April 13, 1943. C. L. MOORHEAD 2,316,353

DUST BAG ATTACHMENT FOR SUCTION CLEANERS

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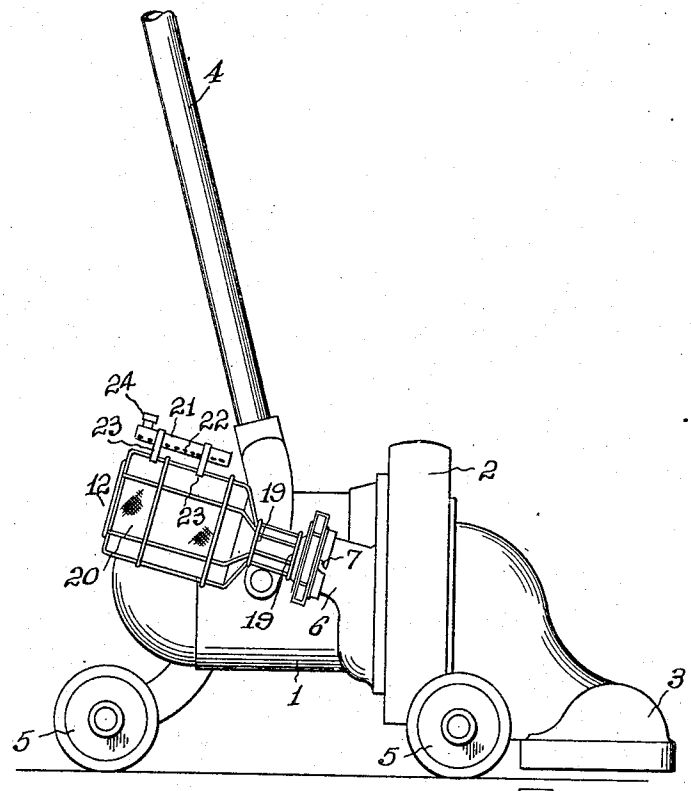


FIG. 1

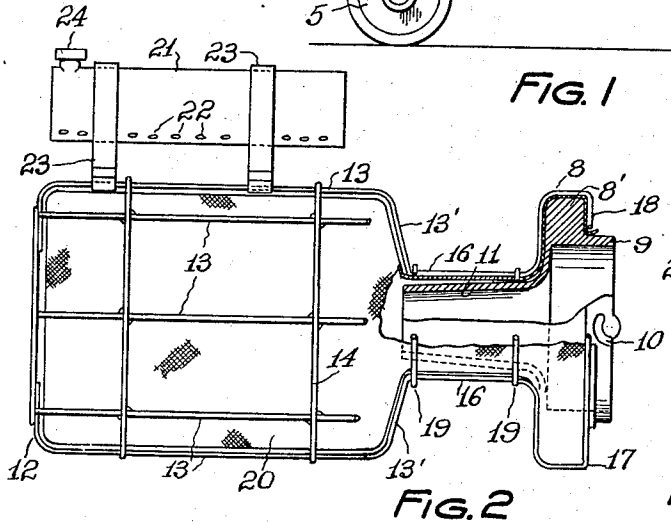


FIG. 2

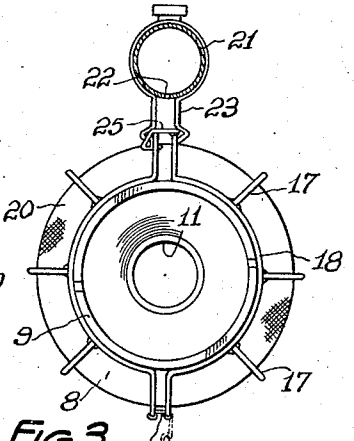


FIG. 3

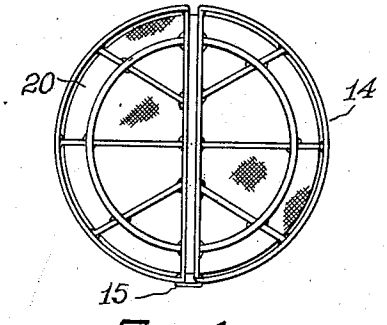
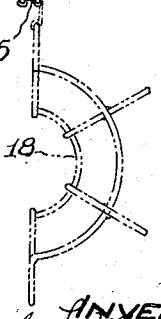


FIG. 4



INVENTOR:
Charles L. Moorhead

BY
Robb & Robb
ATTORNEYS.

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DUST BAG ATTACHMENT FOR SUCTION CLEANERS

Charles L. Moorhead, Lakewood, Ohio

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6 Claims. (Cl. 183—9)

The purpose of this invention has been to devise a novel type of dust bag supporting means for use in conjunction with so-called suction or vacuum cleaners, as commonly known today.

A primary object of the invention has been to design a special type of holder for securing the porous dust bag for the cleaner in position upon the latter for additionally supporting the dust bag so as to relieve the stresses and strains which are usually applied thereto incident to the passage through the bag of the high pressure air which is laden with dust that it carries into the bag for deposit in the latter, the holder being of such construction as not to interfere in any way with the function of porosity of the bag in use.

By the provision of the novel holder of the invention it is possible, in the first place, to use for the bag material light cotton or some equivalent cheap material which permits of throwing away of the bag itself when it is filled with dust and no longer useful, thus eliminating the necessity of emptying the bag of the dust and using the bag again or for successive operations of cleaning. It is well known that the emptying of dust bags for cleaners is a somewhat unpleasant task because of the handling of the dirt or foreign matter that is drawn into the bag receptacle, due to the necessity of shaking the bag, and the fact that the dust particles are distributed in the air breathed by the person doing the work.

A primary object of the invention has been to design the holder above mentioned in the form of a skeleton or cage-like structure made of inherently stiff material such as wire or metal parts of a similar nature, so that the holder when it is applied to the cleaning machine is self-sustaining by reason of its inherently stiff structure.

A further object of the invention has been to so design the bag holder that it may be quickly clamped upon and removed from the machine, and the operations of removal of the dirt filled bag and replacement of a fresh bag are thus facilitated.

A further object of the invention has been to so design the bag holder that when it is made in its preferred small size to receive bag replacements, the structure offers a basis for providing the user of the machine with replacement bags in quantities, thus offering the manufacturer an outlet for additional business with reference to the supplying of the bags.

Still another object of the invention has been to use, in association with the bag holder, a conveniently applicable water or liquid chemical container which, when mounted adjacent to the bag holder and preferably supported thereon, will supply to the bag, if desired, drops of moisture tending to impregnate the bag walls and maintain the latter in wet condition for facilitating the filtering of the dust from the air as the air passes through the bag to the outer atmosphere, the bag retaining the dust passing thereinto from the discharge neck of the cleaner.

Other advantages of the invention will be appreciated upon reference to the following full description of detail construction of the parts and the illustration thereof in the accompanying drawing, in which—

Figure 1 is a side elevation of a suction or vacuum cleaner equipped with the invention.

Figure 2 is a sectional view of the connector for the bag holder and illustrates the bag holder in clamped connection upon the connector, the bag being partially broken away to show more fully the method of attaching the same to the connector by means of a holder.

Figure 3 is an end view of the construction in Figure 2 and showing the moisture receptacle in connected relation to the bag holder, dotted lines showing one section of the body of the bag holder as when opened up for removal of the bag or replacement.

Figure 4 is a view of the bag holder itself, looking at the same from the rear end thereof, as distinguished from Figure 3 which shows the front or lower end of the bag holder in its clamped relation to the connector.

In the drawing the vacuum cleaner illustrated is simply one type in combination with which the invention may be employed. Various different types of cleaners are in use today and by slight modification of the structure of the bag holder the invention may be adapted for employment upon such various types of machines.

The cleaner illustrated is of the usual type including the body 1 on which the motor is supported, the suction fan casing 2, the nozzle head 3, handle 4, and supporting wheels 5. Cleaners of this type are equipped with a discharge neck 6 of some type, that illustrated in the drawing having opposite coupling pins 7 for engagement with the bag connector that is usually found upon these machines and includes a collar or equivalent member provided with bayonet slots to interengage the pins 7 by rotative movement for establishing the connection.

According to my invention, I employ a connector 8 which is composed of a ring-like body 9 having an annular flange 8', the body portion

9 being formed with the bayonet slots 10 designed to interengage with the pins 7 with which the discharge neck 6 is usually equipped. It is of course to be understood that for some types of discharge necks 6 where the pins 7 and bayonet slot connector is not employed, the body 9 of the connector of this invention may be a spring clamp ring or any equivalent type of structure that is adapted to be clampingly or otherwise applied to the discharge neck 6 for attaching a cleaner bag thereto.

The connector 8 of my invention has a tubular extension 11 projecting therefrom, the interior of which communicates with the space surrounded by the body 9. The purpose of this part 11 will be apparent hereinafter.

The essential feature of my invention comprises the holder 12 so designated generally and consisting of a cage-like or skeleton frame made up of longitudinal members 13 and transverse members 14. The holder frame is comprised of two semi-circular sections as seen in Figures 2, 3, and 4, there being hinge members 15 connecting certain of the longitudinal members 13 of the sections at the lower portion of the holder. At the inner end of the holder 12 the longitudinal members 13 are curved inwardly as shown at 13', and then extended in a direction parallel with the main portions of said members to provide clamping portions 16. Thereafter these members 16 are extended outwardly to provide U-shaped clamping portions 17 the extremities of which are connected by semi-circular transverse parts 18.

The transverse members 14 of the holder are made in curved form and thus provide a ring-like structure as respects the cooperating members of the two sections in which the holder is formed. Similar curved parts 19 are used for the clamping portions 16 of the holder and connect the longitudinal portions together as clearly shown in Figure 1 and in Figure 2.

The U-shaped members 17 and the clamping parts 16 are designed to engage over the flange 8' of the connector 8 and the tubular extension 11 of said connector, respectively. The purpose of these members 17 and 16 is to provide a means for attachment of the cage-like holder 12 to the connector 8, and in addition to this to clamp the inner portion of the bag 20 received in the holder 12 snugly around the part 11 and around the flange 8' of the connector as seen best in Figure 2.

If desired, above the holder 12 may be disposed the liquid receptacle 21 which is capable of containing water or a chemical such as liquid disinfectant, and this receptacle 21 is provided with perforations 22 in its bottom portion from which the liquid contained therein may drip onto the bag 20 and thus ultimately wet the entire bag by distributing over its surface through capillary movement. The receptacle 21 may be supported in any suitable way, but is preferably carried on the upper portion of the holder 12 by means of spring clips 23 adapted to engage over the upper longitudinal members 13 of the holder. Thus, the container 21 may be readily removed and replaced for purposes of refilling, a filling cap 24 being provided for such purpose.

With the foregoing construction of my invention presented, its operation will be readily apparent. To emplace the bag 20 within the holder 12, the spring catch 25 is used which engages two of the U-members 17 receiving the flange 8' of the connector in order to clamp the bag holder onto the connector. By disengaging the spring catch 25 the two sections of the holder 12 may be separated as by swinging one of the sections to the dotted line position shown in Figure 3. It will be assumed that previous to doing this the receptacle 21 has been removed, if it is used. It is understood, however, that my bag holder may be employed either with or without the receptacle 21, depending upon whether the customer employing the cleaning machine wishes to avail of the moisture applying means 21.

When the sections of the holder 12 have been operated after the manner roughly illustrated in Figure 3, the receptacle 21 having been previously removed, the bag 20 will be placed with its larger portion within the space to be surrounded by the sections of the holder 12 and adjacent to the portion in the larger part of the holder. The bag will be clamped around the tubular extension 11 of the connector 8. Also, the open end portion of the bag will be clamped around the flange 8' by means of the U-members 17. The bag will thus be firmly attached to the connector 8 in the manner seen in Figure 2 when the sections of the bag holder 12 are caused to move together and assume the positions in full lines in Figures 1, 3, and 4.

The above operation will preferably be performed by removing the connector 8 from the discharge member 6, this being conveniently done by simply disengaging the part 9 from the pin 7 by slightly rotative movement to remove the pins from the bayonet slots 10.

After the bag has been clamped in position inside the holder 12 and snugly fitting about the parts 11 and 8', the spring catch 25 will be engaged to maintain the sections of the holder 12 closed around the bag. Upon starting the machine of course the bag 20 will be inflated as usual and air will pass through the pores thereof, the dust being retained within the bag as customary.

The removal of the bag will involve merely the opposite of the operation above indicated for the application of the bag to the holder 12 and the method of removal is obvious. If the receptacle 21 is used it will be detached first, preliminary to the separation of the sections of the holder 12, for bag removal purposes.

Obviously, by the use of the invention, as the bag is inflated, the walls thereof will be caused to contact with the various longitudinal and end members of the body of the holder 12. Such contact will relieve the bag of the stresses and strains incident to the powerful blast of air which is entering the same and which effects its inflation. Thus there may be used by means of the invention a lighter materal for the bag, one which is so cheap or inexpensive as to enable it to be readily thrown away when the bag is filled with dust, thus eliminating the necessity for emptying the bag every time it is filled. Of course, if the person using the cleaning machine prefers to empty the bag, he may do so, but when the bag holder 12 is made relatively small and adapted for small size bags 20 it will be seen that the more suitable operation would be to simply throw away the bag 20 containing the dust after cleaning operations sufficiently to fill the bag have been performed.

It will be apparent that when the receptacle 21 is used, the spring clips 23 assist in holding the sections of the holder 12 together by clamping against the uppermost longitudinal members 13 of the holder.

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

1. A bag holder for cleaning machines comprising a skeleton frame adapted to contain a bag and made in separable sections, means for holding the sections of the holder together to maintain them in bag holding condition, means for attaching the holder to the discharge neck of a cleaning machine, a receptacle for water, chemical solution, or the like having apertures to supply the solution to the bag, and means for attaching the receptacle to the holder.

2. A bag holder for cleaning machines comprising a skeleton frame adapted to contain a bag and made in separable sections, means for holding the sections of the holder together to maintain them in bag holding condition, means for attaching the holder to the discharge neck of a cleaning machine, a receptacle for water, chemical solution, or the like having apertures to supply the solution to the bag, and means for attaching the receptacle to the holder, comprisinging spring clips coacting to hold the holder sections together in bag holding condition.

3. In combination with a vacuum cleaning machine embodying a discharge neck for dust laden air, a bag holder comprising a cage-like frame, means for connecting the frame to the discharge neck, said frame comprising relatively stiff body members, and a porous bag disposed within the holder and connected to the discharge neck thereby, said holder being formed with parts embracing the connector member and forming clamp elements engaging the open end of the bag in the holder with said connector, detachable catch means enabling removal of the holder from the connector, the holder and the extended portions thereof being made in separable sections adapted to be held together in bag holding condition by the detachable catch means, a receptacle for water, chemical solution, or the like, positioned above the holder, whereby the said water or the like will flow by gravity onto the bag aforesaid, and connecting means between said receptacle and the body of the holder.

4. In combination with a vacuum cleaning machine embodying a discharge neck for dust laden air, a bag holder comprising a cage-like frame, means for connecting the frame to the discharge neck, said frame comprising relatively stiff body members, and a porous bag disposed within the holder and connected to the discharge neck thereby, said holder being formed with parts embracing the connector member and forming clamp elements engaging the open end of the bag in the holder with said connector, detachable catch means enabling removal of the holder from the connector, the holder and the extended portions thereof being made in separable sections adapted to be held together in bag holding condition by the detachable catch means, a receptacle for water, chemical solution, or the like, connecting means between said receptacle and the body of the holder, and connecting parts on the receptacle for attaching the same to the body of the holder above the same adapted to cooperate to hold the sections of the holder in closed bag holding condition, whereby the water or the like will flow onto the bag by gravity.

5. In combination with a vacuum cleaning machine embodying a discharge neck for dust laden air, handle means for operating the cleaner, a connector member removably engaged with said neck, a bag holder comprising a cage-like frame, a porous bag disposed within the holder and engaged with the connector member, said frame comprising relatively stiff body members enclosing said bag, and clamping means engaging the connector member and rigidly supporting the bag holder on said neck independently of the handle means.

6. The combination as claimed in claim 5, wherein the connector member includes a tubular member extending into the porous bag, and a ring-like member for connecting said connector to the discharge neck, said bag being releasably clampingly engaged to the tubular member and the ring-like member by the frame.

CHARLES L. MOORHEAD.