

Sept. 27, 1932.

C. E. REDDIG  
VACUUM CLEANER

1,879,710

Filed July 20, 1928

2 Sheets-Sheet 1

FIG. 1.

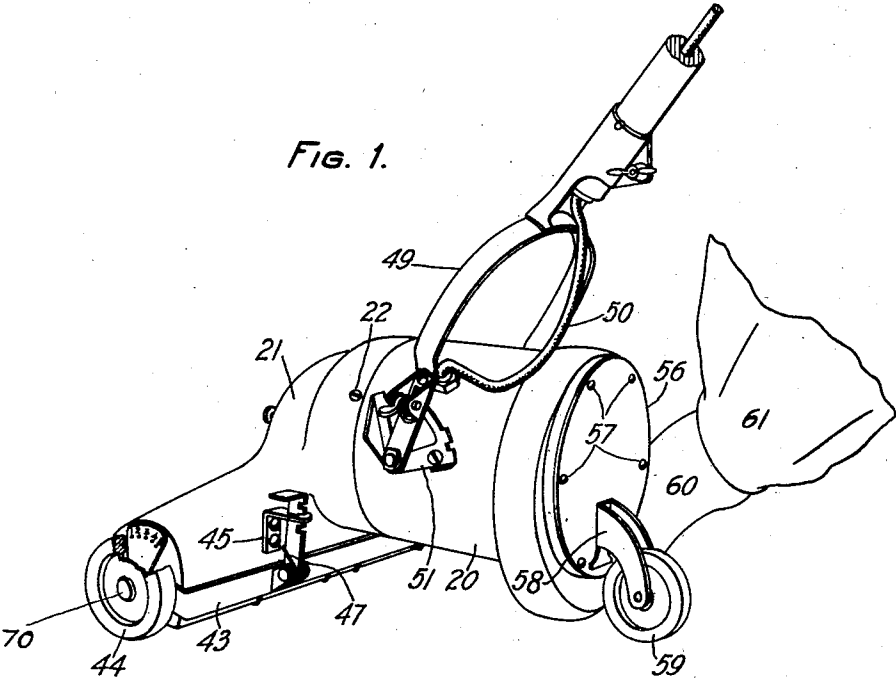
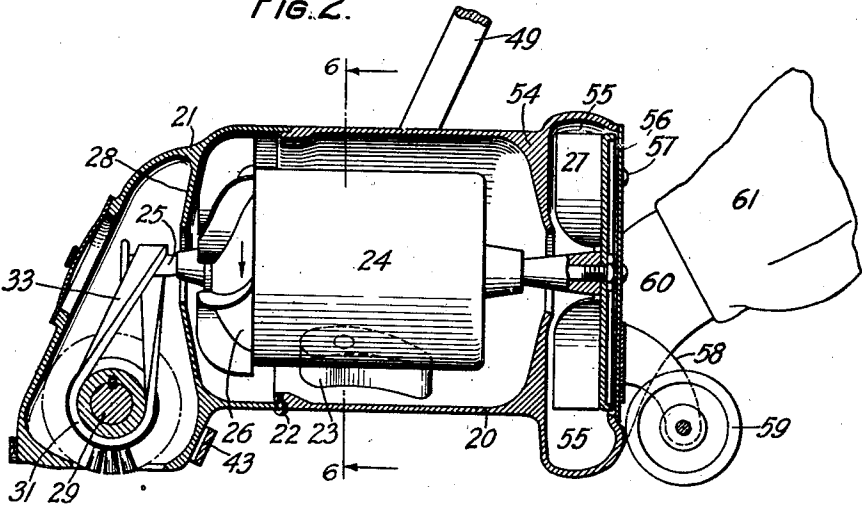


FIG. 2.



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FIG. 3.

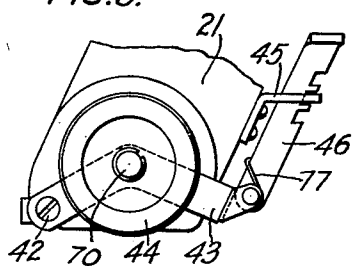


FIG. 4.

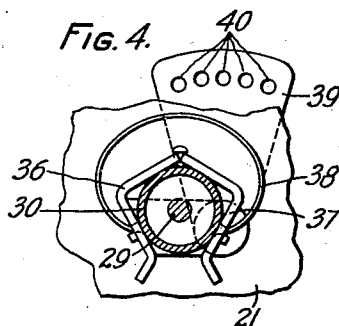


FIG. 6.

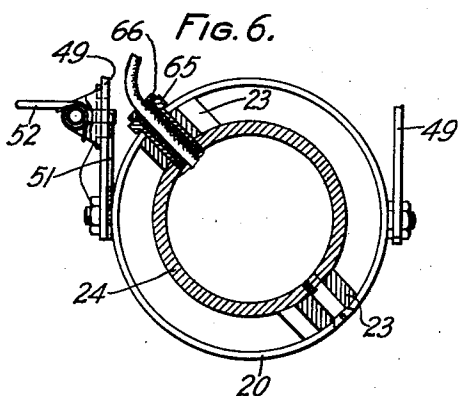


FIG. 5.

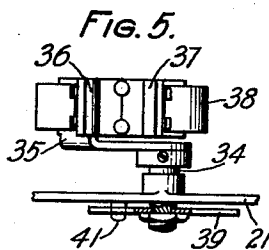
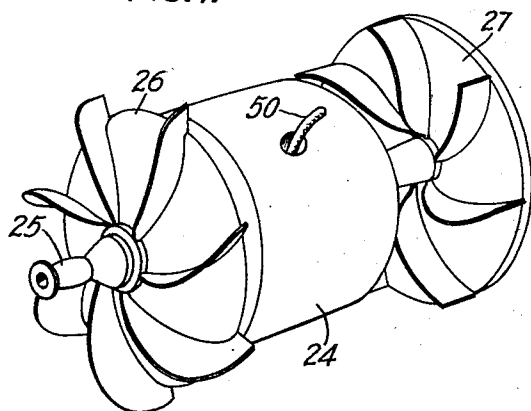


FIG. 7.



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## UNITED STATES PATENT OFFICE

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## VACUUM CLEANER

Application filed July 20, 1928. Serial No. 294,193.

This invention relates to vacuum cleaners and more particularly to vacuum cleaners for household use.

The object of this invention is to provide a vacuum cleaner which will be simple, cheap to manufacture, efficient in operation, of comparatively low over-all height, and in which the noise due to fast unbalanced moving parts is greatly attenuated.

This object is obtained in a preferred embodiment of the invention in which the motor is enclosed in an air and dust tight shell or casing which cooperates with an outer disposed casing to form a passage for the air which is discharged from a vane wheel mounted on the front end of the motor shaft to another vane wheel mounted on the opposite end of this shaft. The inner disposed casing and the motor mounted therein, are supported in position concentric with the outer disposed casing by means of stream lined fin or spacer members which are curved to follow the direction of the current of air generated by the compound action of the vane wheels in order to present minimum resistance to the flow of air. Through one of these spacers an opening is provided for receiving a metal bushing which engages the motor casing for securing it in the outer casing and for running the motor conductor cord from the motor to the outside, thus providing a dust proof mounting for the cord and which permits easy removal of the cord when disassembling the machine. The suction nozzle at the front of the machine contains a brush driven by the motor and is adjustable relatively to the floor by raising or lowering rollers which support the front end of the machine.

Other features and advantages of the invention will appear from the following description, reference being had to the accompanying drawings, in which;

Fig. 1 is a perspective view of the vacuum cleaner showing the handle and dust bag with portions cut away;

Fig. 2 is a longitudinal sectional view thereof;

Fig. 3 is a partial view of the cleaning nozzle showing the nozzle adjusting mechanism;

Fig. 4 is a partial view of the cleaning nozzle showing the brush adjusting mechanism;

Fig. 5 is a top view of Fig. 4;

Fig. 6 is a cross-sectional view of the machine taken approximately on lines 6-6 of Fig. 2; and

Fig. 7 is a perspective view of the motor casing showing the vane wheels in position on the armature shaft of the motor.

Referring to Fig. 1 of the drawings, 20 is a cylindrical casing to the end of which a cleaning nozzle 21 is secured by a number of screws such as 22. In casing 20 and preferably integrally formed therewith there is provided a pair of stream lined fin members 23 and 23' shown in Figs. 2 and 6 which are disposed substantially 180° apart and are provided for supporting a motor casing 24 in position concentric with respect to outer casing 20, thus forming an annular chamber for the passage of the air therethrough.

The casing 24 of the motor is held securely in position in casing 20 by an ordinary screw engaging the motor casing and passing through fin member 23', and a metal bushing 65 is provided which crosses through fin member 23 for engaging the motor casing as shown in Fig. 6. The lead-in conductor 50 passes through the bushing 65 and is insulated therefrom by an insulating sleeve 66.

On the front end of the armature shaft 25 there is mounted a vane wheel 26 and on the rear end of this shaft there is mounted a vane wheel 27 having preferably a greater diameter than wheel 26. The stream lined fin members 23 and 23' are disposed in the casing 20 and are curved in the direction of the current of air flow generated by the compound action of vane wheels 26 and 27 and divide the annular space between the motor 24 and the casing 20 into spiral channels.

The cleaning nozzle 21 has an apertured partition or wall 28 through which the front end of the armature shaft extends. In this cleaning nozzle at a point below the armature shaft and at right angles thereto there is mounted, in bearings 30, a rotatable shaft 29 which carries a bristle brush 31 and a

flanged pulley 32 which is operatively connected to armature shaft 25 by a belt 33.

On each end of the cleaning nozzle 21, as shown in Figs. 4 and 5, there is pivotally mounted a spindle, the left hand one 34 being shown. On the inner end of each spindle is mounted a bracket 35 having a V-shaped arm 36, which cooperates with a similarly shaped arm 37 hinged thereon and spring 38, to form a clamping device for securing their respectively associated brush bearings 30 in the cleaning nozzle. A sector member 39, which is mounted on the outer end of each spindle 34, is provided for locking the brush in an adjusted position with respect to the surface to be cleaned through the engagement of apertures 40 with studs 41 as shown in Figs. 4 and 5.

On opposite ends of the cleaning nozzle 21 there is mounted, on pivots 42 shown in Fig. 3, a yoke member 43 carrying the rollers 44 by means of stud shafts 70, one being shown in Figs. 1 and 3. A latching device, which comprises bracket 45 secured to the cleaning nozzle, rack 46 pivoted on the yoke 43 and spring 77, which holds the rack in engagement with the bracket 45, is provided for adjusting and holding the cleaning nozzle in adjusted position with respect to the surface to be cleaned.

On casing 20 there is pivotally mounted a forked lever 49 of a suitable length having a handle portion, not shown, which carries a switching device not shown, connected to the lead-in conductor 50 for controlling the operation of the motor in a well known manner.

To the side of casing 20, adjacent one of the pivots of forked lever 49 there is securely mounted a notched sector member 51 which cooperates with a spring pressed trigger member 52 for holding the lever 49 in a number of convenient positions with respect to the operator of the machine.

The rear end of casing 20 is provided with an apertured partition 54 through which the air passes before entering a chamber 55 which is closed by a cover 56 held securely thereon by a number of screws 57. On this cover is mounted a bracket 58 on which the roller 59 is mounted.

The chamber 55 terminates to the low side of the machine in a tubular outlet 60 to which an ordinary dust bag 61 is attached.

It will be seen that by using two fans they can be made of smaller diameter and driven at lower speeds and still pump sufficient air for thorough cleaning. This reduced fan size and speed considerably diminishes the noise of the cleaner and the double fan arrangement balances the armature of the motor at each end.

What is claimed is:

1. In a vacuum cleaner, a casing having a suction nozzle at one end and a discharge nozzle at the other, a motor suspended within

said casing with its shaft directed lengthwise thereof, curved plates spacing the motor from the sides of said casing and dividing the space between said motor and casing into spiral channels, a vane wheel on each end of said motor shaft, said wheels being biased to direct air through said casing towards the end where the discharge nozzle is located.

2. In a vacuum cleaner, a casing, a motor supported within the casing and spaced from the sides thereof, a vane wheel on each end of the motor shaft, curved plates in the space between the motor and the casing, and a partition in the casing having an opening adjacent the center of one vane wheel for directing the air stream produced by the other vane wheel to the center of said one vane wheel.

3. In a vacuum cleaner, a casing adapted to have air passed therethrough, a motor within said casing, and curved plates spacing said motor from the walls of said casing and forming spiral air passages around said motor within the casing.

In witness whereof, I hereunto subscribe my name this 17th day of July, 1928.

CHARLES E. REDDIG.