Jan. 27, 1925. 1,524,296

E. R. FIELD

VACUUM CLEANER

Filed April 29, 1922 2 Sheets-Sheet 1

Fig. 1.

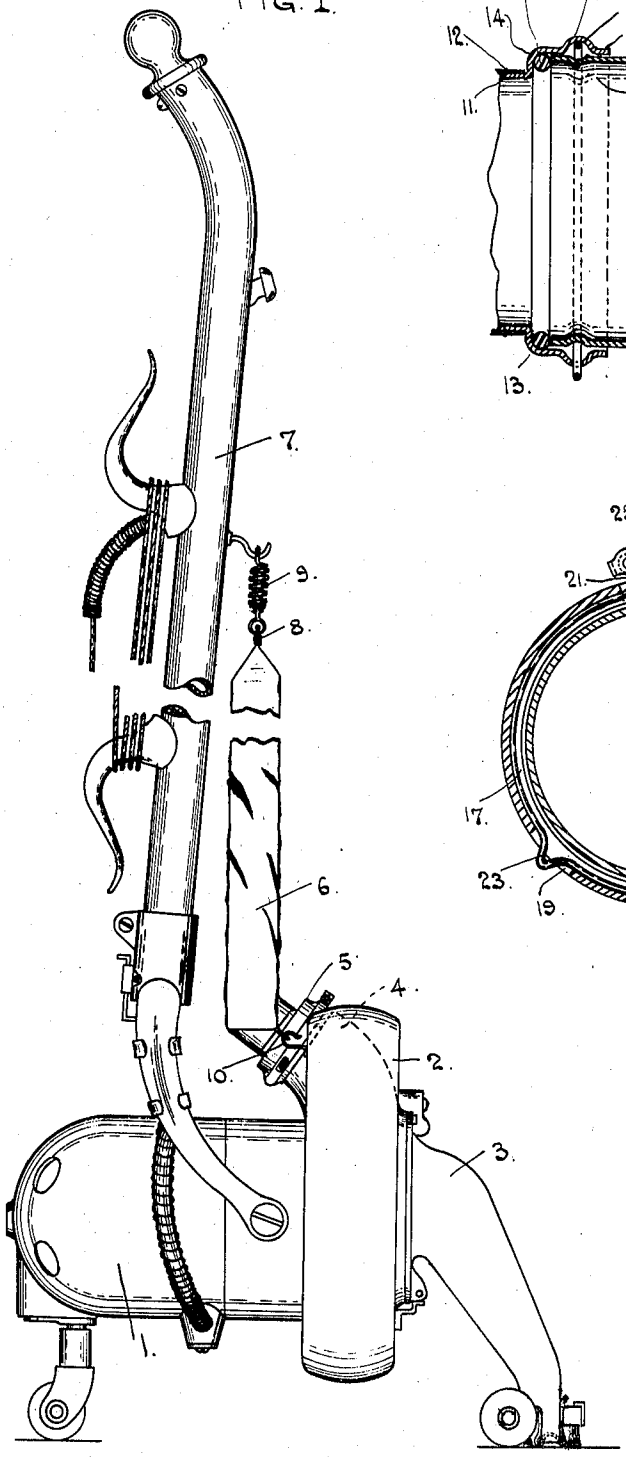
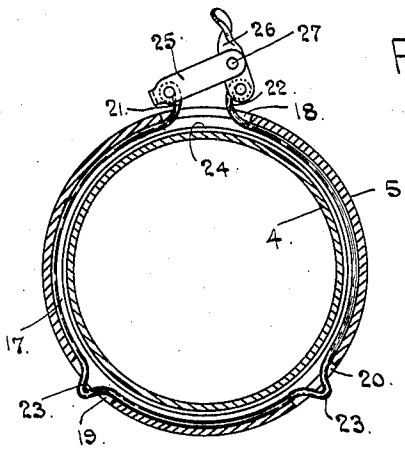


Fig. 3.

Fig. 4.



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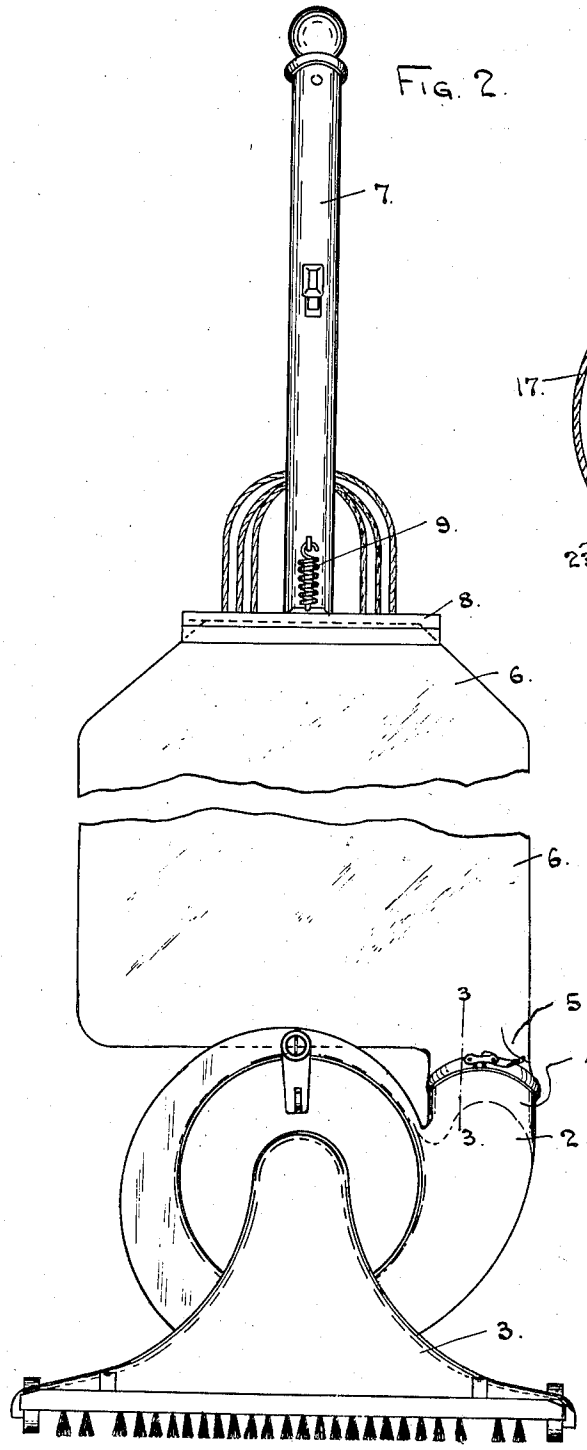


Fig. 2.

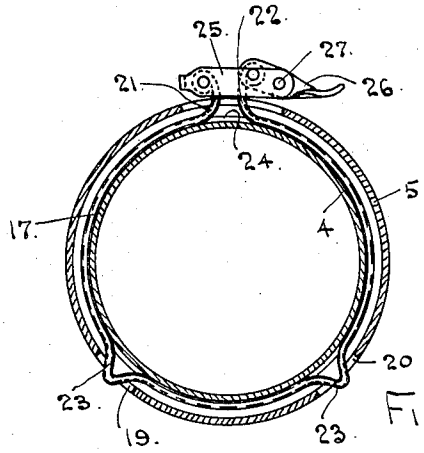


Fig. 5.

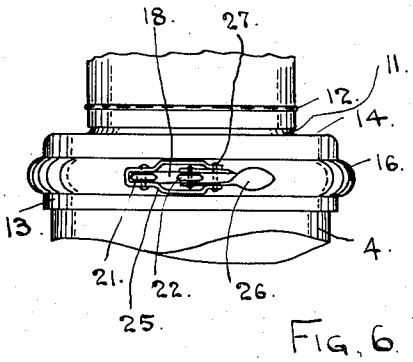


Fig. 6.

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UNITED STATES PATENT OFFICE.

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VACUUM CLEANER.

Application filed April 29, 1922. Serial No. 557,417

To all whom it may concern:

Be it known that I, EGBERT R. FIELD, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Vacuum Cleaners, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to vacuum cleaning apparatus, and refers more particularly to the portable type provided with a swinging handle, a bag directly connected to the fan casing, and also a suction tool directly connected to the fan casing.

One of the objects of the invention is to carry the bag upon the swinging handle with the discharge opening of the bag at its upper end, this opening being closed by means of a clip carried upon the handle at its front side, whereby liability of dirt dropping from the bag is avoided and also the bag rests upon the handle when the latter is swung downwardly into horizontal position or into a position where it extends substantially parallel to the axis of the vacuum cleaner body. Another object is the provision of a simple device having a snap action for detachably securing the bag coupling to the discharge nozzle of the fan casing. Other objects of the invention reside in the novel features of construction and combinations and arrangements of parts as more fully hereinafter set forth.

In the drawings:

Figure 1 is a side elevation of a vacuum cleaner embodying my invention;

Figure 2 is a front elevation thereof;

Figure 3 is a cross section on the line 3—3 of Figure 2;

Figure 4 is a cross section therethrough, showing the parts of the bag coupling securing device in expanded position;

Figure 5 is a similar view showing the bag coupling securing device in contracted position;

Figure 6 is a top plan view thereof.

The body of the vacuum cleaner comprises the motor casing 1 and the fan casing 2, the suction tool or nozzle 3 being directly connected to the fan casing. The fan casing has a tangential discharge terminating in the discharge nozzle 4 to which the bag coupling 5 of the bag 6 is detachably secured. 7 is a handle having a bifurcated lower end embracing the motor casing 1 and pivotally connected thereto at its sides, this handle being adapted to be swung downwardly into horizontal position or into a position where it extends substantially parallel to the axis of the body of the vacuum cleaner, at which time, the handle is very close to the floor.

The bag 6 has its discharge opening at its upper end so that liability of dirt dropping therefrom is avoided. 8 is a U-shaped clip yieldably carried upon the front face of the handle 7 by a suitable means such as the coil spring 9, this clip being adapted to engage opposite sides of the upper end of the bag to close its discharge opening and also to support the bag upon the handle. 10 is a hook extending rearwardly from the fan casing 2 and at substantially the same height as the discharge nozzle 4 of the fan casing. This hook is adapted to engage in an eye in the lower end of the bag and cooperates with the bag coupling 5 secured to the discharge nozzle 4 to retain the lower end of the bag in extended position.

With the above arrangement, it will be seen that in addition to supporting the bag upon the swinging handle with the discharge opening of the bag at its upper end and closed by the clip carried upon the handle, the bag is supported in front of the handle so that when the latter is swung into horizontal position, the bag is supported upon the handle and retained out of engagement with the floor. This is very important, since with a vacuum cleaner of the type having a swinging handle which is adapted to swing into horizontal position adjacent to the floor, insufficient clearance is allowed between the handle and the floor for the bag, so that if the bag were carried in its usual position at the rear of the handle, it would be drawn over the floor.

Another important feature of my invention resides in the following construction of device for detachably securing the bag or like coupling to the discharge nozzle of the fan casing: This bag or like coupling has the tubular part 11 which telescopes within

the neck of the bag, or a hose, and is secured thereto by suitable means such as the wire 12. The coupling also has the enlarged end 13 and the intermediate annular flange 14, the enlarged end being of a diameter to freely fit over the end of the discharge nozzle 4. To form an air tight seal between the coupling and the discharge nozzle, there is the annular sealing member 15 formed of suitable material such as rubber secured within the enlarged end 13 and against the annular flange 14, this sealing member being engaged by the end of the discharge nozzle.

The enlarged end 13 has the outwardly extending annular bead 16 forming an annular groove within which is adapted to lie the resilient wire 17 of the securing device, the diameter of the bead being such that when the wire is lying within the same in expanded condition, the inner diameter of this wire is substantially the same as the inner diameter of the main portion of the enlarged end. The bead has the elongated slots 18, 19 and 20 therein, through the first of which the ends 21 and 22 of the wire 17 pass outwardly, and through the latter of which the return-bends 23 of the wire extend outwardly, the arrangement being such that movement of the wire longitudinally of the coupling is prevented. These return-bends are of sufficient length to prevent this longitudinal movement even when the wire is in contracted position. The discharge nozzle 4 is provided with an annular groove 24 which registers with the groove formed by the bead of the coupling when the coupling is assembled upon the nozzle, this annular groove 24 being engageable in by the wire 17 when the latter is contracted.

To contract the wire, I have provided a snap lock comprising the links 25 and 26 which are respectively pivotally connected to the ends 21 and 22 of the wire and are also pivotally connected to each other at 27. The pivot 27 connects one end of the link 25 to the link 26 intermediate its ends, and the arrangement is such that when the coupling is secured to the discharge nozzle by swinging the link 26 in a clockwise direction to contract the wire 17, the pivot 27 is offset outwardly beyond the pivots connecting the ends of the wire 21 and 22 respectively to the links 25 and 26 so that an off-center lock is formed.

The links 25 and 26 are preferably formed of stampings and the link 25 is U-shaped and formed of a single piece, while the link 26 is also U-shaped but preferably formed of two pieces, the free or outer ends of which are twisted through an angle of approximately 90° and fixedly secured to each other to form the handle 28.

What I claim as my invention is:

1. The combination with a discharge nozzle having a groove therein, of a bag or like coupling telescopically engageable with said nozzle, a resilient wire carried by said coupling and engageable in the groove in said nozzle, and off-center locking means connected to said wire to contract the same to engage in said groove.

2. The combination with a discharge nozzle having a groove therein, of a bag or like coupling engageable over the end of said nozzle, a wire carried by said coupling and engageable in the groove in said nozzle, said wire having ends extending outwardly through said coupling, and links pivotally connected to the ends of said wire and to each other for contracting said wire to force the same into engagement with the groove in said nozzle.

3. The combination with a discharge nozzle having an annular groove near its end, of a bag or like coupling engageable over the end of said nozzle and provided with an outwardly extending annular bead forming a groove in its inner face adapted to register with the annular groove in said nozzle, a wire adapted to lie within the groove formed by said bead and having ends extending outwardly through said coupling, a link pivotally connected to one of the ends of said wire, and a second link pivotally connected to the other of the ends of said wire and to said first-mentioned link intermediate its ends, the pivot between said first-mentioned link and one end of the wire being adapted to be offset outwardly beyond the link connecting the pivots of said second-mentioned link.

4. In a vacuum cleaner, the combination with a discharge nozzle and a dirt retaining bag, of means for connecting the bag to the nozzle, said means including a band having a portion secured to the bag and having an enlarged portion surrounding the nozzle, the enlarged portion having an annular groove and an opening, the nozzle having an annular groove, a member normally engaging the first-mentioned groove and engageable with the last-mentioned groove, portions of said member projecting through said opening, and off-center locking means connected to the projecting portions of said member for holding said member in engagement with the last-mentioned groove.

5. The combination with a vacuum cleaner, a nozzle having a groove therein, a coupling telescopically engageable with said nozzle and provided with an enlarged portion surrounding the nozzle, a wire carried by said coupling normally engaging the said groove, and locking means connecting the ends of the wire for maintaining the wire in its normal position and also for expanding the wire into the enlarged portion of the coupling.

6. The combination with a vacuum cleaner

nozzle having a groove therein, a coupling telescopically engageable with said nozzle and provided with an enlarged portion surrounding the nozzle, a wire carried by said coupling normally engaging the said groove, and locking means connecting the ends of the wire for maintaining the wire in its normal position and also for expanding the wire into the enlarged portion of the coupling, said coupling provided with slots for receiving portions of the wire to maintain the relative longitudinal position of the parts.

In testimony whereof I affix my signature.

EGBERT R. FIELD.