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2,016,294

AIR-METHOD CLEANER

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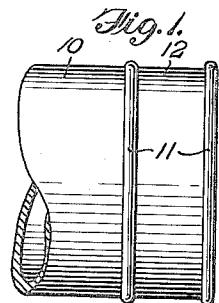


Fig. 1.

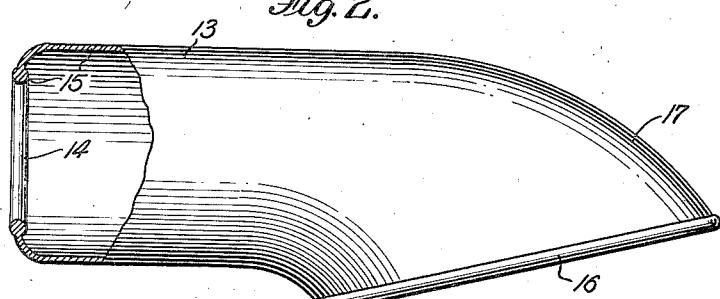


Fig. 2.

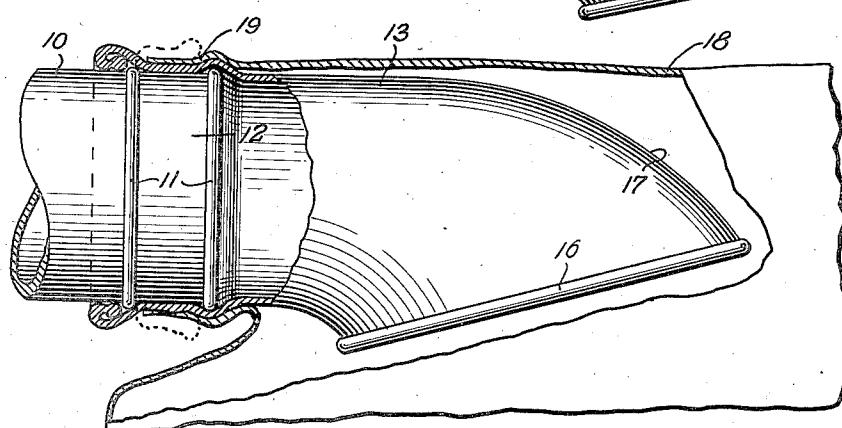


Fig. 3.

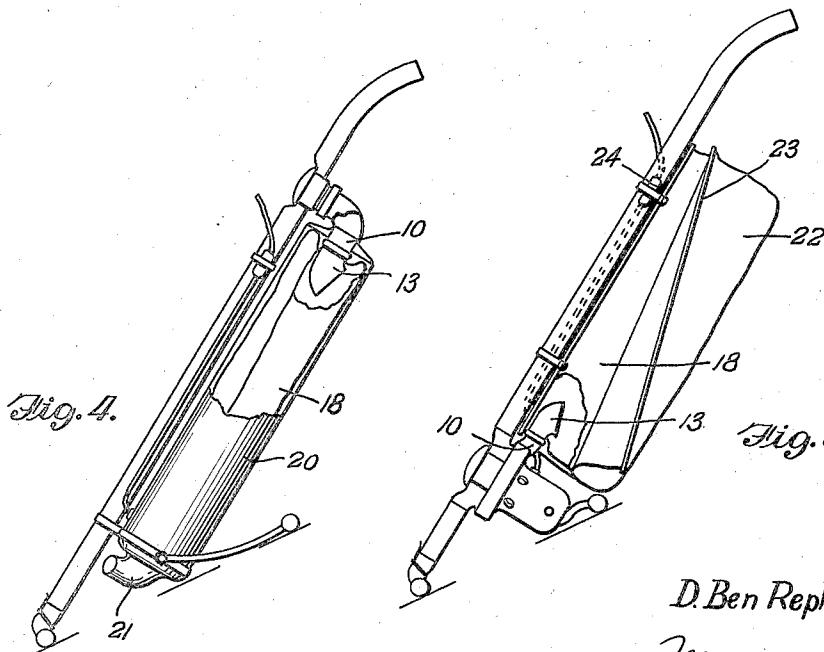


Fig. 4.

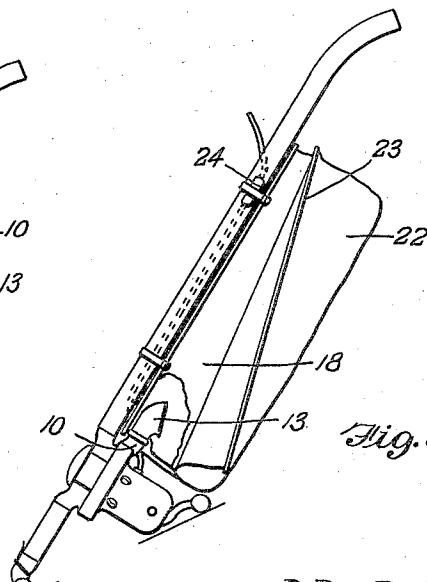


Fig. 5.

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AIR-METHOD CLEANER

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7 Claims. (Cl. 183—36)

The invention relates primarily to improvements in suction cleaners of the type known commercially under the registered trade-mark "Air-Way" and more particularly to an improved connector for detachably securing the paper dust collector bag of a portable suction cleaner to the pipe carried by the cleaner through which dust laden air is discharged. One of the objects of the invention is to provide a simple form of attaching device which is inexpensive to manufacture and easy to apply.

A further object of the invention is to provide a fluid tight sealing contact between the end of the paper dust collecting bag and the discharge pipe of the "Air-Way" cleaner.

Another object is to provide a connector composed of flexible non-metallic material which serves to connect the paper bag to the discharge pipe without the use of additional fastening means, such connector having the advantage of lightness and elasticity.

A further object of the invention is to provide a connector element in which the edges of the mouth of the dust collector bag are impaled with a complete rubber sealing means forming part of the connector and extending above and below said mouth, thereby providing double contact as well as perfect sealing.

A further object of the invention is to provide a connector element which may be employed either for connecting the paper dust collector to a discharge pipe or may be employed as a suction tool.

The invention will be more clearly understood by reference to the accompanying drawing and the following detailed description setting forth illustrative embodiments of the invention intended by way of illustration rather than by way of limitation.

In the drawing,

Fig. 1 designates one end of a pipe forming part of a suction cleaner, through which pipe dust-laden air is discharged into a suitable dust collecting or air-filtering device;

Fig. 2 is a side elevation, partly in section, showing the improved connector whereby a paper dust collector bag is detachably secured to a discharge pipe;

Fig. 3 is a view showing the connector secured to the discharge pipe and indicating the manner in which the connector is employed to attach the dust collector bag to the discharge pipe;

Fig. 4 is a side elevation with portions broken away, showing a suction cleaner in which the

connector is applied to a discharge pipe entering the dust collector bag at the top thereof; and

Fig. 5 is a similar view showing a different form of cleaner in which the connector is applied at the lower portion of the dust collector bag. 5

Referring in detail to the drawing, reference numeral 10 denotes a discharge pipe of a suction cleaner, through which dust-laden air is discharged into a dust collecting and air filtering device. The pipe is provided with spaced annular beads 11 providing between them a groove 12. In Fig. 2 there is shown a connector element 13, composed preferably of rubber or like flexible material, the same being sufficiently stiff to normally retain its form, but sufficiently yielding to be deformed under the application of a reasonable amount of force when the connector is being applied to the discharge pipe. At one end of the connector element there is a reduced opening 14 surrounded by an internal bead 15 which serves to normally retain the shape of the reduced mouth. The opposite end of the connector element is enlarged and the enlarged open end thereof is surrounded by an external reinforcing bead 16. It will be noted that the enlarged mouth is directed at an angle downwardly with respect to the reduced opening 14. A curved wall 17 opposite the upper portion of the opening 14 serves to deflect the dust-laden air into the enlarged mouth. 30

The element 13, shown in Fig. 2, while intended primarily as a connector for securing the dust collector bag to the discharge pipe, may also be employed as a suction tool, the bead 15 being slipped over the end of a suction pipe in the manner described in my prior Patent 1,403,524 dated January 17, 1922. 35

If desired, a mesh cover may be attached over the enlarged open end of the flexible element 13 in order to serve as a filtering medium. In such event the external bead 16 may assist in retaining the mesh cover.

In Fig. 3 the use of the element 13 for detachably connecting the dust collector bag to the discharge pipe of a suction cleaner is illustrated. The bag 18 is preferably composed of porous paper, and may be of the type disclosed in my Patent 1,416,876, dated May 23, 1922. This bag is provided with a reduced neck portion 19. In assembling, the reduced end of the connector element 13 is expanded and forced over the end of the discharge pipe 10 to grip the same with an air-tight fit, as indicated in full lines in Fig. 3. The bead 15 will be bent under in this operation and should extend be- 45 50 55

yond the second bead or rib 11 on the discharge pipe. The neck 19 of the dust collector bag is then passed over the connector element so that its end comes nearly to the second bead 11 of the discharge pipe. Thereupon the end of the flexible connector element is turned back to the reverse position shown in dotted lines in Fig. 3, in which position it will be retained owing to its contracting tendency. Thus the end of the 10 dust collector bag will be firmly held with a fluid-tight fit in the grooved portion 12 between the beads 11 of the discharge pipe. It will be noted that the turned back portion completely covers and seals over the otherwise free edge 15 of the mouth of the paper bag, whereby the reduced portion of the bag is implicated within the folds of the connector, so that there remains no exposed edge of the mouth of the bag.

The curved wall 17 of the connector element 20 serves to deflect the dust-laden air, and is so shaped as to cover any line tangent to the discharge of the fan, so that abrasion articles such as tacks, etc., drawn into the cleaner will not 25 destroy the bag. While this form of connector is particularly intended for use with a paper dust collector bag, it is obvious that the same connecting means may be employed in connection with bags of other types without departing from the invention.

30 The connector may be used with various forms of cleaners. In Fig. 4 the connector is shown applied to a pipe 10 discharging dust-laden air into the top of the dust collector. The cleaning apparatus is of the general type disclosed in my Patent 1,887,600, dated November 15, 1932. In this figure the paper dust collecting bag is indicated at 18, the same being housed within a rigid conductor 20, in the lower portion of which is mounted a fan and motor, not shown, 35 constituting the suction producing means. Filtered air is discharged from the conductor to a pipe 21.

In Fig. 5 the invention is shown applied to a cleaner of the type disclosed in my Reissue Patent 16,224, dated December 15, 1925. In this construction the pipe 10 constitutes the exhaust from the fan and enters the paper dust collector 18 at the lower portion thereof. An outer cloth bag 22, similar to that shown in my Patent 1,681,624, dated August 21, 1928, may be employed to support and sustain the inner bag. As shown, the outer bag is provided with rigidified edges 23 which are detachably fitted into clips 24 carried at opposite sides of the handle 55 of the suction cleaner. These rigidified edges may be removed independently to permit replacement of the paper bag when fouled. As shown in Fig. 5, one side of the outer bag is lowered to reveal the interior paper bag. When one side of the cloth bag is let down, the paper bag may be readily detached from the connector element by simply rolling back the flexible 60 end of the connector, as indicated in Fig. 3. A

new bag may then be applied and the lowered side of the outer bag replaced in its clips.

The invention has been described in detail for the purpose of illustration, but it will be apparent that many changes may be made without departing from the spirit of the invention, and the connector element is capable of many and varied uses.

What I claim is:

1. In a suction cleaner, in combination with a discharge pipe for dust-laden air, and a dust collector bag, a connector element composed of flexible material, having an end expanded over the end of said discharge pipe, and turned back over a reduced end of the dust collector bag to 15 retain the same in position.

2. A connector element as set forth in claim 1, which is provided with an internal bead at the attaching end thereof.

3. The combination as set forth in claim 1, 20 wherein the end portion of the discharge pipe is provided with a pair of spaced annular beads with a groove between them, whereby the end of the dust collector bag is retained in position.

4. A connector element as set forth in claim 1, 25 provided with a down-turned deflector wall portion opposite the entrance opening.

5. In a suction cleaner, a discharge pipe for dust-laden air, a dust filtering bag having a reduced neck portion, and means for operatively 30 connecting the reduced neck portion to the discharge pipe, including a flexible connector element having a portion extending over the discharge pipe and rolled back over the reduced neck.

6. In a suction cleaner, a discharge pipe for dust-laden air, a dust filtering bag having an inlet opening, and a flexible connector element between the discharge pipe and the bag comprising a rubber nozzle having a shank portion provided with an open end adapted to be fitted over said discharge pipe, and having an enlarged portion within said bag provided with an opening lying in a plane which is angularly displaced from the opening at the attaching end, the interior portion of the nozzle opposite said attaching end being smoothly curved to serve as a deflector for dust-laden air.

7. In a suction cleaner, a discharge pipe for dust-laden air, a dust filtering bag having an inlet opening, and a flexible connector element between the discharge pipe and the bag comprising a rubber nozzle having a shank portion provided with an open end adapted to be fitted over said discharge pipe, and having an enlarged portion within said bag provided with an opening lying in a plane which is angularly displaced from the opening at the attaching end, the interior portion of the nozzle opposite said attaching end being smoothly curved to serve as a deflector for dust-laden air, and a peripheral bead adjacent said enlarged end.

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