Sept. 12, 1939. D. HAYS ET AL 2,172,973

VACUUM CLEANER

Filed Dec. 23, 1936

Fig. 1.

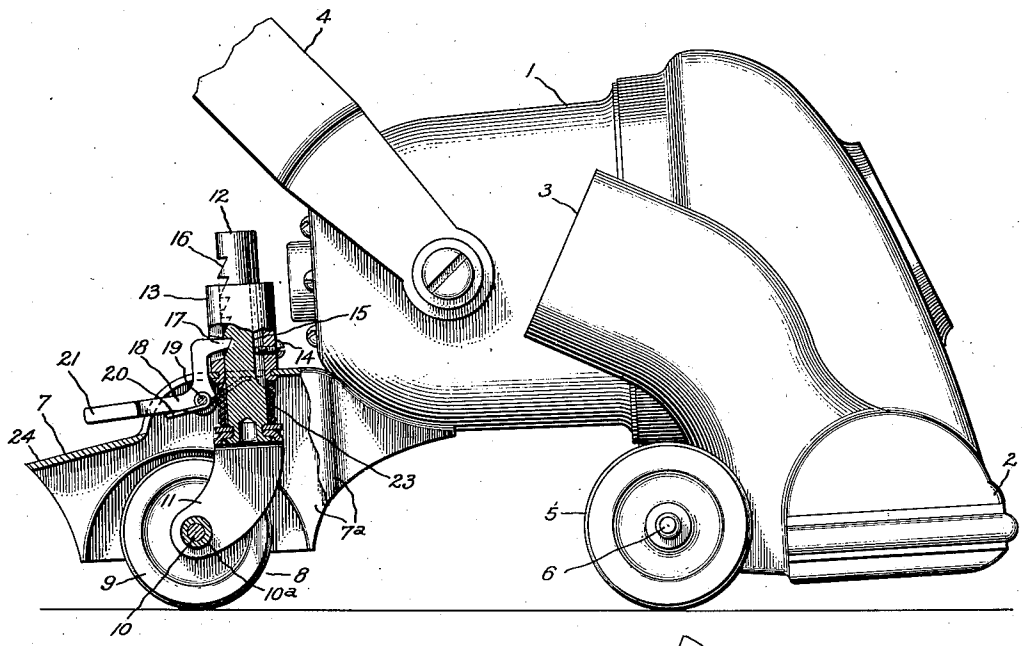


Fig. 2.

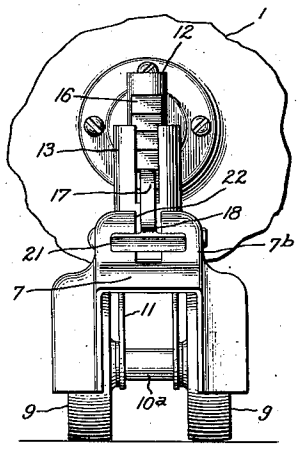
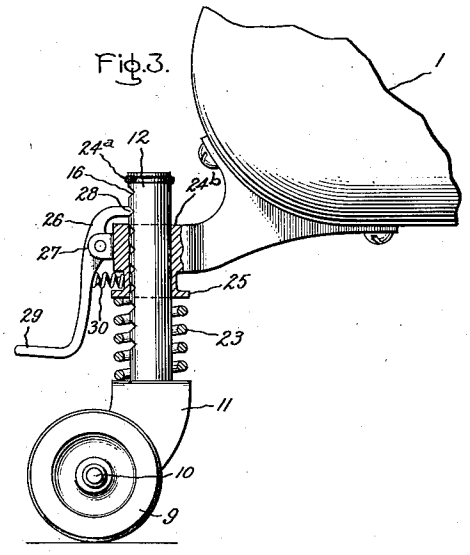


Fig. 3.



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Patented Sept. 12, 1939

2,172,973

UNITED STATES PATENT OFFICE

2,172,973

VACUUM CLEANER

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Application December 23, 1936, Serial No. 117,352

2 Claims. (Cl. 15—16)

The present invention relates to movable floor tools such as vacuum cleaners, and particularly to a supporting arrangement therefor by means of which the position of a part thereof such as the suction nozzle may be readily adjusted with respect to the floor.

The object of our invention is to provide an improved construction for supporting vacuum cleaners and the like, and for a consideration of what we believe to be novel and our invention attention is directed to the accompanying description and the claims appended thereto.

In the accompanying drawing, Fig. 1 is a side elevation, partly broken away, of a vacuum cleaner having a supporting structure embodying our invention, Fig. 2 is a rear view of the supporting structure, and Fig. 3 is a side elevation of a modification of the supporting structure.

For the purpose of illustration, our invention is shown applied to a vacuum cleaner having a body or casing 1 within which is mounted a motor driven fan which draws air through a suction nozzle 2 and discharges the air through a discharge conduit 3. A suitable bag may be connected to the discharge conduit for filtering the dust from the air. At the rear of the casing is pivoted a fork 4 which is adapted to be connected to a suitable handle for moving the cleaner over the surface to be cleaned. At the front end of the cleaner casing are wheels 5 rotatably carried on suitable shafts 6 suitably fixed to the casing in a manner not shown. At the rear end of the casing is fixed a bracket 7 which serves as a housing for a double-wheeled caster 8. The bracket has side walls 7a and a top wall 7b. The caster comprises wheels 9 which are fixed to a shaft 10 rotatably carried in a sleeve 10a fixed between the arms of a fork 11. The fork is fixed to a spindle 12 which is slidably carried in a sleeve 13 fixed to the top wall 7b of the bracket 7. The sleeve 13 carries a screw 14 which projects within a longitudinal slot 15 in the spindle and prevents rotation of the spindle with respect to the sleeve. The upper end of the slot serves as a stop for limiting the downward movement of the spindle. On the rear side of the spindle 12 are a series of notches 16 which are adapted to be engaged by a latching member 17 to hold the spindle in a fixed position relative to the bracket 7.

The latching member 17 is integral with a bell crank lever 18 which is pivoted on a rod 19 fixed between the side walls 7a of the bracket. The latching member 17 is urged toward the notches 16 by means of a coil spring 20 arranged around the rod 19 and having its ends respectively bearing on the underside of the top wall 7b of the bracket and the underside of the arm 21 of the bell crank lever 18. The arm 21 of the bell crank lever projects through a slot 22 in the top wall of the bracket so that it is accessible to the operator's foot. By exerting a downward pressure on the arm 21 the latching member 17 may be moved clear of the notches 16. When this is done, the spindle 12 may be moved downward relative to the bracket 7 by means of a coil spring 23 arranged around the spindle and between the lower end of the sleeve 13 and the upper surface of the caster fork 11. The spring biases the spindle downward with respect to the bracket. Since the front supporting wheels 5 are fixed with respect to the cleaner casing it is apparent that downward movement of the spindle with respect to the bracket will cause the cleaner casing to be pivoted about the wheels 5 in a clockwise direction as viewed in Fig. 1 thereby tending to lower the suction nozzle and bring it closer to the surface being cleaned. Should the operator wish to raise the suction nozzle with respect to the surface being cleaned this can be effected by means of a downward pressure exerted on the rear end of the casing sufficient to compress the coil spring and thereby effect movement of the spindle 12 in opposition to the force of the spring 23. This pressure may be applied in any suitable manner, for example, through the handle fork 4 or through the bracket 7. It will be noted that this arm 21 projects over the bracket 7 and that it may be pressed against the upper surface of the bracket 7 by means of a downward pressure exerted on the arm by the operator's foot, in which case the pressure required to move the caster spindle in opposition to the spring 23 is applied through the arm 21. It is also possible to apply the necessary pressure to the bracket 7 by resting the operator's foot partially on the rear end 24 of the bracket and partially on the arm 21. When the nozzle is at the desired elevation with respect to the surface being cleaned the arm 21 is released and spring 20 moves the latching member 17 into engagement with one of the notches 16 thereby preventing further movement of the rear wheels relative to the bracket which would change the relative position of the suction nozzle. The suction nozzle may be moved upward by merely exerting a downward force through the operator's foot on the end 24 of the bracket 7. This force, due to the inclined lower surfaces of the notches 16, causes the latching member 17 to be forced out of the notch in which it fits, after which the spring 20 forces it into the next lower

notch. In case the suction nozzle is lowered too far, it may therefore be easily raised in steps corresponding to the spacing of the notches. From one aspect, the notches 16 and the latching member 17 constitute a ratchet. The inclined lower surfaces of the notches make the operation easier by decreasing the force required to force the latching member 17 out of the notches where a downward pressure is applied to the bracket.

In Fig. 3 is shown a modification of the construction for adjustably supporting the rear wheels with respect to the cleaner casing. The remaining part of the cleaner is of the same construction shown in Fig. 1 and is not illustrated in this figure. The caster shown in Fig. 3 is of the same general construction as that shown in Figs. 1 and 2 and the corresponding parts are indicated by the same reference numerals. The caster spindle 12 is slidably and non-rotatably carried in an opening in a bracket 24b fixed to the rear end of the cleaner casing. The caster spindle is urged downward with respect to the bracket by means of the coil spring 23 arranged around the spindle 12 and between the upper end of the caster fork 11 and a collar 25 integral with the bracket 24b. Downward movement of the spindle is limited by a snap ring 24a on the upper end of the spindle. As in the construction shown in Fig. 1 the coil spring 23 tends to move the caster spindle downward with respect to the bracket 24b and thereby tends to pivot the cleaner casing about the front supporting wheels 5 so as to move the suction nozzle closer to the surface being cleaned. The caster spindle is held in a fixed position with respect to the bracket 24b by means of a latching member 26 which is pivotally carried between ears 27 on the bracket. The latching member has a pointed end 28 which is adapted to engage one of the notches 16 in the caster spindle and has an outwardly projecting arm 29 which is adapted to be engaged by the operator's foot. A coil spring 30 arranged between the bracket 24b and the latching member biases the latching member in a direction to move the pointed end 28 into one of the notches 16. By exerting a downward pressure on the arm 29 the pointed end 28 of the latching member may be moved clear of the notches 16 thereby freeing the caster spindle for movement relative to the bracket 24b. The position of the caster spindle with respect to the bracket may now be adjusted exerting a downward pressure on the arm 29 either to move the cleaner casing downward in opposition of the force of the coil spring 23 or else to limit the upward movement of the cleaner casing under the action of the spring 23. When the nozzle is in the desired position the arm 29 is released thereby permitting the pointed end 28 to be moved into one of the notches 16 to hold the caster spindle in fixed relation to the bracket 24b.

What we claim as new and desire to secure by Letters Patent of the United States is:

1. In a floor tool of the type comprising a body having a part adapted to cooperate with a floor, a floor engaging supporting element for said body mounted for movement relative thereto whereby the position of said part is adjustable relative to the floor, means for biasing said element downward with respect to said body, locking means having a plurality of locked positions for preventing movement of said element by said biasing means whereby said element may be held in a plurality of positions, a control member carried by said body for operating said locking means, said member having a foot engageable part movable downward by the operator's foot to release said locking means, said part extending above a portion of said body so that upon operation of the control member to release said locking means pressure may be applied to said portion of the body by the operator's foot to effect movement of said body and said member in unison thereby effecting movement of said supporting element relative to said body in opposition to said biasing means, and means biasing said control member to the locked position.

2. In a floor tool of the type comprising a body having a part adapted to cooperate with a floor, front and rear supporting wheels therefor, said rear supporting wheels being carried on the lower end of a vertical spindle slidably carried in said body, a spring for biasing said spindle downward relative to said body, a plurality of ratchet teeth in said spindle, a pawl on said body, means for biasing the pawl into engagement with the teeth on the spindle for selectively holding the spindle in one of a plurality of vertical positions with reference to said body, and a foot operated member on said body arranged upon downward pressure thereon to release said pawl to permit sliding movement of the spindle in said body.

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