March 20, 1962 D. H. HUNT 3,025,894

VACUUM CLEANERS

Filed June 8, 1959

Fig. 1.

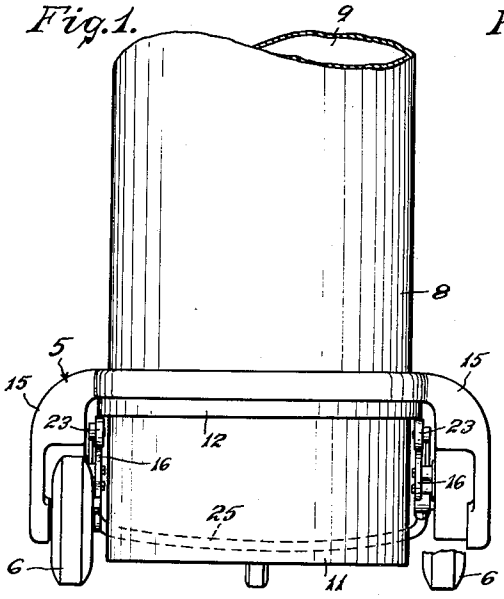
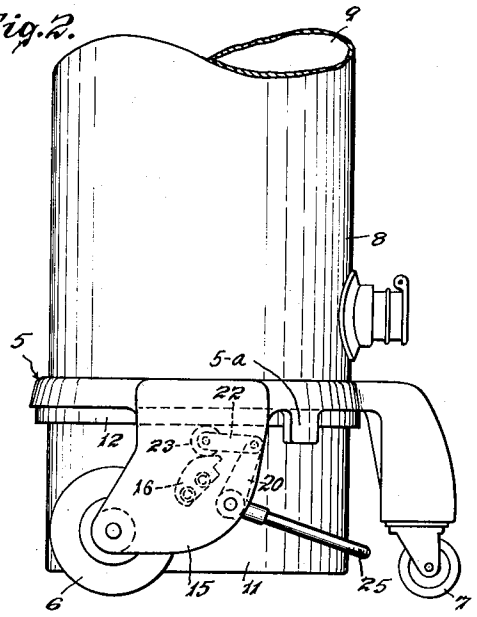


Fig. 2.



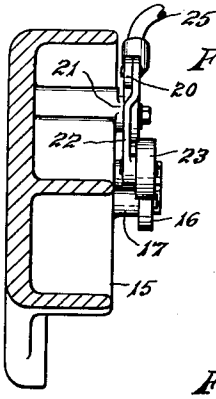


Fig. 6.

Fig. 3.

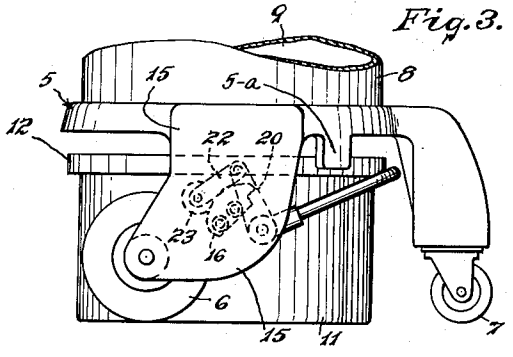


Fig. 4.

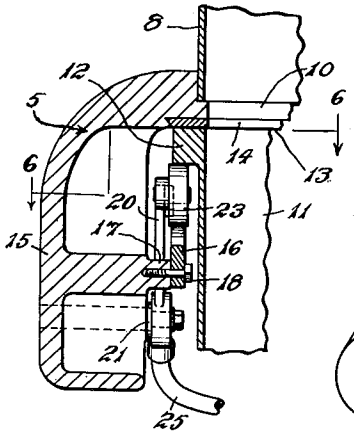
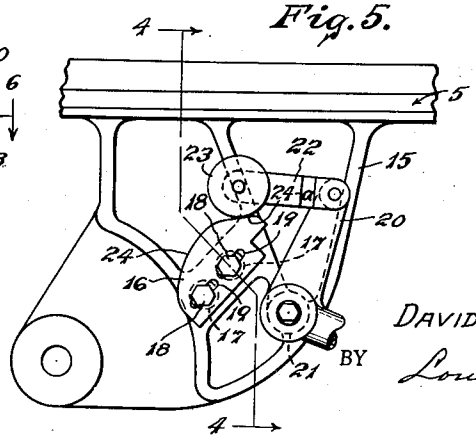


Fig. 5.



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VACUUM CLEANERS

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5 Claims. (Cl. 141—369)

This invention relates to vacuum cleaners, and more particularly to vacuum cleaners of the type having a dust chamber and a detachable dust-collecting receptacle, or container, mounted underneath said dust chamber to receive the dust and dirt therefrom.

It is an object of the present invention to provide an improved, highly efficient mechanism for such vacuum cleaners which will facilitate the operation of lifting the dust and dirt container into position and securing it thereon, and also of removing said container therefrom.

A further object of this invention is to provide an improved mechanism which will lift the said dust container into its normal position relatively to the dust chamber and secure it in said position by a simple operation of a conveniently accessible operating lever.

Further objects and advantages of this invention will be more clearly understood from the following description and the accompanying drawing in which:

FIG. 1 is a front view of the lower portion of a vacuum cleaner embodying my present invention.

FIG. 2 is a side view thereof.

FIG. 3 is a similar view illustrating the operation of my improved mechanism.

FIG. 4 is an enlarged sectional front view, taken on line 4—4 of FIG. 5, showing the mechanism of my invention.

FIG. 5 is a side view of said mechanism.

FIG. 6 is a sectional plan view on line 6—6 of FIG. 4 with the dust container removed.

As illustrated in the drawing, the numeral 5 denotes the base of a conventional, floor-type, portable vacuum cleaner which is mounted on wheels 6—6 and 7. The said base includes a ring-shaped portion which has a cylindrical housing 8 mounted thereon containing a dust chamber 9 which is disposed over an opening 10 in said ring-shaped portion. Below the said opening there is provided a dust and dirt container 11 having an annular flange 12 at the top thereof adapted to abut the marginal edge portion 13 of the opening 10. If desired, a resilient sealing gasket 14 may be provided between said flange and said edge portion to render a tight and dust-proof seal between the container and the dust chamber.

The present invention is embodied in two identical mechanisms which are mounted at opposite sides of the dust container on the inner sides of opposed, depending leg portions 15—15 of the base 5 and are jointly operated by a single operating member. Each of said mechanisms includes a cam plate 16 which is adjustably secured to inwardly projecting bosses 17—17 on said leg portion by means of bolts 18—18 extending through slots 19—19 in said cam plate; and an upwardly extending bell crank lever 20 which is pivotally mounted on a similar inwardly projecting boss 21 for pivotal movement about an axis extending perpendicularly to said leg portion. A link 22 is pivotally connected to the upper end of said lever 20, and a roller 23 is rotatably mounted upon the free end of said link. The said roller rests on an upwardly inclined cam surface 24 of the cam plate 16 and is adapted to engage the underside of the flange 12 on the dust container 11 as clearly shown in FIG. 4.

The levers 20—20 of the opposed mechanisms are connected for simultaneous operation by a common handle in the form of a bail 25 which extends rearwardly with respect to said base around the rear portion of the dust container 11.

In order to secure said dust container to the vacuum cleaner, the said bail 25 is first lifted to the position shown in FIG. 3 wherein the roller 23 will roll downwardly on the cam surface 24 of the cam plate 16 to a position below the underside of the flange 12 on the dust container when said dust container is resting on the floor supporting said vacuum cleaner. The container is then urged under the vacuum cleaner, or the vacuum cleaner may be moved over the container, to the position illustrated in FIG. 3 wherein the flange 12 on said dust container abuts guide-stops 5–*a* which depend from said base portion 5 adjacent and rearwardly of each leg 15 and function to position said container in alignment with the opening 10. The bail 25 is then pushed downwardly, to the position shown in FIG. 2, causing the rollers 23—23 at the opposite sides of the dust container to roll upwardly on the lifting portions of the cam surfaces 24 into engagement with the underside of said flange 12 and to cooperatively lift said container into position against the base 5. Axial alignment of the said dust container 11 with the opening 10 is insured by the clockwise rotation of said rollers 23—23 acting upon the underside of the flange 12 which maintains said flange in constant engagement with the guide-stops 5–*a*. The rollers 23—23 then ride onto upper or wedging portions 24–*a* of the cam surfaces 24 which are at a lesser angle than the lifting portions of said cam surfaces and cause said rollers to force the flange 12 into sealed engagement with the marginal edge portion 13 of the opening 10. The inclination of said wedging portions 24–*a* of the cam surfaces 24 is such that the rollers will not move downwardly thereon under the weight of the dust container and its contents. The degree of tightness with which the flange 12 is forced into sealed engagement with the marginal edge portion 13 may be controlled by merely loosening the bolts 18—18 and adjusting the cam plates 16—16 as necessary.

It will be noted that by locating the bail 25 so that it opens towards the front of the base 5, the dust container 11 may be conveniently urged through the open front of the base into position to be engaged by the rollers 23—23. If desired, the said bail may also be conveniently operated with the foot.

I claim:

1. In a vacuum cleaner including a base, a dust chamber on said base, an opening in said base communicating with said dust chamber, and a dust container mountable upon said base in register with said opening and having an annular flange at the top thereof; the improvement which comprises: cooperating means on opposite sides of said base for lifting and securing said dust container thereto, each of said cooperating means including a stationary member having an upwardly inclined cam surface, an operating lever pivotally mounted on said base, a link pivotally connected at one end to said operating lever, a roller rotatably mounted on the opposite end of said link disposed so as to ride on said cam surface and engageable with the underside of said flange upon movement of the operating lever to raise the dust container into position abutting the marginal edge portion of said opening and to secure said dust container in working position.

2. In a vacuum cleaner including a base, a dust chamber on said base, an opening in said base communicating with said dust chamber, and a dust container mountable upon said base in register with said opening and having an annular flange at the top thereof engageable with the marginal edge portion of said opening; the improvement which comprises: cooperating means for lifting and se-

curing said dust container in working position in register with said opening, said cooperating means including at opposite sides of said base a stationary cam plate secured to the base and having an upwardly inclined cam surface, an operating lever pivotally mounted on said base adjacent to said cam plate, a link pivotally connected at one end to said operating lever, a roller rotatably secured to the free end of said link and disposed so as to roll upon said cam surface, said roller being adapted upon operation of the operating lever to roll upwardly on said cam surface and to engage the underside of said flange whereby to lift said dust container into working position, said cam surface including a wedging portion for wedging said roller against the flange to secure said dust container in position.

3. In a vacuum cleaner including a base having side members depending therefrom and an open front portion, a cylindrical body forming a dust chamber on said base, an opening in the top of said base communicating with said dust chamber, and a detachable dust container mounted on said base in register with said opening and having an annular flange at the top thereof; the improvement which comprises: cooperating means on opposite sides of said base for lifting and securing said dust container thereto, each of said cooperating means including a stationary cam plate adjustably secured to the base and having an upwardly inclined cam surface thereon including a lifting and wedging portion, an operating lever pivotally mounted on said base adjacent to said cam plate, a link pivotally connected at one end to said lever, a roller rotatably mounted on the opposite end of said link disposed so as to ride on said cam surface, whereby upon pivotal movement of said operating lever in one direction said roller is movable forwardly on said cam surface to a position below the plane of the underside of said flange when said dust container is resting on the floor supporting said vacuum cleaner, said roller being movable upwardly on said cam surface upon pivotal movement of said lever in the opposite direction to engage the underside of said flange and to raise and secure said dust container in a working position wherein said flange is in register and sealed engagement with the marginal edge portion of said opening.

4. In a vacuum cleaner including a base, a dust chamber on said base, an opening in said base communicating with said dust chamber, and a dust container mountable upon said base in register with said opening and having an annular flange on the top thereof; the improvement which comprises: cooperating opposed means on opposite sides of said base for lifting said dust container and securing it thereto, each of said opposed means including a stationary member having an upwardly inclined cam surface, an operating lever pivotally mounted on said base, a link pivotally connected at one end to said operating lever, a roller rotatably mounted on the opposite end of said link disposed so as to roll on said cam surface and engageable with the underside of said flange upon movement of the operating lever to raise the dust container into position abutting the marginal edge portion of said opening and to secure said dust container in working position, and stop means on said base adjacent the marginal edge portion of said opening engageable by the flange on said dust container for positioning said dust container in register with said opening, said rollers, during lifting movement of said dust container, urging said dust container into engagement with said stop means.

5. In a vacuum cleaner, a base having a ring-shaped portion defining an opening therein, a housing on said base having a dust chamber communicating with said opening, and a dust container mountable on said portion in register with said opening and having an annular flange at the top thereof; the improvement which comprises: cooperating opposed means on opposite sides of said base for lifting said dust container and securing it thereto, each of said opposed means including a stationary member having an upwardly inclined cam surface, an operating lever pivotally mounted on said base, a link pivotally connected at one end to said operating lever, a roller rotatably mounted on the opposite end of said link disposed so as to roll on said cam surface, and stop means depending from said ring-shaped portion adjacent the marginal edge of said opening, said rollers being operable upon movement of said operating lever to engage the underside of said flange and move said container upwardly and into engagement with said stop means whereby it is guided into register with said opening.

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