a dirt-receiver or receptacle to the under side of the bag in a dust-tight manner, to pass the dust and dirt from the bag into such receiver or receptacle without any dust escaping to the atmosphere, to remove the dirt-laden receptacle leaving the necessary bag opening automatically closed in a dust-tight manner.

Further objects of this invention are to add to the ease and certainty with which the receptacle may be attached to the bag and to make such attachment a natural and easy motion on the part of the operator which includes centering the receptacle in side guides, joining the receptacle to the lid or closure for motion in both the opening and closing directions, and to stop the said motion by stops whereby the movement in both directions for both receptacle and closure are positively limited in extent.

A further object of this invention is to provide the above advantages with an inherent automatic locking function whereby the closure is locked shut excepting only when it is unlocked automatically by the receptacle when the receptacle is used for removing the dirt from the bag, and whereby the closure is again locked in the closed position automatically when the receptacle is removed from the bag.

Other objects will appear as the invention becomes more clearly understood.

In the accompanying drawings forming a part of this application one embodiment only of the invention has been disclosed for illustrative purposes. In the drawings:

Figure 1 is a perspective view of a vacuum-

cleaner with a bag showing the port-and-closure mechanism.

Figure 2 is an enlarged perspective view of said port-and-closure mechanism.

Figure 3 is a perspective view of the dirt-receptacle.

Figure 4 is a section taken on the line 4-4 of Figure 2.

Figure 5 is a section taken on the line 5-5 of Figure 4.

Figure 6 is a similar view showing the dirt-receptacle turned 90° to unlock closure.

Figure 7 is a section on the same plane as Figure 6 showing the closure opened and the dirt-receptacle covering the port.

Figure 8 is a section on line 8-8 of Figure 5.

Figure 9 is a section on the line 9-9 of Figure 6.

Figure 10 is a section on the line 10-10 of Figure 2.

Figure 11 is a rear view of the sliding closure member.

On the under side of a dirt-bag 1 being of conventional or other form, on a vacuum-cleaner 2 is disposed a port-and-closure structure 3 (shown in enlarged perspective in Figure 2). The structure comprises the means normally attached to the bag whereby the dirt may be emptied from the bag without removing it from the vacuum-cleaner. The port-and-closure structure 3 comprises an internal frame 4 having a central port or opening 5. It is sewn into the bag fabric 6 which is joined to an inner fabric 7 the latter preferably of rubberized material in order to obtain a smooth inner surface in the area near the opening 5 to which dust and dirt do not readily adhere and on which they freely slide. Normally the opening 5 is closed by a slidable closure 8 composed preferably of a flexible material such as a sheet of vulcanized rubber, or fabric and rubber, or rubber otherwise reinforced. The closure 8 slides beneath longitudinal guides or rails 9 and 10 which are provided with wing-like faces 11 and 12 at the upper end and mushroom-headed rivets 13 and 14 at the lower end, the purpose of which will appear presently. The guides 9 and 10 are joined firmly to the frame 4 as by rivets directly through the fabric of the bag. The closure 8 is provided with a rigid bar 15 of specialized form at the top firmly joined thereto as by rivets and another somewhat similar bar 16 at the bottom similarly joined thereto. The bars 15 and 16 have lateral projections on their ends as at 17 which are raised sufficiently to slide on the upper side of the guide rails 9 and 10. The cross-bar 15 is

further provided with an inwardly bent lip or lips 18 for engagement with a cooperating lip on a dirt-receptacle 20 in a manner presently to be described. Projections 17 on either end of the cross-bars 15 and 16 are provided and devised for the purpose of engaging the under side of the mushroom rivets 13 and 14 when the closure has reached its extreme movement. Projections 17 on the cross-member 16 engage the mushroom rivets when the closure is in the fully closed position and those on 15 engage them when the closure is in the fully opened position.

A dirt-receptacle 20, provided with a handle 30, and with outwardly extending side flanges 31 and 32 is devised to slide beneath the guide rails 9 and 10. There are also flanges 33 and 34 for the purpose of maintaining dust-tight contact with the fabric-covered frame 4 at the ends of the dirt-receptacle when in use. There is a further reentrant flange 35 on the forward end of the receptacle, i. e. opposite the handle end. The reentrant flange 35 is devised to engage the inwardly projecting flanges 18 of the cross-bar 15 primarily for the purpose of drawing the closure 8 to the closed position. The flange 35 has another function, however, namely, that of unlocking and locking the closure in a closed position—unlocking it when it is to be opened for emptying dirt into the receptacle, and locking it when the receptacle is removed from the port-and-closure mechanism—the locking function being wholly automatic. Joined to the under side of the cross-bar 15 there is a flat spring 37 extending from side to side of the closure and joined to it by suitable means such as spot-welding at 38 and having the tips of the spring free and constantly impinging on the under side of the rails 9 and 10.

When the bag is to be emptied the receptacle 20 is joined to the closure 8 for filling purposes as shown in Figure 5, then turned 90° in the direction of the arrow, to a position shown in Figure 6, then pushed on to the port-and-closure structure, in the direction of the arrow shown, until the cross-bar 15 engages the mushroom rivets 13 and 14. The port or aperture 5 will then be covered by the receptacle as shown in Figure 7.

The guide flanges 11 and 12 are highly valuable in the practical conduct of the operation just described. The operator of this device being the average housewife this progressive operation must be accomplished without the exercise of mechanical intelligence. Hence it is highly desirable that the flange 33 of the receptacle 20 be centered between the rails 9 and 10 almost with the eyes shut. This is accomplished by means of the flanges 11 and 12 between which the nose of the receptacle is so easily placed while the flange 35 is hooked over the cross-bar 15. After the receptacle is given its 90° swing it may be pushed as far as it will go parallel with and caught beneath the rails 9 and 10, (being stopped, of course by the mushroom rivets 13 and 14). After the dirt has been shaken into the receptacle and the handle of the vacuum-cleaner raised as shown in Figure 1, the receptacle 20 by means of its handle 30 may be pulled straight toward

the operator as far as it will go, (i. e. until the cross-bar 16 engages the rivets 13 and 14 as in Figure 2). Then, when the receptacle is turned horizontal, it promptly disengages itself. The foregoing operation has been performed with the dust-beclouded atmosphere of the inside of the bag scarcely communicating with the outside atmosphere, while the closure is closed and latched in a dust-tight manner.

To make the locking mechanism fully understandable it is necessary to recite it in the following detail. When the reentrant flange 35 is hooked under the flange 18 of the cross-bar 15 in the manner shown in Figure 5, the receptacle is joined to the port-and-closure mechanism in such manner that it may be released by the operator's hand and it will hang there thus attached. When the receptacle is rotated through the 90° arc, as illustrated between Figures 5 and 6, the flange 35 unlocks the closure by raising the cross-bar 15 from its normal contact with the top side of guide rails 9 and 10 to such degree that the turned portion 40 no longer engages the end of the rail 41, i. e. raised so that it can be pushed over the end of the rail (as shown between Figures 8 and 9) permitting the projections 40 to slide on the top side of the rail. This movement is resisted by the spring 37 which is obliged to slide on the under side of the rail. When the closure is returned to its normally closed position and the receptacle removed the flanges 40 reengage the ends of the rail, locking the closure shut.

I have provided on the under side of flexible closure 8 a flexible, yieldable material, such as fabric or felt 45, so that in cases where fabric or other yieldable material are not present between closure 8 and frame 4 this yieldable material may provide the necessary dust-tightness for the above stated purposes.

I claim:

A bag-emptying device for vacuum cleaners including a bag having an opening for emptying purposes, a rigid frame surrounding the opening and secured to the bag, spaced, oppositely directed, inwardly extending guides mounted on said frame, a closure slideable in said guides, said closure including a rigid cross bar extending along one edge thereof and having laterally extending projections at each end thereof and occupying positions on the outer side of said guides, closure latching flanges formed on said projections normally overlying the upper edges of said guides when said closure is fully closed, an inwardly extending lip on said bar in the medial regions thereof, and means for releasing said latching means comprising a member having a reverse flange portion providing a hook designed for insertion behind said lip, the width of said last mentioned flange being in excess of the distance between said cross bar and frame whereby when said flange is inserted behind said lip and moved into a position normal to said bar said latching flanges will be forced outwardly to clear the upper edges of said guides.

WARD LEATHERS.