May 12, 1964 C. J. PAULER ETAL 3,132,932

BAY CHANGER FOR USE IN VACUUM CLEANERS

Filed Nov. 28, 1960 3 Sheets-Sheet 1

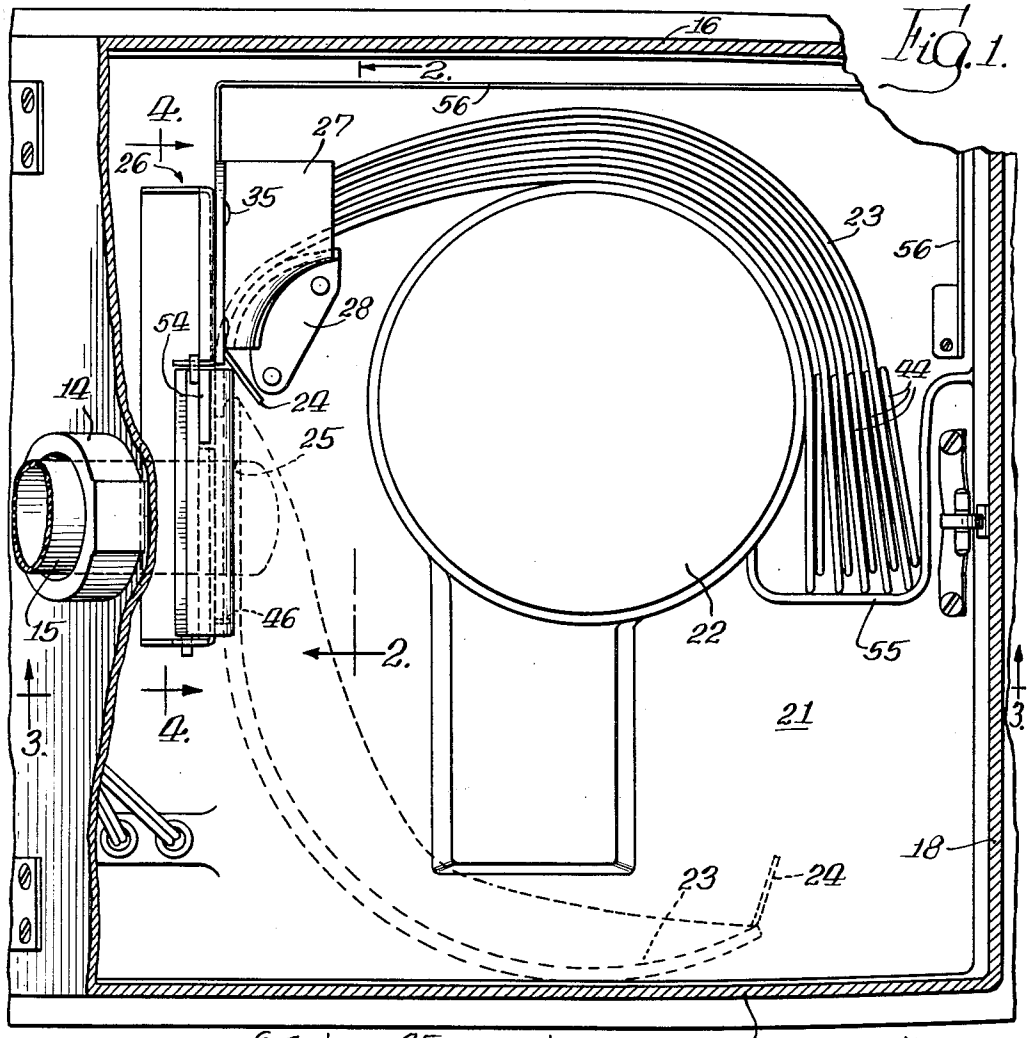

Fig. 1.

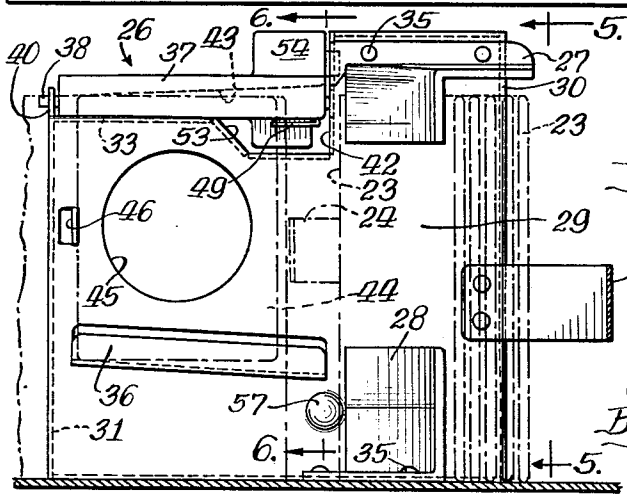

Fig. 2.

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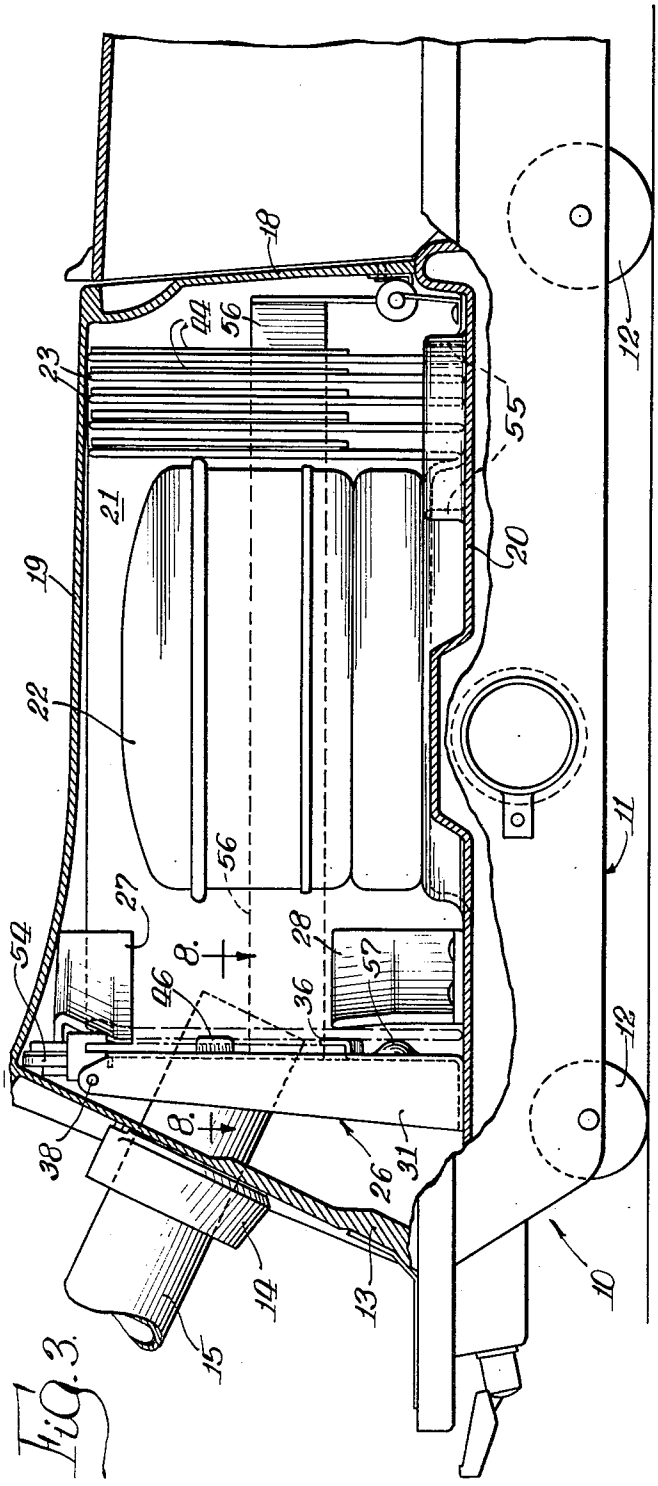

FIG. 3.

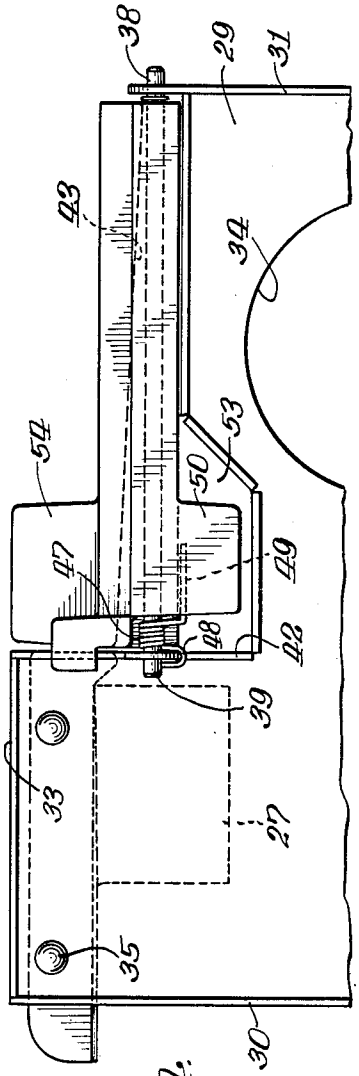

FIG. 4.

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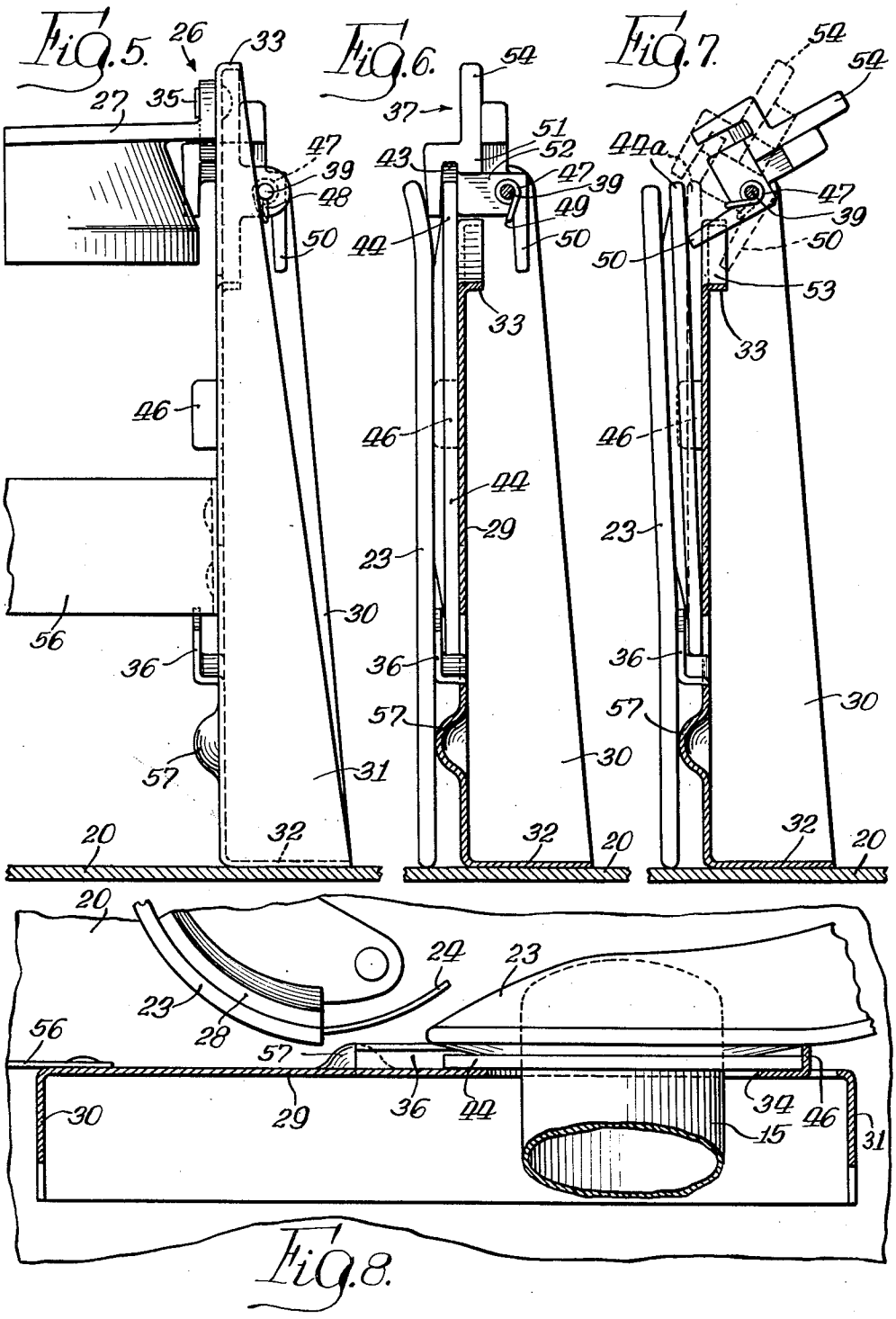

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BAG CHANGER FOR USE IN VACUUM CLEANERS

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5 Claims. (Cl. 55—376)

This invention relates to vacuum cleaners and in particular to vacuum cleaners arranged for use with disposable dirt collecting bags.

In one form of vacuum cleaner utilizing disposable filter bags for separating the dirt from the air drawn through the vacuum cleaner, a supply of bags is provided within the housing of the vacuum cleaner to be drawn one at a time into dirt collecting association with the air moving means thereof. An improved vacuum cleaner of this type is disclosed in the copending Korrell and Crehore application Serial No. 33,479, filed June 2, 1960, now Patent 3,090,181, issued May 21, 1963, for a Vacuum Cleaner and assigned to the assignee hereof. The present invention comprehends a vacuum cleaner structure generally of the type disclosed in said application having a modified form of means for connecting the bags successively in operative association with the air moving means permitting facilitated association and disassociation for subsequent disposal when the bags are filled with dirt.

A principal feature of the invention is, therefore, the provision of a new and improved vacuum cleaner structure.

Another feature of the invention is the provision of a vacuum cleaner structure having new and improved means for selectively associating and disassociating a disposable dirt collecting bag with the air moving means thereof.

A further feature of the invention is the provision of such a vacuum cleaner structure including movable track means providing facilitated association and disassociation.

A still further feature of the invention is the provision of such a vacuum cleaner structure including wall means defining an air inlet, means for drawing dirt laden air inwardly through said inlet, a filter bag having an inlet and guide means adjacent the bag inlet, a first track laterally adjacent said air inlet, and a second track oppositely laterally adjacent said air inlet, the tracks defining confronting, parallel channels for slidably receiving spaced portions of the guide means to align the bag inlet with the air inlet inwardly thereof, one of the tracks being pivotal about its longitudinal axis to disengage the guide portion therefrom for facilitated removal of the guide means from the tracks.

Other features and advantages of the invention will be apparent from the following description of one embodiment thereof taken in conjunction with the accompanying drawings. Of the drawings:

FIGURE 1 is a fragmentary horizontal section of a vacuum cleaner structure embodying the invention.

FIGURE 2 is a fragmentary vertical section thereof taken substantially along line 2—2 of FIGURE 1.

FIGURE 3 is a fragmentary side elevation thereof with portions broken away.

FIGURE 4 is a fragmentary enlarged vertical section taken substantially along line 4—4 of FIGURE 1.

FIGURE 5 is an enlarged fragmentary vertical section thereof taken substantially along line 5—5 of FIGURE 2.

FIGURE 6 is an enlarged fragmentary vertical section taken substantially along line 6—6 of FIGURE 2.

FIGURE 7 is an enlarged fragmentary vertical section generally similar to that of FIGURE 6 but with the movable track portion illustrated in different positions as during the disassociation of a dirt collecting bag therefrom.

FIGURE 8 is a fragmentary horizontal section taken substantially along line 8—8 of FIGURE 3.

In the exemplary embodiment of the invention as disclosed in the drawings a vacuum cleaner structure generally designated 10 is shown to comprise a casing 11 mounted on wheels 12 and provided with a front plate 13 carrying an inlet collar 14 for receiving a hose fitting end 15. The casing 11 further includes side wall portions 16 and 17, a rear wall portion 18, a top wall portion 19 and a bottom wall portion 20 defining a space 21 within which is mounted a conventional motor-fan suction unit 22. In operation the suction unit draws air into space 21 from hose fitting 15 and discharges it outwardly through suitable outlet means (not shown).

As the air is moved through the space 21 by the suction unit 22, the dirt is removed and collected therefrom in a suitable bag 23 formed of a suitable filter material such as paper and provided with a tab 24 at one end thereof and an inlet opening 25 adjacent the opposite end thereof. As best seen in FIGURE 1, a plurality of bags 23 are stored in the space 21 in circumjacent relationship to the suction unit 22. The bags are stored in a collapsed condition to minimize the storage space requirements and are arranged with the tabs 24 thereof juxtaposed to a track device 26 spaced slightly behind front plate 13. The bags are selectively pulled from the storage position, shown in full lines in FIGURE 1, to the dirt collecting position, shown in dotted lines therein, by suitable manipulation of the tabs 24 relative to the track device 26 so that while the bag remains in the dirt collecting position the opening 25 is aligned with the collar 14 to receive the hose fitting 15 within the bag. A pair of guides 27 and 28 are provided adjacent track device 26 to guide the bags as they are pulled into this dirt collecting position.

Referring now more specifically to FIGURES 2 and 4–7, track device 26 is shown to comprise a plate 29 provided with upright end walls 30 and 31, a bottom wall 32 and a top wall 33. An opening 34 is provided in plate 29 aligned with the collar 14 to pass the hose fitting 15 therethrough. As best seen in FIGURE 2, the guides 27 and 28 are secured to the left portion of the plate 29 by suitable means such as screws 35.

The track device further includes a lower fixed track 36 which is upset from plate 29 rearwardly from the lower right-hand portion thereof. As best seen in FIGURE 2, track 36 defines an upwardly opening channel inclined upwardly from the horizontal toward the right end wall 31 of the plate. Adjacent the upper wall 33 of the plate is a substantially parallel second track 37 carried on a rod 38 and pivotally mounted at its opposite ends for movement about its longitudinal axis in an upstanding extension 40 of right end wall 31 and an upright portion 42 of top wall 33. As best seen in FIGURES 2 and 4 the track 37 includes an upper guide surface 43 inclined downwardly at a slight angle to the horizontal toward right end wall 31. The trailing end of the bag 23 is provided with a peripherally slightly trapezoidal collar, or guide, 44 including an opening 45 aligned with the opening 25 of the bag 23, which collar is pulled into snug relationship with the inside surfaces of the slightly convergent tracks 36 and 37 as the bag is drawn to the dirt collecting position shown in dotted lines in FIGURE 1. Thus, the collar is slidable longitudinally in the tracks to the dirt collecting position. A stop 46 is upset from plate 29 to extend rearwardly adjacent right end wall 31 and positively limit the movement of the bag to the desired positon wherein openings 45 of the collar and 25 of the bag are aligned with openings 34 of the plate, thereby automatically positioning the bag to receive the end of the hose fitting 15 as shown in FIGURE 1.

Track 37 is pivotally urged to the collar receiving position, as shown in FIGURES 5 and 6, by a coil spring 47 having one end extending around the end 39 of the rod 38

extending through wall portion 42 and having one end 48 engaging wall portion 42 and an opposite end 49 engaging a depending presser lug 50 of track 37. As shown in FIGURES 5 through 7 upper track 37 includes a downwardly opening channel portion 51 defining at its upper end the guide surface 43 and carrying a rearwardly extending portion 52 from which lug 50 depends. The upper wall 33 of plate 29 adjacent lug 50 defines a recess 53 through which the lug 50 may move during the pivoting of the track 37 as shown in FIGURE 7. To effect such pivoting against the action of coil spring 47, a tab 54 is provided on track 37 upstanding from channel portion 51 which may be pressed forwardly by the user's fingers or thumb from the position of FIGURE 6 through the dotted line position of FIGURE 7 to the full line position of FIGURE 7. Thus, as best seen in FIGURE 7, the channel 51 is removed from association with the upper edge portion 44*a* of the bag collar 44 and concurrently the lug 50 is urged against the front side of the collar adjacent the upper edge to urge the collar outwardly and thereby release it from the upper track 37. As the collar is effectively released from association with track 37 the bag may be removed transversely from the space 21 simply by the user lifting it therefrom.

When the user releases the tab 54 the coil spring 47 automatically restores the upper track 37 to the position of FIGURES 5 and 6 permitting the next bag to be moved into place subsequent to the removal of the dirt laden bag as described above. Each bag may thusly be brought from its stored position, as shown in full lines, in FIGURE 1, to the dirt receiving position, as shown in dotted lines in FIGURE 1, as required. To facilitate the placing of the bags in the storage position and movement of the bags selecitvely to the dirt receiving position, the lower wall 20 of the casing is provided with an upright guide wall 55 rearwardly of suction unit 22 and a bag support 56 is secured to plate 29, as shown in FIGURES 1 and 2, retaining the bags in juxtaposition to the suction unit within the space 21. Upon utilization of the last bag 23 of a group of bags in the storage position, a fresh supply of bags may be readily installed by moving them downwardly edgewise between the suction unit 22 and the support 56 and bringing the leading ends thereof under the guide 27 to dispose the tabs 24 slightly to the right of guide 27 as shown in FIGURE 1. A boss 57 projecting rearwardly from plate 29 subjacent the left-hand end of fixed track 36 urges the bag rearwardly from the collar 44 to facilitate the guiding thereof into the tracks 36 and 37.

Thus, a facilitated replacement of the dirt laden bags is provided eliminating contact by the user with dirt laden portions of the vacuum cleaner and permitting ready arrangement of the new bag in the dirt collecting position. Each bag may comprise a separate unit eliminating any necessity for separation of one bag from another by the user while yet each bag is stored in position for ready movement to the dirt collecting position. Further, the cooperating tracks 36 and 37 and stop means 46 assure an accurate automatic positioning of the bag collar to permit insertion of the hose fitting thereinto. The movable track 37 provides a simple and effective means for releasing the upper edge of the bag collar, thereby further facilitating the removal of the dirt laden bag.

Having described our invention as related to the embodiment shown in the accompanying drawings, it is our intention that the invention be not limited by any of the details of description, unless otherwise specified, but rather be construed broadly within its spirit and scope as set out in the accompanying claims.

We claim:

1. In a vacuum cleaner: wall means defining an air inlet; means for drawing dirt laden air inwardly through said inlet; a filter bag having a bag inlet and guide means adjacent said bag inlet; a first track laterally adjacent said air inlet; a second track movably carried oppositely laterally adjacent said air inlet, said tracks defining confronting channels for longitudinally slidably receiving spaced portions of said guide means to align said bag inlet with said air inlet inwardly thereof; and a manually operable means adjacent said air inlet movable through the space between said channels for pressing said guide means transversely from the space between said channels.

2. In a vacuum cleaner: wall means defining an air inlet; means for drawing dirt laden air inwardly through said inlet; a filter bag having a bag inlet and guide means adjacent said bag inlet; a first track laterally adjacent said air inlet; a second track movably carried oppositely laterally adjacent said air inlet, said tracks defining confronting channels for slidably receiving spaced portions of said guide means to align said bag inlet with said air inlet; and presser means operably associated with said one track for movement, concurrently with movement of said second track, through the space between said channels to disengage said guide means from said second track for facilitated removal of said guide means from said tracks.

3. The vacuum cleaner structure of claim 2 wherein said presser means comprises an integral extension of said second track.

4. The vacuum cleaner structure of claim 3 wherein said second track is provided with an upstanding tab for manipulation to move said second track and presser means.

5. In a vacuum cleaner: wall means defining an air inlet; means for drawing dirt laden air inwardly through said inlet; a filter bag having a bag inlet and guide means adjacent the bag inlet; a first track laterally adjacent said air inlet; a second track oppositely laterally adjacent said air inlet, said tracks defining confronting channels for slidably receiving spaced portions of said guide means to align said bag inlet with said air inlet inwardly thereof; and presser means movably mounted in said wall means including a portion movable transversely through the space between said channels to disengage said guide means therefrom for facilitated removal of filter bag from said tracks.

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