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COUPLING FOR VACUUM CLEANERS

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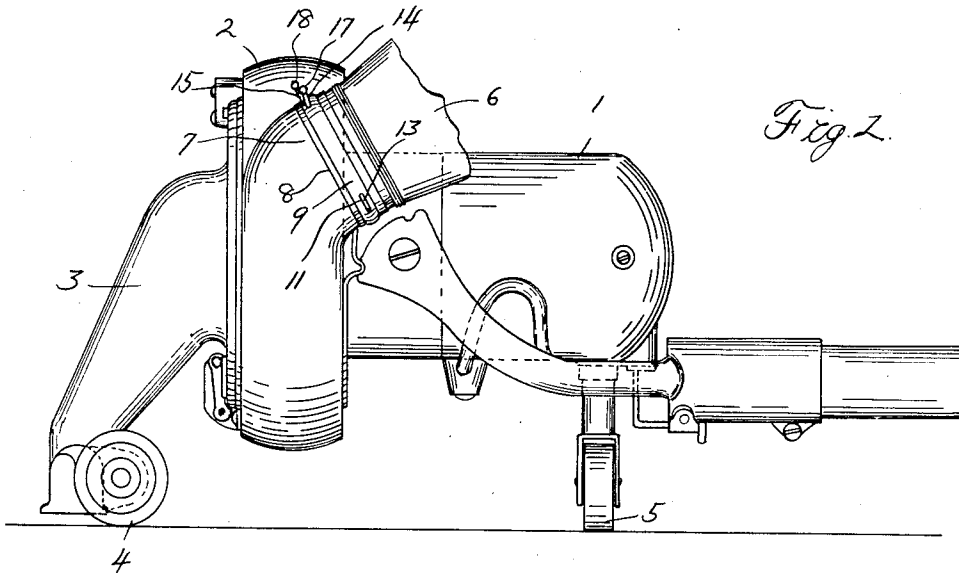


Fig. 1.

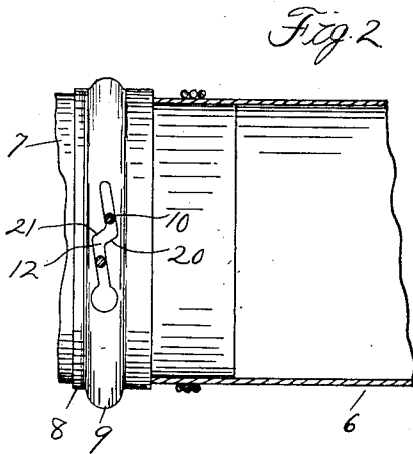


Fig. 2.

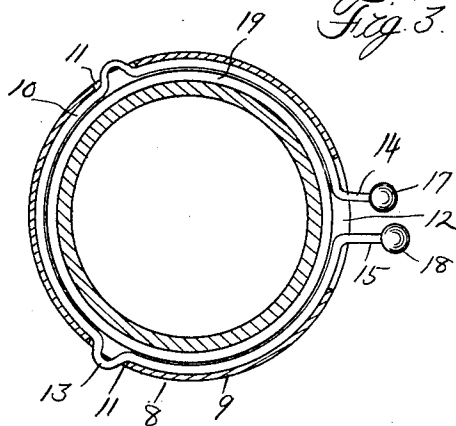


Fig. 3.

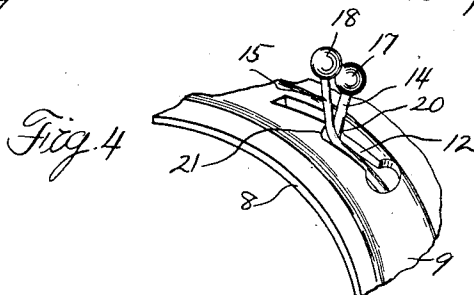


Fig. 4.

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UNITED STATES PATENT OFFICE.

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COUPLING FOR VACUUM CLEANERS.

Original application filed March 20, 1922, Serial No. 454,060. Divided and this application filed January 22, 1923. Serial No. 614,326.

The invention relates to vacuum cleaning apparatus and has for its object the provision of a simple construction of coupling for securing the bag to the discharge of the fan casing, which permits of quickly securing or removing the bag to or from the discharge. With this object in view, the invention resides in the novel features of construction as more fully hereinafter set forth.

10 This application is a division of my co-pending application Serial No. 454,060 filed March 20, 1922 upon vacuum cleaner.

In the drawings:

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

Figure 2 is a sectional elevation of the coupling;

20 Figure 3 is a transverse section through the discharge of the fan casing and the coupling;

Figure 4 is a perspective view of a portion of the coupling.

25 The vacuum cleaner in the present instance has the motor casing 1, the fan casing 2 and the suction tool or nozzle 3 and is supported by the rolls 4 near opposite ends of the suction tool, and the castor wheel 5 near the rear end of the motor casing.

30 For detachably securing the dirt retaining bag 6 to the tubular outlet or discharge 7 of the fan casing 2, I have provided a coupling having a snap lock. In detail, 8 is a tubular coupling member secured to the inlet end of the bag and adapted to telescopically engage over the tubular discharge 7 of the fan casing. This tubular coupling member has the annular outwardly extending bead 9 in its periphery forming in its inner face an annular groove adapted to receive the securing device 10 which is in the form of a resilient wire normally occupying the annular groove so that it will not interfere with the telescopic movement of the coupling member over the discharge. The bead has in its periphery the spaced apertures 11 as well as the zig-zag aperture 12, the latter having circumferentially extending end slots with laterally offset adjacent ends which are connected by a transverse slot. The wire 10 has outwardly bent portions 13 engaging in the apertures 11 and also has outwardly extending arms 14 and 15 engaging respectively in the

end slots of the zig-zag aperture 12 so that accidental disengagement of the wire from the tubular coupling member is prevented. 55 One end 16 of one of the end slots of the zig-zag aperture is enlarged to permit of the passage of the heads 17 and 18 upon the ends of the arms 14 and 15 respectively to manually engage or disengage the wire with or from the tubular coupling member. The tubular discharge 7 of the fan casing is provided with the annular groove 19 in its outer periphery near its end in which the wire 10 is engageable when the latter is contracted to thereby 65 secure the tubular coupling member to the tubular discharge.

To hold the wire in contracted position, the heads 17 and 18 interlock after they have been forced past each other to a position such 70 as shown in Figure 4, the arms of the wire being resilient to permit of manual movement of these heads past each other to this position. The shoulders 20 and 21 formed by the edges of the transverse slot of the zig-zag aperture 12 engage the arms 14 and 15 respectively of the wire when the heads are interlocked to prevent further movement of the arms and further contracting movement of the wire. When the wire is in engagement with the annular groove of the tubular discharge its outwardly extending bends are still in engagement with their respective apertures of the tubular coupling member so that the bag is firmly secured to the discharge of the fan casing. 85

From the above description, it will be readily seen that I have provided a simple construction of coupling for securing the bag to the fan casing, this coupling being so constructed that the bag may be quickly removed from or secured to the fan casing. Also, that the coupling has a snap lock which may be easily operated.

What I claim as my invention is:

95 1. A coupling for vacuum cleaners including the discharge tube of the fan casing having an annular groove in its periphery near its outer end, a tubular coupling member telescopically engageable over said discharge tube and having an annular groove in its inner periphery and openings into said groove, and means for securing said coupling member to said discharge tube comprising a mem- 100

ber engageable in the groove in said coupling member and having a projection extending through one of the openings therein and cooperating ends extending through another of the openings therein, said securing member being normally expanded and housed within the groove in the coupling member but being contractible to engage in the annular groove in said discharge tube and having its cooperating ends adapted to yieldably interlock with each other when in contracted position.

2. A coupling for vacuum cleaners including the tubular discharge of the fan casing, and an annular groove in the periphery of said discharge near its outer end, a coupling member telescopically engageable over said discharge and having an annular groove in its periphery with openings into said groove, one of said openings having a zig-zag shape, and means for securing said coupling member to said discharge comprising a resilient member engageable in the groove in said coupling member and having a projection extending through one of the openings therein, and cooperating ends extending through the zig-zag opening therein, said securing member being contractible to engage in the annular groove in said discharge and having its cooperating ends adapted to yieldably lock with each other when in contracted position, the shoulders formed upon said zig-zag opening limiting the movement of the cooperating ends of said securing member when locked with each other.

3. A coupling for vacuum cleaners including a discharge tube of the fan casing, a band telescopically engageable with said discharge tube, a hollow bead on said band, a contractible member within said bead contractible to grip said discharge tube, a plurality of projections on said member adapted to project through the outer wall of the said hollow bead when the said member is contracted to prevent relative longitudinal movement of the band with respect to said discharge tube, additional projections on said member adapted to project through the outer wall of the hollow bead, heads on said last mentioned projections adapted to be interlocked for holding said member contracted and means formed in the wall of said bead for guiding said heads into inter-locking engagement.

4. The combination with a discharge tube of a vacuum cleaner and a dirt retaining bag, of means for attaching the bag to the tube, said means including a band secured to the bag and surrounding the discharge tube, said band having a zig-zag slot and an opening therein, and a member surrounding said discharge tube within said band adapted to grip said discharge tube, said member having a portion projecting through said opening and having members projecting through said slot adapted to be interlocked for holding the

member aforesaid in gripping engagement with said tube.

5. The combination with a discharge tube of a vacuum cleaner and a dirt retaining bag, of means for attaching the bag to the tube, said means including a band secured to the bag and surrounding the discharge tube, a resilient member surrounding said discharge tube within said band adapted to be contracted to grip said discharge tube, said member having cooperating interlocking ends projecting through a slot in said band, and means associated with said slot for limiting the contracting movement of said resilient member.

6. The combination with a discharge tube of a vacuum cleaner and a dirt retaining bag, of means for attaching the bag to the tube, said means including a band secured to the bag and surrounding the discharge tube, said band being provided with relatively offset slots, a resilient member surrounding said discharge tube within said band adapted to be contracted to grip said discharge tube, said member having cooperating interlocking ends projecting through and operable in said slots respectively.

7. The combination with a discharge tube of a vacuum cleaner and a dirt retaining bag, of means for attaching the bag to the tube, said means including a band secured to the bag and surrounding the discharge tube, said band being provided with offset slots, a resilient member surrounding said discharge tube within said band adapted to be contracted to grip said discharge tube, said member having cooperating interlocking ends projecting through and operable in said slots respectively, and means associated with said slots for limiting the contracting movement of said resilient member.

8. A coupling for vacuum cleaners including a discharge tube of a fan casing provided with an annular recess in its outer periphery adjacent its end, a tubular coupling member telescopically engageable with said discharge tube to surround the end portion thereof, said tubular coupling member provided with an annular outwardly extending bead adapted to register radially with the said recess, said bead having a pair of openings, a resilient clamping member surrounding said discharge tube and adapted in its unclamped position to lie within the bead whereby said coupling member and discharge tube may be freely relatively longitudinally moved into said telescoped position, means whereby said resilient clamping member may be contracted to move the same radially inwardly for clamping engagement in the said annular recess, means integral with said last mentioned means for locking the said member in its contracted position, said resilient clamping member being provided with a projection engageable in its said contracted position with one of the openings in the said bead whereby

relative longitudinal movement of the discharge tube and coupling member is prevented.

9. A coupling for vacuum cleaners including a discharge tube of a fan casing provided with an annular recess in its outer periphery adjacent its end, a tubular coupling member telescopically engageable with said discharge tube to surround the end portion thereof, said tubular coupling member provided with an annular outwardly extending bead adapted to register radially with the said recess, said bead having a pair of openings, a resilient clamping member surrounding said discharge tube and adapted in its unclamped position to lie within the bead whereby said coupling member and discharge tube may be freely relatively longitudinally moved into said telescoped position, means carried by the clamping member extending radially through one of said openings for contracting said resilient clamping member to move the same radially inwardly for clamping engagement in the said annular recess and for locking said member in its contracted position said resilient clamping member being provided with a portion return bent radially to extend outwardly through the other of said openings, said return bent portion being engageable in its said contracted position, with one of the openings in the said bead whereby

relative longitudinal movement of the discharge tube and coupling member is prevented.

10. The combination with the discharge tube of a vacuum cleaner and a dirt retaining bag, of means for attaching the bag to the tube, said means including a band secured to the bag and surrounding the discharge tube, a contractible member surrounding said discharge tube and carried by said band, interlocking projections carried by said member for locking the said member in contracted position and means on said band for guiding said projections into interlocking engagement with each other.

11. The combination with the discharge tube of a vacuum cleaner, and a dirt retaining bag, of means for attaching the bag to the tube, said means including a band secured to the bag and surrounding the discharge tube, a hollow bead on said band, a contractible member arranged within said hollow bead and surrounding said discharge tube, interlocking projections on said contractible member for locking the same in contracted position, and shoulders on said bead arranged to guide said projections into interlocking engagement with each other.

In testimony whereof I affix my signature.

EGBERT R. FIELD.