May 6, 1941. F. RIEBEL, JR 2,240,799

VACUUM CLEANER

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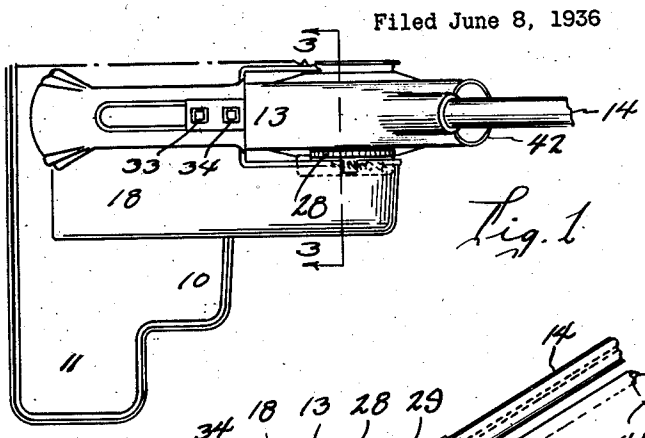


Fig. 1

Fig. 2

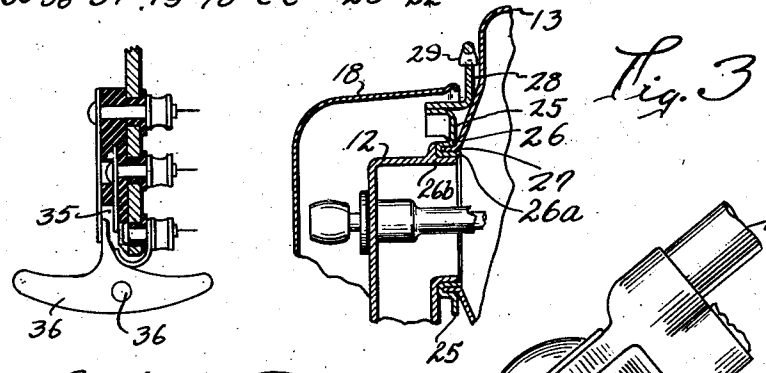


Fig. 3

Fig. 4

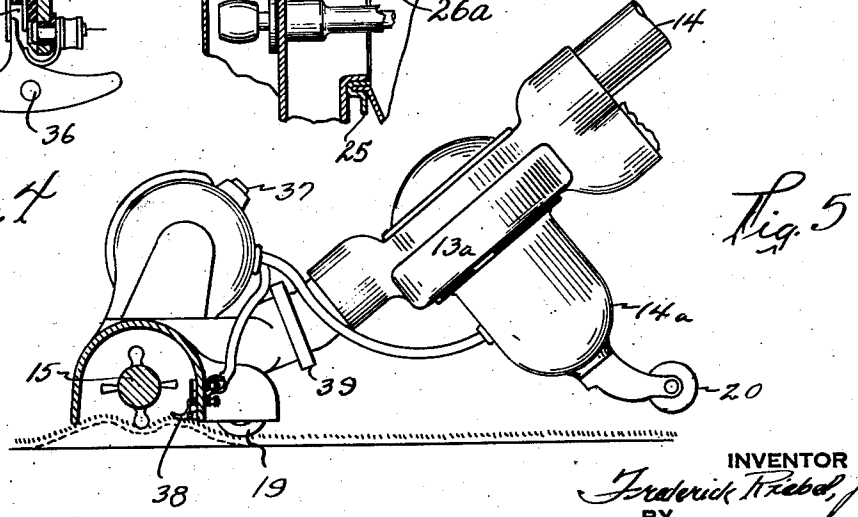


Fig. 5

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VACUUM CLEANER

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5 Claims. (Cl. 15—16)

The object of this invention is to provide a height adjusting mechanism particularly adaptable for use in connection with a cleaner in which the fan case is positioned on a horizontal transverse axis and in which said mechanism is operable from the operator's end of the handle.

Fig. 1 is a plan view of a portion of a cleaner embodying the invention,

Fig. 2 is a longitudinal vertical sectional view of the same,

Fig. 3 is a detail sectional view taken on the line 3—3 of Fig. 1,

Fig. 4 is a detail sectional view illustrating the control shoe,

Fig. 5 is a side elevation partly in section of a modified form of the invention.

Referring now to Figs. 1 to 3, I provide in the form of my invention shown therein, a suction chamber including a body portion 10 having at its forward extremity an agitator chamber 11, and elbows 12 projecting upwardly from the chamber and communicating with the fan case 13 which is double and embodies two rotating fans. The opposed inlets of the fan case 13 are journalled with respect to the elbows 12 so that the fan case and handle 14 which is rigidly secured thereto may together swing as a unit relative to the body of the cleaner. The motor M drives the agitator 15 by means of a belt 16 and drives the fans by means of belts 17. The motor is located in a depression in the top of the suction chamber casting and is concealed beneath a motor cover 18 which also covers the elbows 12.

The cleaner is supported upon front wheels 19 and rear wheels 20 the latter being journalled upon a bracket 21 which is hinged at 22 to the suction chamber 10 and is upwardly urged by a spring 23.

Upon the hinge shaft 22 is secured an operating lever 24 the upper end of which rides against the cam 25 having a plurality of steps in which the lever 24 may engage. The cam 25 is in the form of a ring having an inner U-shaped flange comprising elements 26 and 26a journalling the neck portion 27 of one side of the fan case 13 as shown in Fig. 3, and having the flange 26a in rotatable engagement with the flange 26b of the elbows 12. Said neck therefore serves to form the previously mentioned pivotal connection between the fan case and elbows 12.

Upon the cam 25 is mounted a ratchet 28 which cooperates with a pawl 29 on the end of the rod 30 extended longitudinally through the handle 14. The rod 30 is normally retracted by a spring 31, maintaining the pawl 29 normally out of engagement with the ratchet 28.

By engaging the trigger 32 the pawl 29 may be moved into engagement with the ratchet 28 so as to cause the cam ring 25 to move in unison with the fan case. The cam ring 25 may then be adjusted to any desired position causing the wheel bracket 21 to correspondingly be adjusted in position relative to the body of the cleaner. Upon release of the trigger 32, the pawl 29 will be automatically retracted, leaving the cam ring 25 in the position to which it was moved, the ring 25 being retained in adjusted position as a result of the high frictional engagement of the flange 26b by the flange 26a; the friction between 27 and 26 and 26a is considerably less than that between 26a and 26b, thereby retaining 25 in adjusted position.

The operator is continuously informed of any possible need for adjustment by a pair of signal lamps 33 and 34 respectively mounted on top of the cover 18. These lamps have separate circuits C and C' controlled by a double throw switch 35 embodying a carpet riding shoe 36 which is pivoted at 37 to the suction chamber 10.

The shoe 36, in order to avoid vibrations caused by the fluttering of the carpet under the beater impact is made fairly heavy so that it resists such vibration by its inertia.

The signal 33 may be set to flash on when the carpet is too low and the signal 34 set to operate when the carpet is too high. These signals may be of contrasted colors. Upon seeing one of the signals give warning of necessary adjustment of the rug the operator may compensate by changing the adjustment of the bracket 21.

In the form shown in Fig. 5, a single signal 37 is used which will remain continually lighted as long as the cleaner is properly operated. In this case a single throw switch 38 is employed. The electric connections may be connected with those of the motor M which drives the agitator 15. The cleaner shown in Fig. 5 may embody the type of construction having a fan case 13a driven by a motor 14a and a swivel joint 39 between the inlets of the fan case 13a and the outlet of the suction chamber 10, and wherein adjustment of nozzle height is accomplished by moving the handle 14 vertically.

A bag 40 is hung on rods 41 attached to the under side of the handle 14. It is coupled to the outlet 42 of the fan case by means of a bag coupling 43.

I claim as my invention:

1. In a vacuum cleaner having a floor tool and

including a nozzle; means to vertically adjust said nozzle comprising a pair of trunnions mounted on said floor tool, a fan and a fan case rotatably supported by said trunnions, their common axis of rotation disposed horizontally, a suction chamber in said floor tool to which the chamber of the fan case is interiorly joined by said trunnions, a handle rigidly attached to the fan case, a vertically adjustable wheeled carriage supporting said floor tool and fan chamber, a control member supported on one of said trunnions and disposed adjacent the fan case and which is selectively rotatable with, or relatively of the fan case, means connecting said control member with said wheeled carriage to transmit movement from one to the other, said control member having a portion arranged circumferentially of one of said trunnions, means extending longitudinally of said handle and adapted to operatively engage said control member, said control member adapted to vary the vertical position of the carriage and simultaneously vertically adjust said nozzle when said handle and said fan case are rotated while said means extending longitudinally of the handle is in engagement with said control member.

2. A vacuum cleaner as set forth in claim 1 in which said control member is in the form of a segment of a circle integral with the member relatively rotatable of one of said trunnions, said segment having tooth formations adapted to be engaged by said means extending longitudinally of said handle to selectively rotate said control element to thereby vertically adjust said nozzle.

3. In a vacuum cleaner having a suction chamber including a vertically adjustable nozzle and having a rotatable fan case disposed on a horizontal axis, means for vertically adjusting the nozzle including trunnion means supporting said fan case for rotation on said suction chamber, a handle rigidly connected to the fan case and rotatable with said fan case, a vertically adjustable wheeled carriage supporting the fan case, means supported on said trunnion means capable of a selective rotation with or relatively of said fan case, means extending between said trunnion supported means and the wheeled carriage to transmit motion from one to the other, means extending longitudinally of the handle and relatively axially movable of said handle for selective locking engagement with said trunnion supported means, said handle and the means extending longitudinally thereof adapted to vertically adjust said nozzle when said locking engagement obtains and upon rotation of said handle and fan case, said trunnion supported means being maintained in adjusted position by the frictional engagement between said trunnion supported means and said trunnion means.

4. In a vacuum cleaner including a vertically adjustable nozzle and having a rotatable fan case disposed on a horizontal axis, a handle rigidly secured in said fan case, inlet elbows to the fan case disposed on opposite sides thereof, a vertically adjustable carriage device supporting the fan case, means associated with the fan case and selectively rotatable with or relative thereto and arranged between one of the said inlets and the fan case, linkage means extending between said carriage and said last mentioned means to transmit motion from the one to the other to effect vertical adjustment of the carriage, means extending longitudinally of the handle selectively engageable with the means associated with the fan case constructed and arranged such that when said handle means engages the means associated with the fan case, rotation of the fan case and said relatively rotatable means will alter the vertical position of the fan case and simultaneously vertically adjust said nozzle.

5. In a vacuum cleaner including a vertically adjustable nozzle and fan case, and having the fan case rotatable, a handle rigidly connected to the fan case, means on which the fan case is supported for rotation, a wheeled carriage pivotally secured to the means on which the fan case is supported for rotation and adapted to vertically adjust said nozzle and fan case, means rotatable with or relative to the fan case and associated therewith, a linkage mechanism arranged between said carriage and said fan case associated means and adapted to transmit motion from the one to the other, to vertically adjust the fan case and nozzle, means associated with the handle adapted to be selectively locked with the means associated with the fan case, such that when said handle means is in locking engagement with said fan case means, and said fan case is rotated by said handle, said fan case will be vertically adjusted to simultaneously vertically adjust said nozzle, and when not in locking engagement, said handle and fan case, rotate relatively of said means associated with the fan case.

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