

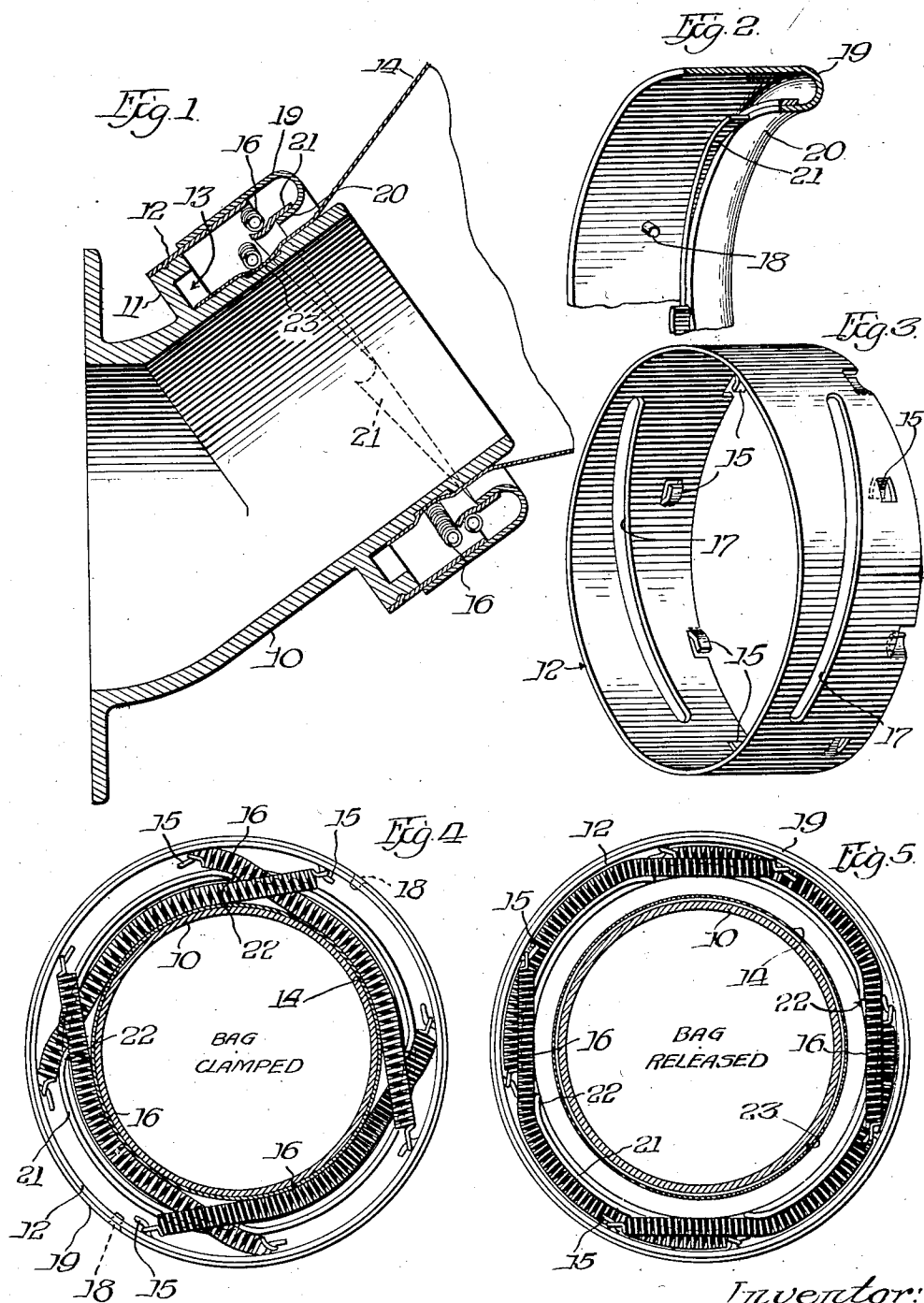
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SUCTION CLEANER

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SUCTION CLEANER

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This invention relates to suction cleaners in general and particularly to means for clamping a dust bag on the discharge outlet of the suction cleaner. More specifically, the invention relates to a clamping ring for detachably securing a dust bag made from paper or other fibrous material, to an adapter or discharge neck of a suction cleaner.

The primary object of the invention is to provide new and novel means for detachably connecting a dust bag to the discharge outlet of a suction cleaner.

Another object is to provide a bag ring which is operatively connected to the discharge neck, or outlet, of a suction cleaner, for securing a bag thereto, or for releasing a bag therefrom by giving the bag ring a part turn.

Another object of the invention is to provide a bag ring which is operatively arranged about the discharge outlet of a suction cleaner and which subtends a chord of the arc of the circle of said ring to form yielding engaging means for detachably and yieldingly securing a dust bag to the discharge outlet when the bag ring is given a part turn in one direction and which releases the bag and permits withdrawal thereof when the bag ring is turned in the opposite direction.

Another object is to provide a bag ring which is provided with a plurality of springs which engage a dust bag upon operating the ring to one position to subtend chords for yieldingly engaging the dust bag about its entire periphery, and which has a member which causes the springs to recede when it is desired to remove the bag from the discharge neck.

Other objects and advantages will hereinafter appear.

In accordance with the invention, the ring comprises an inner collar which is secured to an annular flange on the discharge neck, and this collar has a plurality of clips struck up therefrom to which the ends of helical springs are attached. An outer collar fits over the inner collar and has an intumed circular portion into which the springs recede or from which the springs extend during movement of the outer collar so as to clamp or release the bag as required.

The accompanying drawings illustrate selected embodiments of the invention and the views therein are as follows:

Figure 1 is a vertical sectional view of a suction cleaner discharge outlet or adapter embodying the invention.

Figure 2 is a detail sectional view of the outer collar.

Figure 3 is a detail perspective view of the inner collar.

Figure 4 is an end view showing the clamping ring in clamped position.

Figure 5 is a similar view showing the ring in released position.

Referring to the drawings 10 designates a discharge neck or an adapter which may be either detachably connected to a suction cleaner or which may be made an integral part thereof. This neck or adapter is provided with a flanged member 11 to which a collar 12 is secured and forms an annular recess 13 into which the dust bag 14 is received.

A plurality of inwardly extending clips 15 are struck up from the collar 12 to which a plurality of helical springs or other yieldable members 16 are attached. This collar is provided with a pair of arcuate slots 17 through which pins 18 on the outer collar 19 extend. The pin and slot connection operatively connect the two collars together and permit relative rotation therebetween.

The outer collar 19 is turned inwardly, Figure 2, to provide a retaining ring 20. A plurality of substantially triangular members 21 are secured to the member 20 as clearly shown in Figure 2. The base of each of these triangles is rounded to provide mouths 22 so that during rotation of the outer collar the springs 16 will be guided to proper operative position. The clips 15 are staggered one above the other as clearly shown in Figure 3, so that when the springs are secured to the clips, they will be at an angle relative to the outer edge of the collar.

The operation is as follows:

The springs 16 are secured to the clips 15 and arranged behind the member 20 so that each mouth 22 of the triangular members 21 will form a guide for the springs during rotation of the outer collar. After the springs are secured to the clips, the outer collar 19

is fastened thereabout so that the pins 18 enter the arcuate slots 17 in the inner collar. The inner collar is then securely fastened to the flange 11 on the adapter 10, Figure 1, and a bag 14 is placed in the groove or space 13. The outer collar is free to travel about the inner collar, substantially the full length of the slots, and inasmuch as these slots are diagonal the outer collar will also move laterally when it is being rotated. When the outer ring is operated in one direction, the springs fully extend beyond the end of the mouths of the triangular members so that a plurality of chords of the arc of the circle are subtended for yieldingly supporting the dust bag. When the chords are subtended they will engage the tubular neck 10 and clamp the dust bag thereto.

Upon opposite rotation of the outer collar, the springs will be caused to recede behind the triangular portions 21 and be guided by the mouths thereby causing the springs to bear against the inside of the member 20 and be removed or pulled away from the dust bag. The rounded mouths form positive guides for the springs and prevent them from engaging or otherwise coming in contact with the ends of the triangular members. Inasmuch as the clips 15 are staggered laterally, the springs will not come in contact with each other and thereby form means for yieldingly engaging the entire periphery of the bag on the neck 10. This neck may be provided with a groove 23, Figure 1, into which the springs 16 will press the bag to form a substantially air-tight and dust-proof connection.

The invention provides a bag ring of few and simple parts which can be easily and quickly operated for detachably securing a bag to a part of a suction cleaner.

Changes may be made in the form, construction and arrangement of the parts without departing from the spirit of the invention or sacrificing any of the advantages thereof, and the right is hereby reserved to make all such changes as fairly fall within the scope of the following claims:

I claim:

1. In a retaining and attaching means for suction cleaner dust bags, the combination with a neck, a ring rotatably mounted upon and spaced from said neck, and yieldable means controlled by the operation of said ring for forming yielding bag securing means said ring having means thereon for positively deflecting said yielding means away from said neck.

2. Retaining means comprising a ring, a plurality of circumferentially overlapping springs connected to said ring, and a movable outer ring permanently and rotatably connected to said first named ring and having a part thereof which substantially engages said springs, and means carried by

said outer ring for bending said springs outwardly.

3. A clamping device for attaching a suction cleaner bag, comprising an annular neck, supporting means secured to said neck and spaced outwardly therefrom, a contractile member carried by said supporting means, and a ring rotatably mounted upon said supporting means and having means thereon adapted upon rotation of said ring to bend said contractile member away from said neck.

4. A clamping device for attaching a suction cleaner bag, comprising a member having an annular groove therein adapted to receive the mouth portion of the bag, a contractile member carried by said member and normally tending to engage the inner wall of said annular groove, and a ring rotatably mounted on said member and spaced from the inner wall of said groove and having means thereon for deflecting said contractile member outwardly when said ring is rotated about said neck.

5. A clamping device comprising an annular neck, supporting means carried by said neck and radially spaced therefrom, a plurality of contractile members carried by said supporting means, and a ring permanently and rotatably carried by said neck and having means thereon for deflecting said contractile members away from said neck when said ring is rotated.

6. A clamping device comprising a ring, a coil spring disposed within said ring, an outer ring about said first named ring, and means carried by said outer ring and engaging inside of said coil spring and said inner ring to deflect said coil spring outwardly upon rotation of said outer ring.

7. A clamping device comprising an annular neck, supporting means secured to said neck, a clamping member under tension lengthwise carried by said supporting means and extending helically of said neck, and means carried by said neck and having a portion movable lengthwise of said clamping member for deflecting it away from said neck.

Signed at Canton, in the county of Stark and State of Ohio, this 24th day of January, A. D. 1929.

HARRY R. BALLOU.