H. E. AND H. W. HOOVER.

BAG AND ATTACHMENT FOR SUCTION CLEANERS.

APPLICATION FILED AUG. 8, 1917.

**1,319,079.** Patented Oct. 21, 1919.

Fig. 2.

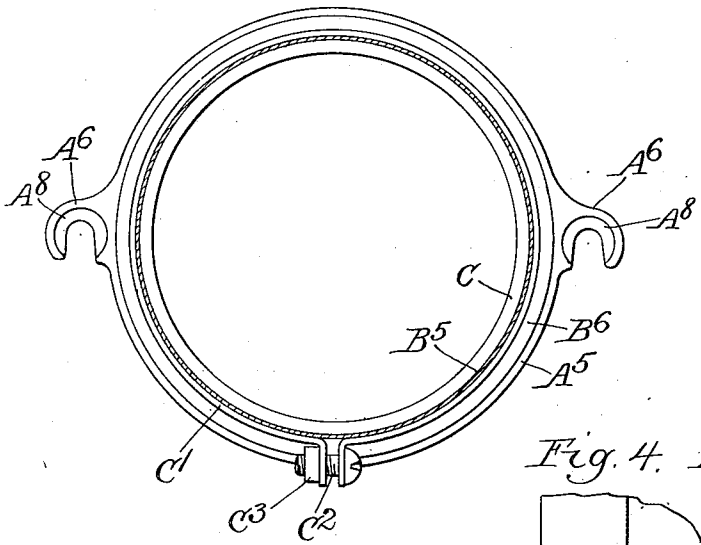



Fig. 3.

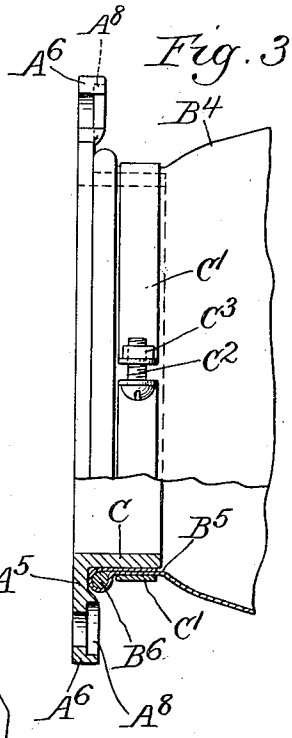



Fig. 4.

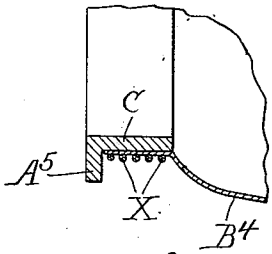
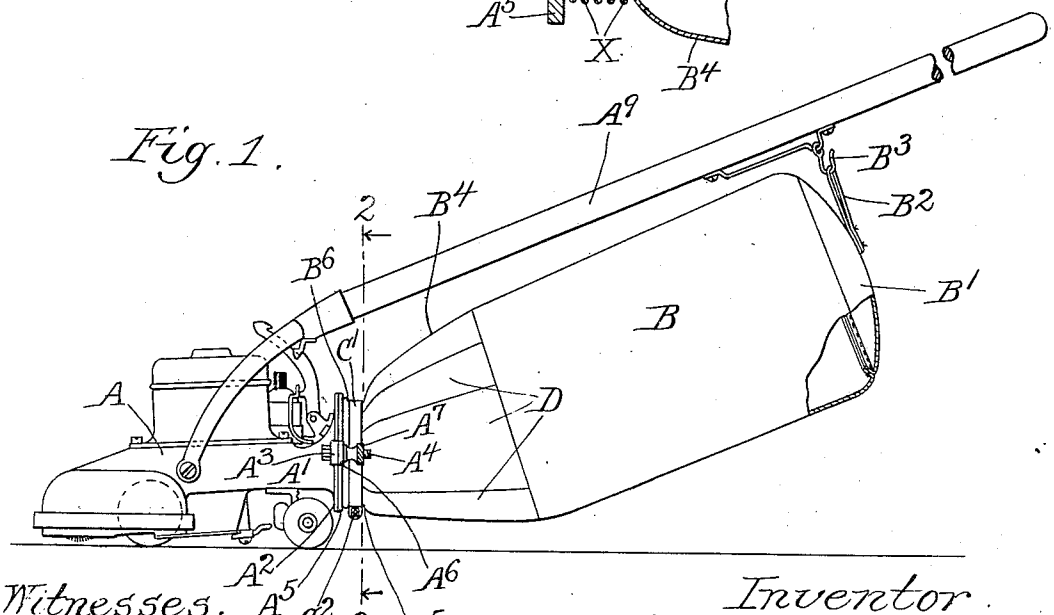



Fig. 1.




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# UNITED STATES PATENT OFFICE.

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## BAG AND ATTACHMENT FOR SUCTION-CLEANERS.

1,319,079. Specification of Letters Patent. Patented Oct. 21, 1919.

Application filed August 8, 1917. Serial No. 185,201.

*To all whom it may concern:*

Be it known that we, HOWARD EARL HOOVER and HERBERT W. HOOVER, citizens of the United States, residing, respectively, at Chicago, in the county of Cook and State of Illinois, and New Berlin, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Bags and Attachments for Suction-Cleaners, of which the following is a specification.

Our invention relates to improvements in bag and attachments for suction cleaners.

It has for one object to provide means whereby the bag may be easily cleaned, and may be easily held in position for cleaning without danger of scattering the contents. It has for another object to furnish convenient means for attaching such a bag to the suction cleaner body and for removably securing it in position. It has for another object to permit the bag to hang properly while in use. Another object is to provide means for removably attaching the bag itself to a releasing collar whereby the bag may be easily renewed.

Other objects will appear as the description is proceeded with.

Our invention is illustrated more or less diagrammatically in the accompanying drawings, wherein—

Figure 1 is a side elevation;

Fig. 2 is a section on an enlarged scale along the line 2—2 of Fig. 1;

Fig. 3 is a detailed side elevation with parts in section showing the bag attaching collar;

Fig. 4 is a detail cross section of a modified method of attaching the bag to its support.

Like parts are indicated by like characters in all the figures.

A is a suction cleaner housing. We have not shown it in detail as it forms no part of our present invention. Suffice it to say that air is drawn in through a suction nozzle by a fan driven by the motor and discharged through the open neck $A^1$. This neck is surrounded by the enlarged flange $A^2$ from which project lugs $A^3$ and holding screws $A^4$. $A^5$ is a bag supporting ring adapted to engage the flange $A^2$ and provided with hooks $A^6$ adapted to rest on the screws $A^4$ and to be clamped into position by thumb-nuts $A^7$. The hooks are cupped as at $A^8$ to receive the inner extension of the thumb-nuts. $A^9$ is a handle pivoted on the housing. The dust bag is provided with a central cylindrical portion B having a substantially flat rear end $B^1$ supported by means of a loop $B^2$ from a hook $B^3$ on the handle $A^9$. The opposed end of the bag is provided with a tapered neck $B^4$. This tapered neck is preferably made of the same material as the bag and is as here shown formed by folding and stitching the bag material so as to provide a relatively constricted through large open mouth $B^5$. Surrounding this open mouth of the bag and inclosed within the fabric thereof is a ring $B^6$, made of any suitable material.

The open mouth of the bag is adapted to receive the flange C of the ring $A^5$. $C^1$ is a split ring as indicated and adapted to surround the open mouth of the bag and to be clamped by means of the screw $C^2$ and nut $C^3$ upon the fabric of the bag so as to lock it in position upon the flange of ring $A^5$. The reinforcing ring around the end of the bag coöperates with the split ring to prevent withdrawal of the holding ring.

The folded portions of the bag are indicated at D and they are so folded and cut that the upper portion of the tapered neck is shorter than the lower portion and the axis of the bag is inclined to the axis of the tapered neck and a line perpendicular to the plane of the open mouth is inclined both to the axis of the neck and to the axis of the bag.

We have spoken of the reduced neck of the bag as being formed by folding portions of the bag together, but of course such tapering of the neck could be brought about in any desired manner. In the particular

form illustrated the parts of the cylindrical bag were actually folded over one on another and stitched together.

The loop $B^2$ or other similar attachment at the end of the bag is designed to furnish convenient means for manipulating the bag particularly when the dust is to be shaken out of the opposite or open end of the bag.

The use and operation of our invention are as follows:—

The bag shaped as shown is adapted to hang in the position indicated in Fig. 1 where the lower margin of the tapered neck is substantially parallel with the floor. The bag and its associated parts are easily retained in position. The reinforcing ring which is attached to the bag is larger than the holding ring which encircles the tapered end of the bag near but just back of the holding ring. The tapering of the bag and accumulation of the material back of the holding ring tends to prevent the holding ring from slipping out over the bag just as it is prevented from slipping out over the end of the bag by the reinforcing ring. The supporting ring with its flange receives the mouth of the bag and when the holding ring is drawn tightly in position the parts are firmly secured as indicated in Fig. 3. The supporting ring is now dropped into position in line with the outlet of the housing, the hooks of the ring resting on the screws $A^4$. The thumb-nuts are now screwed down on the screws until their inner portions lie in the cupped-shaped parts of the hooks $A^6$. In this position the bag cannot be removed because the part of the thumb-nut which rests in the cupped-shaped portion is of greater diameter than the outlet of that portion and thus the parts are held together even if the thumb-nuts be not firmly screwed down.

The nut on the screw which draws the two ends of the holding ring together is square and in close proximity to the surface of the ring so that it is prevented from rotation and the ring can be tightened by a screw driver.

The large mouth permits the easy shaking out of the dirt which it may contain and if the bag is to be emptied in a living room its mouth can be put down on to a paper or other flat surface and held there by standing on the hooks $A^6$, which in this case serve as means for holding the mouth of the bag tightly in position on such paper. The dirt can then be shaken on to the paper without having it scatter through the room. The projecting part $B^2$, forming no part of the bag proper, can be used as means for shaking the bag to get the dirt out. Any direct blow on the body of the bag itself tends to cause the dust to escape through the body of the bag. The flange $A^2$ and ring $A^5$ are provided with flat ground surfaces so as to make a tight joint and so that the ring $A^5$ can make a tight joint with the receiving surface when the bag is being emptied.

The bag can be attached to the supporting ring by means other than the holding ring which we have shown.

If as is sometimes the case, it is desirable to secure the bag permanently on the flange or flanged ring, this may be done by securing the holding ring permanently in position about the mouth of the bag on the supporting ring associated with the bag securing flange. In such case the holding ring may be of any desired material and may even consist of a series of windings tightly secured in position. In such case the reinforcing ring would be unimportant and might be dispensed with, the mouth of the bag being brought to a position where it incloses the supporting ring, and the holding ring or band being then permanently fastened thereabout.

If the reinforcing ring is dispensed with. or if the holding ring is permanent, the parts may take the position illustrated in Fig. 4 where X represents a series of wire windings about the mouth of the bag and about the supporting ring. These windings constitute a holding ring the parts of which may be permanently secured in position.

The loop $B^2$, and it might take any desired form since it is only an attachment at the upper end of the bag, is designed among other things to serve as a handle for the bag and means for grasping so that the bag can be conveniently manipulated particularly in connection with the effort to discharge or shake the dust from the bag through the open mouth at the opposite end.

We claim:—

1. A combined bag and attachment for suction sweepers comprising a bag with a neck, a mouth, and a permanent ring secured at the mouth and of greater diameter than the neck, an annulus having lateral projections of greater diameter than the neck of the bag, means for removably securing it to the suction sweeper about the discharge opening, said annulus being relatively flat on its outer side and provided with a cylindrical flange adapted to enter the mouth and neck of the bag, the external diameter of said cylindrical flange being approximately the same as the internal diameter of the ring in the mouth of the bag, and a removable expansion band adapted to be applied about the neck of the bag behind the ring around the flange and provided with means whereby it may be tightened to removably secure the bag on the flange.

2. A combined bag and attachment for suction sweepers comprising a bag with a neck a mouth an annulus having lateral

projections of greater diameter than the neck of the bag means for removably securing it to the suction sweeper about the discharge opening and a cylindrical flange projecting from the annulus and adapted to enter the mouth and neck of the bag, the external diameter of said cylindrical flange being approximately the same as the internal diameter of the mouth of the bag, and a removable expansion band adapted to be applied about the neck of the bag behind the mouth around the flange and provided with means whereby it may be tightened to removably secure the bag on the flange, said annulus being relatively flat on its outer side.

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