

March 31, 1936.

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VACUUM CLEANER

2,036,056

Filed June 7, 1934

2 Sheets-Sheet 1

Fig. 1.

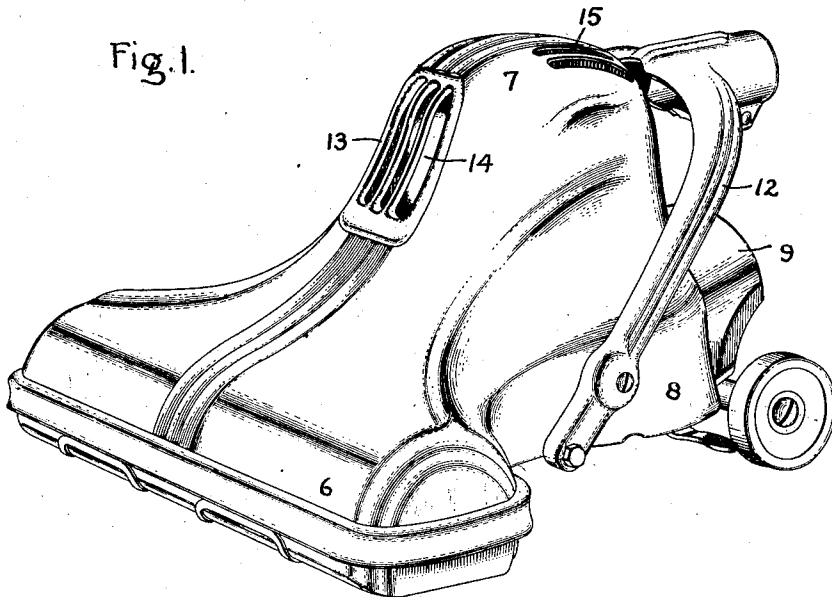
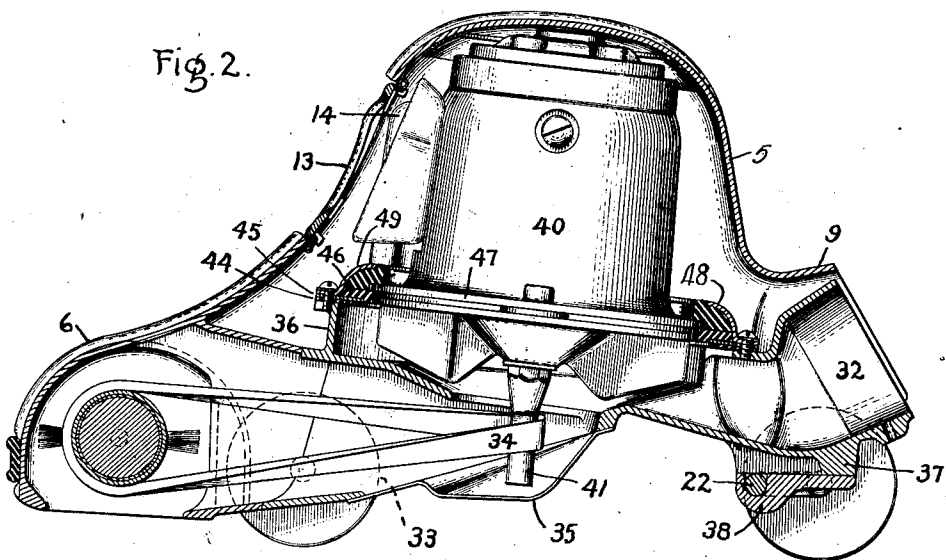


Fig. 2.



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2 Sheets-Sheet 2

Fig. 3.

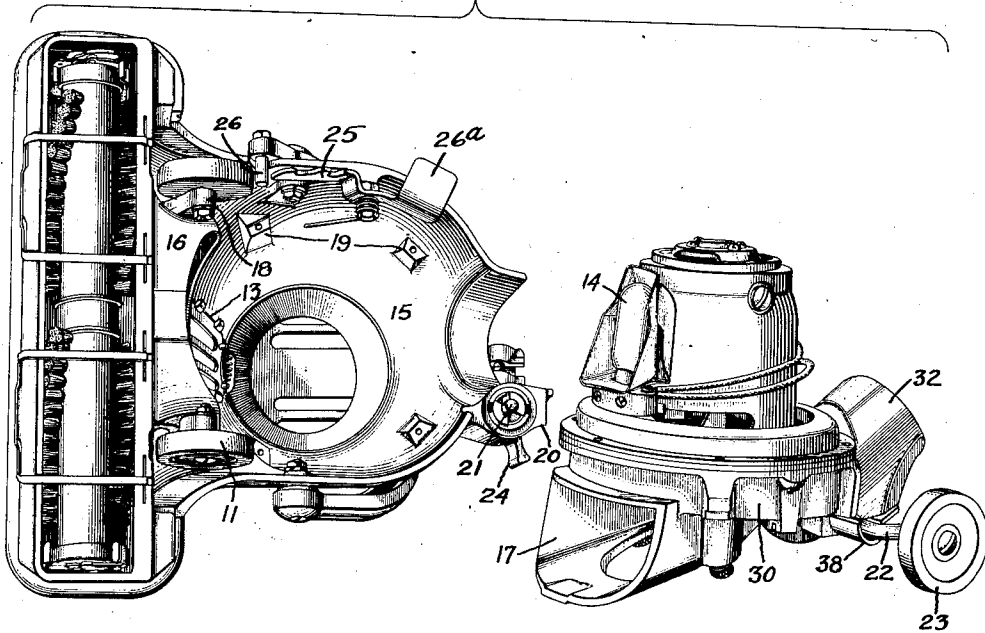
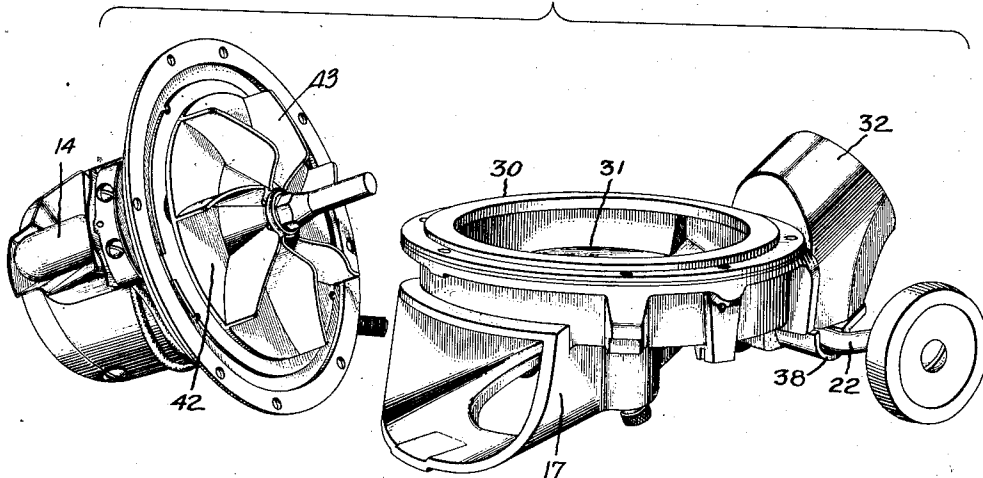


Fig. 4.



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# UNITED STATES PATENT OFFICE

2,036,056

## VACUUM CLEANER

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Electric Vacuum Cleaner Company, Inc., Cleve-  
land, Ohio, a corporation of New York

Application June 7, 1934, Serial No. 729,426

6 Claims. (Cl. 15—8)

The present invention relates to vacuum cleaners of the type arranged to be propelled over the surface to be cleaned by a suitable handle.

The object of my invention is the provision of a vacuum cleaner of improved and simplified construction whereby the cost of manufacture is reduced and the assembly operation simplified.

For a consideration of what I believe to be novel and my invention, attention is directed to the accompanying description and claims appended thereto.

In the accompanying drawings, which are illustrative of my invention, Fig. 1 is a perspective view of a cleaner with the handle and dust bag removed; Fig. 2 is a longitudinal section of the cleaner; Fig. 3 is a perspective view of the cleaner showing the two main portions, the housing and the base element separated; Fig. 4 is a perspective view showing the motor parts and the base part separated.

5 indicates the unitary housing part of the cleaner. It includes the nozzle 6, the top 7, depending side walls 8, and rear extension 9 at the rear to cover the dirt discharging conduit. The part of the housing forming the nozzle completely encloses the brush 10, and the side walls cover the front wheels 11, Fig. 3. To the side walls of the housing is pivotally secured the handle fork 12. In the front of the housing is an opening covered by a removable grill 13 and through which light is emitted from the lamp bulb 14, the latter receiving current from the same source as the motor. In the top of the housing directly over the motor is another grill 15 for ventilating the motor and carrying away heat from the lamp bulb. It will be noted that the entire surface of the housing is smooth and unbroken except for the two small grills. As a result, it is simple to cast, is easy to clean and has no pockets or corners in which dust may collect.

Referring now to the inner or under side of the housing, the nozzle 6 is provided with an outlet conduit 16, Fig. 3, the right-hand end of which is curved in the arc of a circle, in other words, a surface of revolution, to receive the correspondingly shaped end of the conduit 17 leading to the fan chamber. The nozzle conduit has brackets 18 formed integral therewith which receive and support the axles of the front floor wheels 11. The housing is arranged to receive and enclose the base portion and motor as previously indicated and for that purpose shoulder means are formed on the inner wall. In order to save machine work and metal, said means take the form of four equally spaced lugs 19, each having a

threaded screw hole matching with perforated parts on the base. Suitable adjusting mechanism for the rear wheels, (forming no part of the present invention) is illustrated generally at 21 and 24. 25 is a spring pressed latch having a series of steps for holding the forks 12 and handle in adjusted position by engaging the pin 26 on the lower end of one of the forks. The latch is normally in engagement with the pin but can be released by depressing the foot pedal 26a.

Referring now to what for the purposes of description and distinction may be termed the base element or portion of the cleaner, 30, Fig. 4, indicates the unitary cast portion thereof. It defines the fan chamber 31, the center of which at the bottom communicates with the conduit 17 through which dust laden air from the nozzle flows. The end surface of the nozzle conduit 16 and that of the conduit 17 are carefully machined as surfaces of revolution so that when the two are brought into alignment and the housing and base element united, as by screws, no air can leak in through the joint to reduce the suction effect of the fan at the nozzle. The rear of the fan casing has an outlet conduit 32 through which air and dust pass to the handle dust bag, not shown, for separating out the dirt.

The bottom wall of the base element has an opening 33, Fig. 2, permitting access to the brush belt 34 and is normally closed by the removable cover 35. On the upper side of the base element and integral therewith is an annular wall 36 which defines the peripheral part of the fan chamber. Its continuity is interrupted for a short distance in the rear in line with the discharge conduit 32. The under side of the conduit 32 has a flat pad 37 of considerable surface area, and secured thereto, as by screws, is a hanger 38 for the axle 22 of the rear caster wheels 23. The axle has an offset portion or crank for each wheel so that vertical adjustment by the rod 21 of the rear of the cleaner about the front wheels 11 can be obtained. 40 indicates the casing of the electric driving motor, on the vertical shaft 41 of which is a belt pulley and a suction fan 42 having numerous blades 43 and an integral back or supporting plate for the blades.

The motor and fan are elastically supported so as to absorb vibration and reduce the noise of operation. For this purpose, a gasket 44, Fig. 2, made of rubber or equivalent material which will act as a seal against the escape of air from the fan chamber is placed on the top enlarged surface of the annular fan casing wall 36. On top of the gasket is a thin metal ring 45 having a central

opening which is substantially larger in diameter than the adjacent surface of the motor to prevent metal to metal contact. Above the ring and supported thereby is a relatively thick rubber ring or cushion 46 upon which rests the flange 47 of the motor casing. Above the flange 47 and partly resting on it and partly on the rubber ring 46 is a third rubber ring or cushion 48 of considerable cross-section. The parts just referred to are enclosed in a metal casing or holder 49. The holder is united with or clamped to the flange or top surface of the annular wall 36 of the fan chamber by numerous small screws. The holder, rings and washers are also united in such manner that the motor can be applied and removed without the rings being separated.

The construction of the housing is such that it can be made as a die casting, and being of such a simple character, it can be made by simple dies, thereby avoiding the use of collapsible cores to a large extent. The use of collapsible cores increases the cost of production, and the loss due to imperfect castings is greater than where simple dies are used.

By making the base element as described with its integral fan chamber and mounting the motor directly on it instead of first mounting the motor in the housing and then by a separate operation attaching the base portion results in a simplification in the manufacture and also in the assembly. The arrangement permits the parts to be assembled as shown in the right-hand side of Fig. 3 with everything in plain sight of the assembler, thereby simplifying the operation and also decreasing the chance for error. In assembling, the housing is inverted and the base element as a unit is inserted in place through the open bottom of the housing. Four screws are then inserted in the openings which register with the screw holes in the lugs 19 to unite the parts. As considerable space is provided between the flange on the base element and the inner wall of the housing, this may be done without difficulty, especially since the parts are all in plain view.

As will be evident from inspection, there are few surfaces to be machined which result in further decreased cost of production.

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

1. A vacuum cleaner comprising a base element having a wall integral therewith and defining the peripheral part of a fan chamber, a portion of a suction conduit leading to the chamber and a discharge conduit leading from the chamber, a fan located within the chamber, an electric motor for driving the fan supported by and secured to the integral wall of the fan chamber, a unitary removable housing which envelops the motor and base element, said housing having as integral parts a suction nozzle and a conduit communicating with the nozzle, the inner end of which engages the outer end of the suction conduit of the fan chamber, and means for uniting the base element and the housing.

2. A vacuum cleaner comprising a base element having as integral parts thereof a fan chamber wall, a portion of a suction conduit leading to the fan chamber having its outer end formed as a surface of revolution, a fan located within the chamber, an electric motor for driving the fan, yielding means secured to the upper end of the wall of the fan chamber for supporting the motor a unitary removable hous-

ing which completely envelops the motor and base element, said housing having as integral parts a suction nozzle and a conduit opening into the nozzle at one end with its other end formed as a surface of revolution and fitted to and opening into the suction conduit leading to the fan chamber, and means for securing the base element as a unit to the housing.

3. A vacuum cleaner comprising a base element having an integral vertical wall defining a fan chamber, a discharge conduit also integral therewith for dust laden air, a driving motor supported by the base element, a fan in the fan chamber driven by the motor, a rear supporting caster for the base element, a support therefor secured to the under side of the discharge conduit, a unitary removable housing which envelops the base element and is provided with a suction nozzle in communication with the fan chamber, brackets inside of the housing, wheels carried by the brackets, which are also enclosed by the housing, and means for securing the base element as a unit to the housing.

4. A vacuum cleaner comprising a base element having an annular wall integral with and rising therefrom which defines the peripheral portion of a fan chamber and terminates in a surface perpendicular to the wall, a fan located within the chamber, inlet and outlet conduits for the chamber, an electric driving motor for the fan, the casing of which acts as a closure for one side of the fan chamber, an elastic support for the motor which rests on the end surface of the annular wall and also acts to prevent the flow of dust laden air outwardly around the motor, a unitary housing which envelops the motor and base element and has a nozzle integral therewith and also a conduit leading from the nozzle into the inlet of the fan chamber, and means for uniting the base element and housing.

5. A vacuum cleaner comprising a base element having as integral parts a fan chamber wall and admission and discharge conduits for the chamber, a fan in the chamber, a vertically disposed driving motor for the fan mounted on the wall of the fan chamber, a supporting rear caster; and a unitary housing having an integral nozzle and walls which enclose the motor and also extend downwardly at the sides and rear to cover the base element, said housing having a grill covered opening in the front and another grill covered opening at the top for ventilating the motor, a lamp aligned with the front opening, supporting means on the inner wall of the housing to receive the base element as a unit, and means for securing the base element to the supporting means.

6. A vacuum cleaner comprising a base element having an integral part defining a fan chamber, a fan within the chamber, inlet and discharge conduits for the chamber also integral with the base element, and a driving motor supported by the base element for driving the fan, and a unitary housing having an integral nozzle and a conduit communicating with the said inlet conduit, and walls which completely enclose the motor and extend downwardly to cover the base element, supporting means on the inside of said walls with which the base element as a unit engages, and securing means extending through the base element into the supporting means to unite them.

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