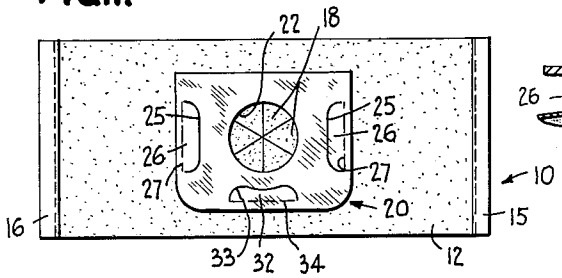
March 21, 1961 H. GOLDBERG 2,975,862

CUT AND SCORED TABS IN CARDBOARD COLLAR

Filed May 27, 1958 2 Sheets-Sheet 1

FIG.1.



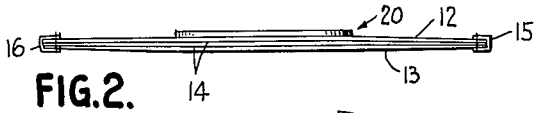


FIG.2.

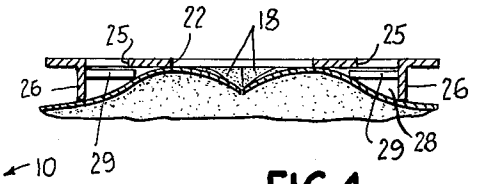
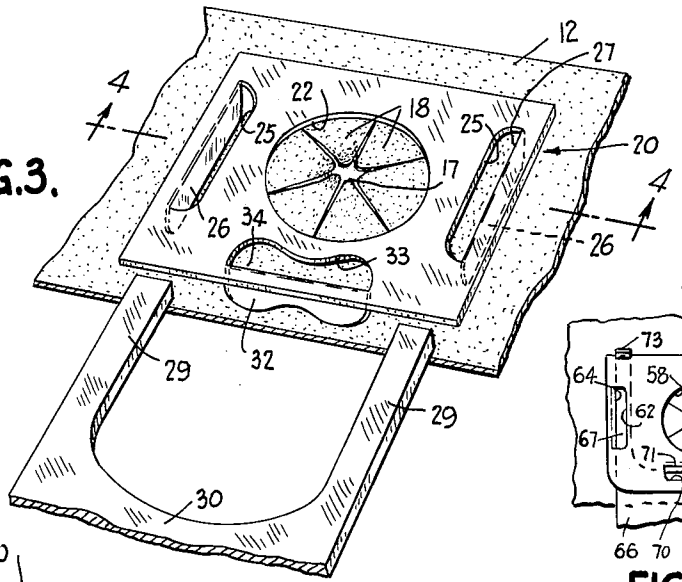


FIG.4.

FIG.3.



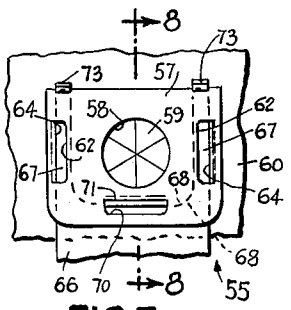


FIG.7.

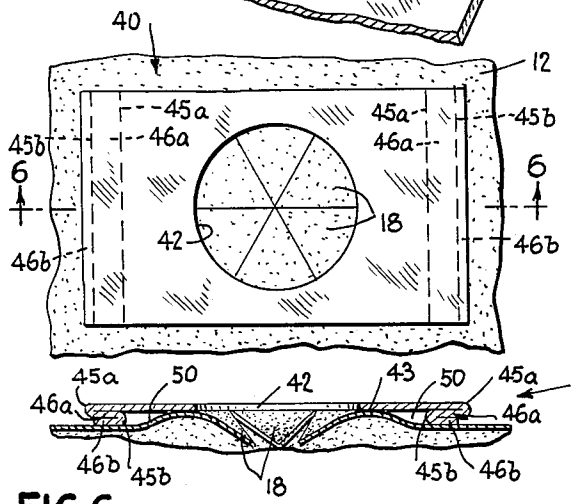


FIG.6.

FIG.5.

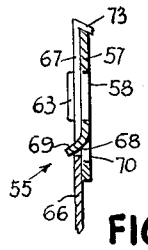


FIG.8.

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CUT AND SCORED TABS IN CARDBOARD COLLAR

Filed May 27, 1958 2 Sheets-Sheet 2

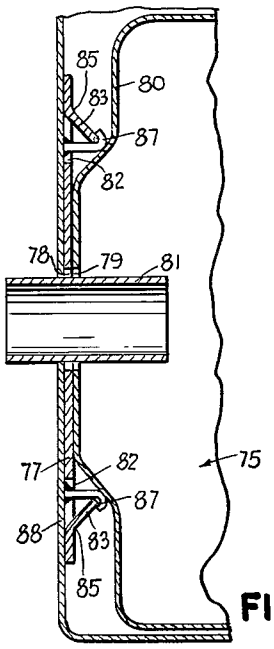


FIG.10.

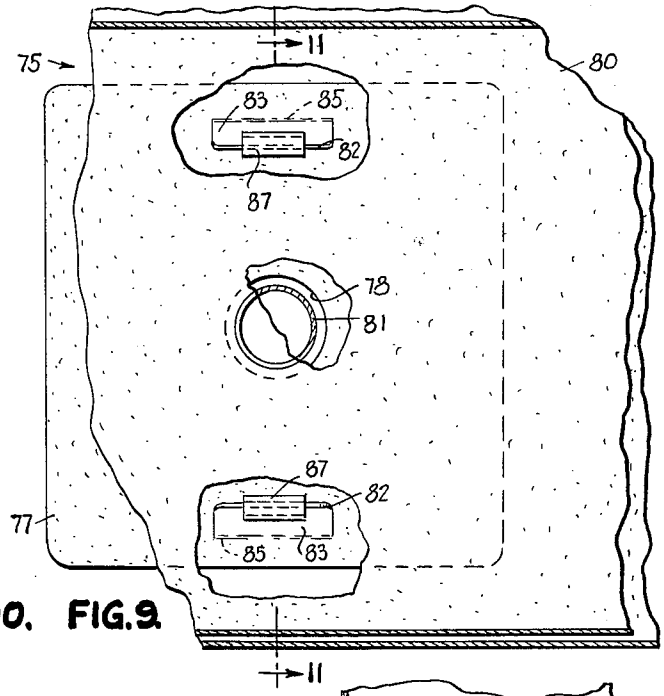
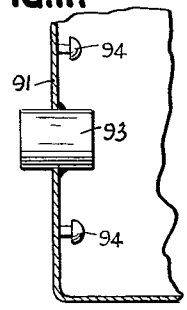


FIG.9.

FIG.11.



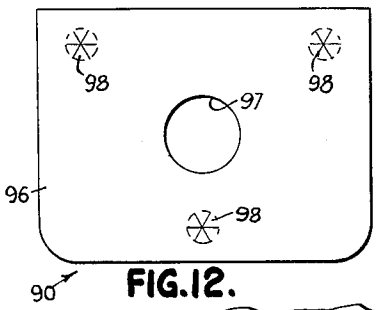


FIG.12.

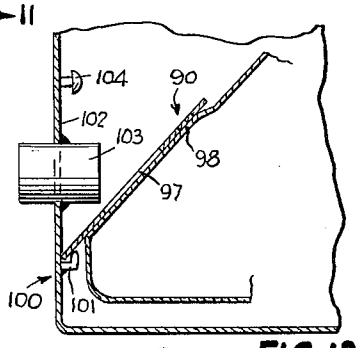


FIG.13.

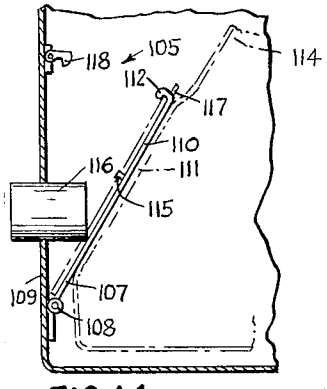


FIG.14.

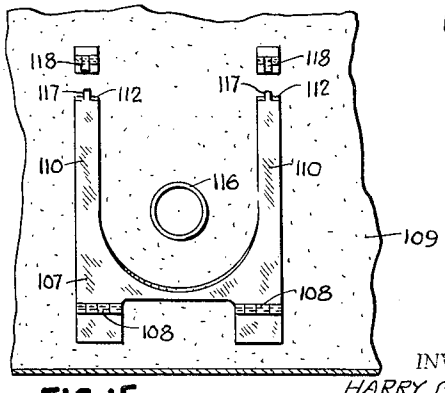


FIG.15.

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2,975,862

CUT AND SCORED TABS IN CARDBOARD COLLAR

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Filed May 27, 1958, Ser. No. 738,064

6 Claims. (Cl. 183—51)

This invention relates to suction type vacuum cleaners and more particularly to a disposable filter bag therefor.

Since the filter material from which disposable vacuum cleaner bags are constructed is relatively fragile, it is usually necessary to exercise care when attaching such bags to the cleaner in order to prevent accidental tearing thereof and loss of the filtering action. In certain types of cleaners, a special mounting bracket is provided to which the bag is secured in operative association with the pressure fluid delivery line so as to maintain it in proper shape and to reinforce the inlet opening thereof. In many instances, however, it is difficult to attach the filter bag thereto without a considerable amount of manipulation and care to prevent damage to the filter paper. Accordingly, it is an object of the present invention to provide a disposable bag for suction type vacuum cleaners having self-contained reinforcing and mounting structure for facilitating the attachment of the bag to the vacuum cleaner mounting bracket that is extremely simple in construction, efficient in operation, and which will overcome the aforementioned difficulties.

Another object of the present invention is to provide a disposable filter bag for vacuum cleaners having a reinforcing and mounting plate with self-contained guide means for facilitating the assembly of the bag with the vacuum cleaner support structure.

Still a further object of the present invention is to provide a filter bag for vacuum cleaners of the above type which may be equally as well applied to rod, plate, or other types of formed bracket supports of suction type vacuum cleaners without further adjustment or additional adapters that will facilitate the assembly and installation of the filter bag to the cleaner.

An additional object of the present invention is to provide a filter bag for vacuum cleaners that can be easily placed in a proper position with a minimum amount of care, and which is so securely held in this proper position that it cannot accidentally shift out of the position because of increased weight of the filter bag, or vibration and jarring of the cleaner.

All of the foregoing and still further objects and advantages of this invention will become apparent from a study of the following specification, taken in connection with the accompanying drawing, wherein:

Fig. 1 is a top plan view of a filter bag having a mounting plate made in accordance with one form of the present invention.

Fig. 2 is a front elevational view of the device shown in Fig. 1.

Fig. 3 is an enlarged fragmentary exploded perspective view of the filter bag shown in Figs. 1 and 2 being applied to a support bracket of a suction type vacuum cleaner forming another part of the present invention.

Fig. 4 is a longitudinal cross-sectional view taken along line 4—4 of Fig. 3, with the device in supported relationship with the bracket of the cleaner.

Fig. 5 is a fragmentary top plan view of a filter bag having a mounting plate made in accordance with another form of the present invention.

Fig. 6 is a fragmentary longitudinal cross-sectional view taken along line 6—6 of Fig. 5.

Fig. 7 is a fragmentary top plan view of a filter bag having a mounting plate made in accordance with another form of the present invention in operative association with a suction cleaner bracket particularly suited therefor.

Fig. 8 is a transverse cross-sectional view taken along line 8—8 of Fig. 7.

Fig. 9 is a fragmentary top plan view, with parts broken away, of a filter bag mounting plate and cleaner support brackets made in accordance with a still further modified form of the present invention.

Fig. 10 is a transverse cross-sectional view taken along line 11—11 of Fig. 9.

Fig. 11 is a fragmentary longitudinal cross-sectional view of a suction cleaner having filter bag mounting brackets made in accordance with another form of the present invention.

Fig. 12 is an elevational view of a mounting plate for filter bags particularly suited for use with the support brackets shown in Fig. 11.

Fig. 13 is a fragmentary longitudinal cross-sectional view similar to Fig. 11, showing a still further modified form of support bracket.

Fig. 14 is a view similar to Fig. 11, showing a still further modified form of filter bag support bracket.

Fig. 15 is a front plan view of the apparatus shown in Fig. 14.

Referring now to the drawing, and more particularly to Figs. 1 to 4 thereof, a filter bag 10 made in accordance with the present invention is shown to have flat sides 12, 13 with a pleated bellows 14 folded therebetween. The opposite ends of the filter bag are held in sealed engagement by means of channel strips 15, 16 that may be secured thereto, such as by stitches. A circular inlet opening 17 is provided in one of the flat sides 12, such opening 17 being defined by a plurality of circular segments 18 which may be formed by a die-cutting operation during the manufacture of the enclosure.

A mounting plate 20 made in accordance with one form of the present invention has a central inlet opening 22 that is maintained in proper concentric alignment with the inlet opening 17 of the bag or enclosure 10 by means of an annular band of adhesive 23 which secures only the central portion of the mounting plate 20 to the portion of the flat side 12 defining the inlet opening 17, while leaving the marginal edges of the plate free. Die cut score lines 25 at opposite sides of the opening 22 in the mounting plate 20 define tabs 26 that may be rotated downwardly about associated fold lines 27 into engagement with the adjacent facing portions of the side 12 of the filter bag. As is clearly shown in Fig. 4 of the drawing, this engagement defines channels or passageways 28 which retain the filter paper in spaced relationship with the marginal portions of the mounting plate 20.

With reference now more specifically to Fig. 3 of the drawing, it will be noted that the channels or passageways 28 are adapted to freely receive the arms 29 of a mounting bracket 30 of a suction type vacuum cleaner. Thus, as the bag is assembled with the supporting or mounting bracket 30, there is little danger of tearing the filter paper as the arms 29 are extended through the provided passageways.

While the spacer tabs 26 are disposed at opposite longitudinal extremities of the mounting plate 20, a securement tab 32 is die cut into one lateral side of the mounting plate. This securement tab 32 formed by the die-cut score line 33 adjacent to the inlet opening 22 is foldable about a hinge line 34 remote from the inlet opening 22

away from the opening 22, into engagement with the top of the mounting bracket 30 after the filter bag has been properly engaged with and positioned thereupon. This securement tab provides at least frictional resistance to relative transverse movement between the filter bag and mounting bracket so that it is properly positioned in place not only while the cleaner is being placed in a completely operative position, but during the actual use thereof.

With reference now to Figs. 5 and 6 of the drawing, a modified form of mounting plate 40 is shown to have a central opening 42 that is in alignment with the inlet opening 17 of the filter bag. This plate is similarly secured to the one side 12 of the filter bag by means of an annular band of adhesive material 43 which leaves the marginal portions of the mounting plate free. In this embodiment, however, the spacer means at each longitudinal extremity of the plate 40 is formed by a plurality of tabs 46*a*, *b*, that are defined by transversely extending fold lines 45*a*, *b*, that enable the tabs to be folded into the position shown in Fig. 6. The additional thickness of these folded tabs 46*a*, *b*, depresses the adjacent surface of the side 12 of the filter bag and defines a passageway or channel 50 through which the arms 29 of the mounting bracket 30 may be extended, in a manner similar to that hereinbefore described. If desired, this form of the present invention may also be provided with a securement tab such as the tab 32 described in connection with the embodiment of the present invention illustrated in Figs. 1 to 4 of the drawing. It is to be noted that such securement tab not only prevents accidental displacement of the filter bag relative to the mounting bracket, but also serves to prevent insertion of the arms 29 of the bracket beyond a predetermined limit so as to assure the proper alignment of the inlet opening 17 of the filter bag with the pressure fluid delivery line of the cleaner.

With reference now to Figs. 7 and 8 of the drawing, a modified form of construction 55 is shown wherein the mounting plate 57 of the filter bag 60 is provided with a central inlet opening 58 for receiving the pressure fluid delivery duct of the cleaner. This duct receiving opening 58 is in alignment with the inlet 59 to the interior of the bag 60. Die cut score lines 62 at opposite sides of the duct receiving opening 58 define tabs 63 that may be rotated downwardly about associated fold lines 64 into engagement with the adjacent facing portions of the end of the filter bag so as to define channels or passageways for slidably receiving the arms 67 of a U-shaped mounting bracket 66 of the cleaner. This U-shaped bracket 66 is also provided with a central bight portion 68 for purposes hereinafter described.

While the spacer tabs 63 are disposed at the opposite longitudinal extremity of the mounting plate 57, an additional tab 69 is die cut along a score line 70 at one lateral side of the mounting plate, which score line 70 is intermediate the inlet opening 58 and an associated hinge line 71 about which the additional tab 69 is foldable. In applying a filter bag having this type of mounting plate 57 to the bracket 66, it is only necessary to insert the arms 67 of the bracket into the space formed by the guide tabs 63 until the upwardly turned lips 73 at the outer free ends of the arms engage with and receive the edge of the mounting plate 57 opposite the additional tab 69. During this sliding movement, the additional tab 69 is turned downwardly so that it simultaneously abuts with the bight portion 68, thus limiting the continued movement of the filter bag which might otherwise damage the connection between the mounting plate and the filter paper defining the opening 59. It will be recognized that in this embodiment, the additional tab 69 is foldable about a hinge line 71 that is disposed intermediate the score line 70 and the duct receiving opening 58 so that the tab 69 automatically provides a stop which limits the movement hereinbefore described. In the embodiment illustrated in Figs. 1 to 6 of the drawing, the tab 32 is foldable downwardly about a hinge line that is immediately adjacent to the edge of the mounting plate and is not intended to function in a similar manner.

Referring now to Figs. 9 and 10 of the drawing, a still further modified form of construction 75 is shown wherein the mounting plate 77 is also provided with a duct-receiving opening 78 in alignment with the inlet opening 79 of the filter bag 80. In this embodiment, however, a single pair of score lines 82 define a pair of inwardly foldable tabs 83 at diametrically opposite sides of the duct receiving opening 78. These tabs 83 are foldable inwardly about parallel fold lines 85 as the filter bag is applied to the cleaner. A pair of angle brackets 87 are secured to the wall 88 of the cleaner at diametrically opposite sides of the inlet duct 81. These brackets 87 include a support post which is fixed to the cleaner and extends parallel to the duct, and a lip part at the outer free end of such support post that extends normal to the support post and the longitudinal axis of the duct. Thus, as the filter bag is applied to the cleaner, the duct 81 is directed inwardly through the duct-receiving opening 78 of the mounting plate 77 and the inlet 79 of the bag. Simultaneously, the brackets 87 are extended through the space defined by the score lines 82 to bend the tabs 83 toward the bag 80 until the mounting plate 77 is in flush-fit relationship with the wall 88 of the cleaner, at which time, the tabs 83 will slip behind the lips of the brackets 87, thus releasably securing the bag in place.

With reference now to Figs. 11 and 12 of the drawing, a still further modified form of construction 90 is shown wherein the wall 91 of the cleaner is similarly provided with an inlet duct 93, but is additionally provided with button head posts 94 which are secured in spaced apart relationship at predetermined positions around the duct 93. These posts 94 are releasably engageable within segmented expansion holes 98 that are similarly spaced around the duct-receiving opening 97 of the mounting plate 96. As a result, it is only necessary to push the mounting plate 96 upon the support posts 94, so that the segmented expansion holes 98 will open sufficiently to receive the heads of the posts 94 to thus secure the mounting plate in flush-fitting relationship with the wall 91 of the cleaner with the duct 93 extending properly through the duct-receiving inlet opening 97.

In Fig. 13 of the drawing, a modified form of construction 100 is shown which is similar to the embodiment illustrated in Figs. 11 and 12. In this embodiment, however, an additional angle plate 101 is disposed at one side of the duct 103 for receiving the edge of the mounting plate 96 that is ordinarily inaccessible and more difficult to properly position. One or more button head posts 94 are also secured to the wall 102 of the cleaner for engagement within similar segmented expansion holes 98 in the mounting plate 96. As a result, in order to insert a filter bag of this type, it is only first necessary to place the lowermost edge of the mounting plate within the angle plate 101 of the cleaner and then rotate it upwardly about this angle plate so as to cause the duct 103 to enter the inlet opening 97 of the mounting plate, following which the posts 94 will be automatically received within the segmented expansion holes 98, thus retaining the parts in proper snug-fit relationship.

Now referring to Figs. 14 and 15 of the drawing, a still further modified form of construction 105 is shown wherein the cleaner is provided with a U-shaped bracket 107 that is pivotally supported upon the wall 109 by spaced apart hinges 108. This bracket 107 is similar to the brackets described in connection with the embodiments of the present invention illustrated in Figs. 1 to 8 of the drawing, and includes a bight portion and a pair of spaced apart parallel arms 110. Accordingly, a filter bag of any type described in connection with the embodiments illustrated in Figs. 1 to 8 can be used with this form of cleaner construction, the end tabs 111 being

foldable downwardly into engagement with the bag **114** to define passageways for receiving the arms **110** of the bracket. Inwardly turned hooks **112** at the end of both arms **110** receive the adjacent edge of the mounting plate **113** which is slidably supported upon the arms **110**. The movement of the mounting plate **113** upon this bracket is limited by the engagement of the opposite edge of the mounting plate with the wall **109** of the cleaner, so that the bag will not be pushed too far so as to cause damage thereto. As soon as the bag has been properly positioned, the hooks **112** will engage with the adjacent edge of the mounting plate to secure it in predetermined position thereon. As a result, it is only then necessary to rotate the bracket **107** about its hinges **108** toward parallel relationship with the cleaner wall **109**. During this movement, the duct **116** will be received within the duct-receiving opening **115** of the mounting plate **113** and outwardly extending lugs **117** at the end of both of the arms **110** will be retained behind the spring hooks **118** also carried upon the cleaner wall **109**. These spring hooks **118** will releasably secure the bracket in the normally closed position, thus providing an effective seal between the cleaner wall and mounting plate of the filter bag.

In all embodiments of the present invention, the mounting plate is preferably constructed of a single piece of cardboard, or the like, that is virtually self-supporting and which will not readily deform under normal use. In the embodiments illustrated in Figs. 1 to 8, however, the provided spacer tabs **26**, **46***a*, *b*, **63**, further act as a reinforcing support that prevents the middle section of the cardboard from collapsing since these tabs are in snug engagement with the outer edges of the arms of the cleaner bracket and thus resist considerable strain without permitting the mounting plate to be drawn into the mounting bracket during the suction operation of the cleaner. As a result, it is possible to provide a satisfactory seal with these mounting plates while they have considerably less strength than would otherwise be required.

While this invention has been described with particular reference to the construction shown in the drawing, it is to be understood that such is not to be construed as imparting limitations upon the invention, which is best defined by the claims appended hereto.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A filter bag for suction cleaners of the type having a double armed mounting bracket for supporting the bag in pressure fluid receiving relationship with a fluid pressure delivery line comprising, in combination, a flat-sided filter bag enclosure having one side defining an air inlet opening, reinforcing means secured to said one side in encircling relationship with said air inlet opening, said reinforcing means comprising a mounting plate having an annular central area in sealing engagement with one side of said bag at the marginal portions surrounding said inlet opening, and spacer means carried by said mounting plate selectively movable into engagement with said one side of said enclosure defining passageways at opposite sides of said inlet opening for guidingly receiving the arms of the cleaner mounting bracket transversely therethrough.

2. A filter bag for suction cleaners as set forth in claim 1, wherein said spacer means comprises tabs integral with said marginal portions of said mounting plate.

3. A filter bag for suction cleaners as set forth in claim 2, wherein said tabs are scored within the plane of said mounting plate and selectively rotatable out of said plane into perpendicular relationship with said one end of said enclosure.

4. A filter bag for suction cleaners as set forth in claim 3, wherein said tabs are at the longitudinal extremities of said mounting plate and are defined by transversely extending fold lines in said marginal portions.

5. A filter bag for suction cleaners as set forth in claim 2, further comprising securement means carried by one side of said mounting plate for limiting relative transverse movement between said enclosure and the cleaner mounting bracket.

6. A filter bag for suction cleaners as set forth in claim 5, wherein said securement means comprises an outwardly struck tab in the marginal portions of said mounting plate at one transverse side thereof.

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