

Feb. 28, 1928.

1,660,331

W. A. FRANTZ

SUCTION CLEANER

Filed Dec. 4, 1922

3 Sheets-Sheet 1

Fig. 1.

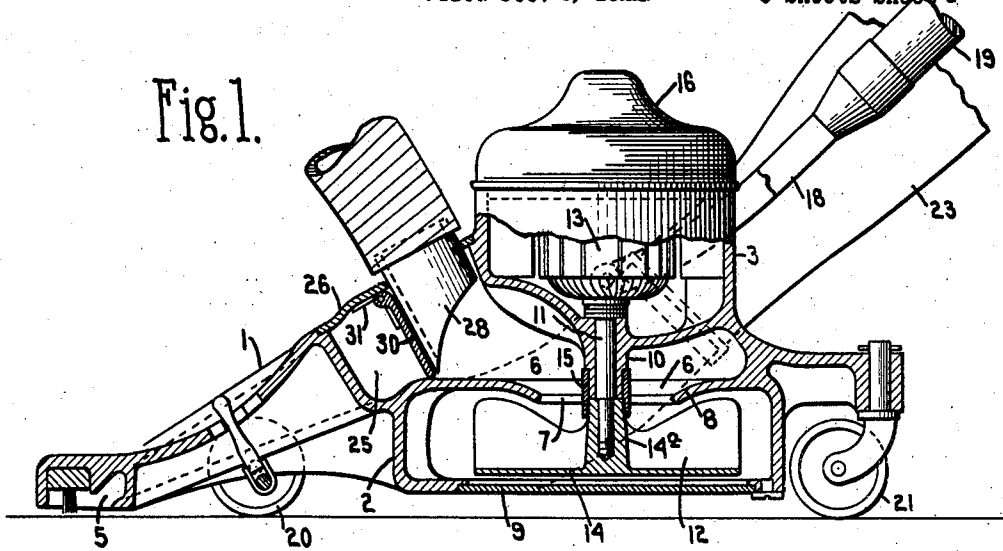
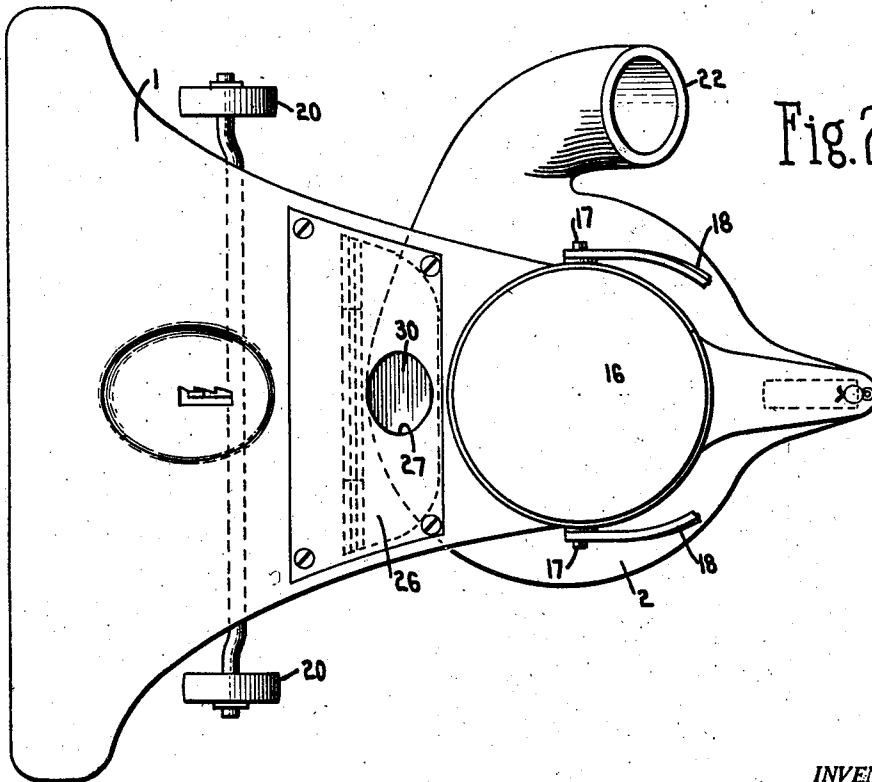


Fig. 2.



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Fig. 3.

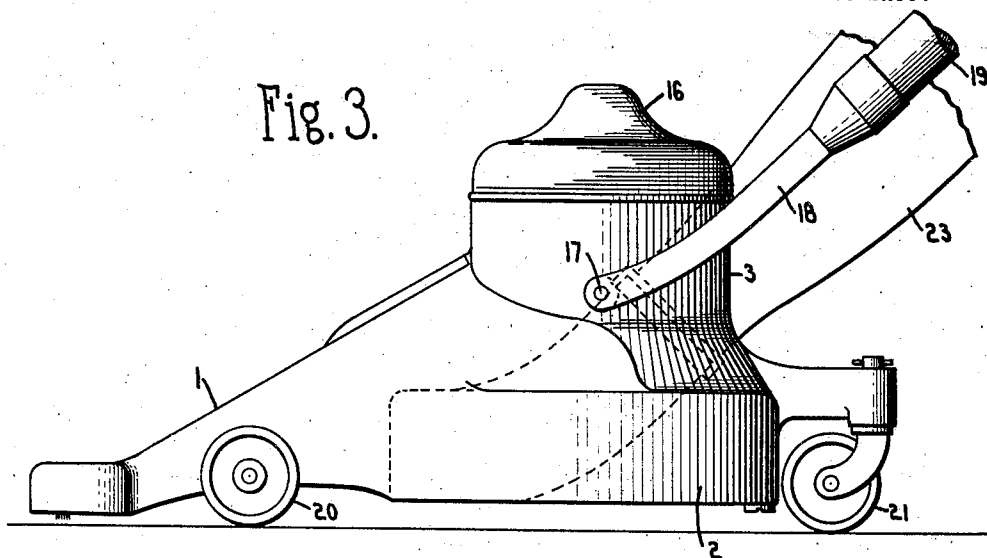
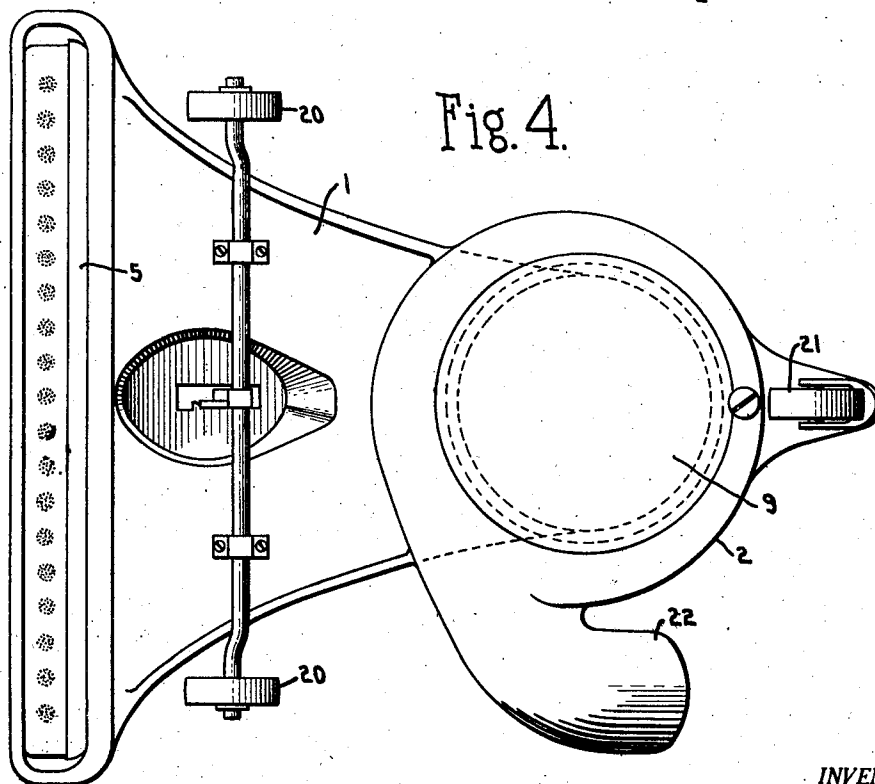


Fig. 4.



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Fig. 5.

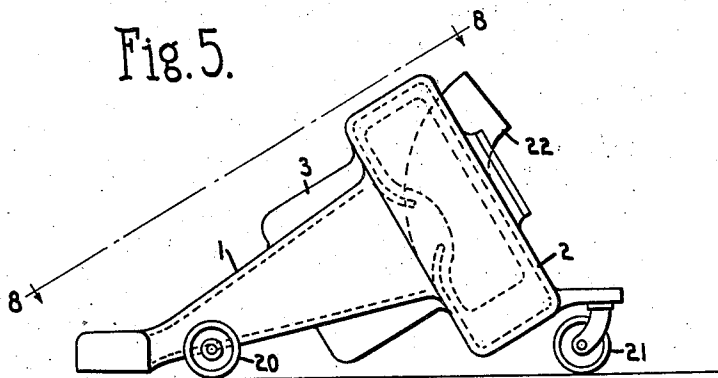


Fig. 6.

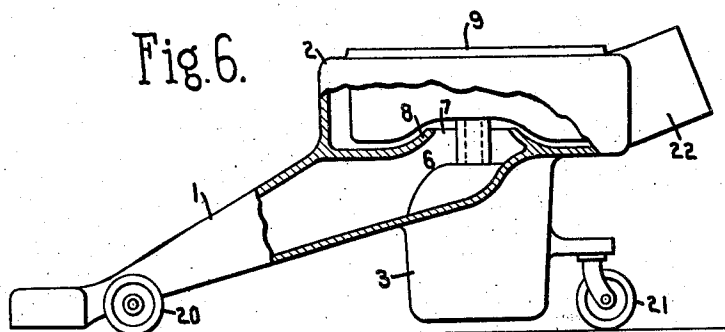


Fig. 8.

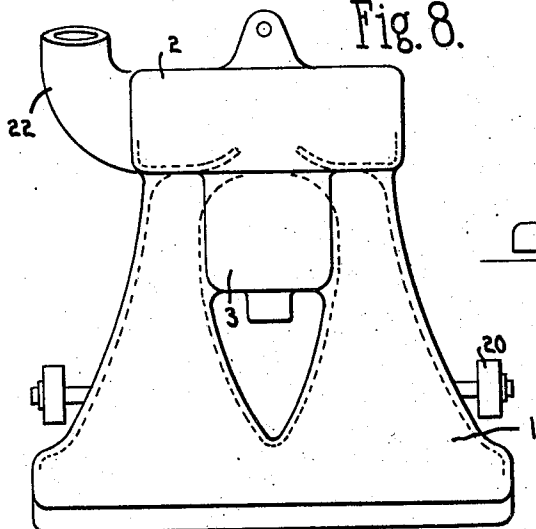
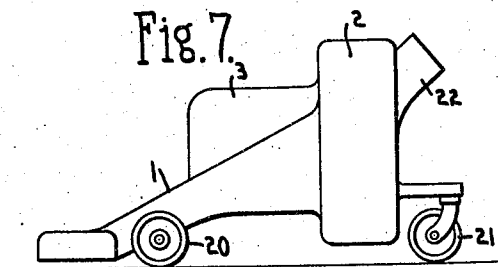


Fig. 7.



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UNITED STATES PATENT OFFICE.

WALTER A. FRANTZ, OF CLEVELAND, OHIO.

SUCTION CLEANER.

Application filed December 4, 1922. Serial No. 604,789.

This invention relates to suction cleaners of the portable electrically operated type, comprising an electric motor and suction fan mounted in a casing adapted to be moved about a floor and having a suction nozzle adapted to collect the dust and litter therefrom. The objects of the invention are the provision of a device of this character of smaller height, greater stability, fewer parts, and simpler construction than heretofore; the provision of a device of this character having new and improved relation of nozzle, fan, and motor; the provision of a device of this character which can be more easily made and of fewer parts than prior devices, while further objects and advantages of the invention will become apparent as the description proceeds.

In the drawings accompanying and forming a part of this application I have shown certain illustrative embodiments of my said invention; Fig. 1 is a vertical sectional view through a complete cleaner; Figs. 2, 3 and 4 are respectively a top view, a side elevation, and a bottom plan of the cleaner shown in Fig. 1; Fig. 5 illustrates my improvements applied to a type of cleaner wherein the motor is downwardly and forwardly inclined and is located between the fan chamber and nozzle; Fig. 6 illustrates the adaptation of my improvements to a cleaner wherein the motor is vertically mounted beneath the fan chamber; Fig. 7 is a side elevation of a machine having a horizontal motor located between the fan chamber and nozzle; and Fig. 8 is an inclined plan view corresponding to the line 8—8 of Fig. 5.

Describing the parts by reference characters, 1 represents the nozzle, 2 the fan chamber, 3 the fan casing, and 4 the motor casing of my improved cleaner. The nozzle terminates at one end in a narrow elongated downwardly facing inlet mouth 5 located at its widest point, whence it narrows rearwardly to a point substantially at the junction of the fan and motor castings. These casings are spaced axially apart to define an annular passage-way 6 which communicates on the one side with the nozzle and on the other side with the inlet opening 7 of the fan casing; the lip of this inlet opening is deflected into the fan casing as shown at 8 while the side of the fan casing opposite thereto is provided with a removable

closure plate 9. Projecting from the motor casing toward or into the opening 7 is a bearing 10 in which is journaled the motor shaft 11 having within the fan chamber the fan 12 and in the motor chamber the armature 13.

The fan is formed with a circular disk 14 at the side away from the inlet 7, and with a central boss 14^a screwed on the shaft 11 and also with a sleeve 15 which projects through the opening to prevent strings and the like from becoming wound into the bearing. The top of the motor chamber is covered by a removable cap 16 and the sides of the casing are formed with bosses 17 for the reception of the arms 18, 18 of the fork which carries the handle 19. The casing is supported on the floor in working position by means of forward wheels 20 and a rear caster 21. The fan chamber is formed with a peripheral outlet neck 22 to which is attached one end of the porous dust bag 23, the opposite end of which is supported from the handle.

The casing may be arranged so that the common axis of the motor and fan is vertical, in which case the motor may be above and fan below as in Figs. 1 and 3, or the fan above and motor below as in Fig. 6; or it may be mounted with this axis horizontal as in Fig. 7 or inclined as shown in Fig. 5. In any case the entire casing can readily be cast in one piece, the opposite ends of the motor and fan chambers only having removable closures. The device so produced is lower and more stable than can otherwise be produced.

In case it be desired to employ an extension hose the arrangement shown in Fig. 1 may be employed. A chamber 25 traversing the nozzle from side to side is closed by a cover 26 having an opening 27 adapted to receive the hose connection 28. Hinged beneath this cover is a flap door 30 adapted when elevated to close the opening 27 and when depressed to close the passage through the nozzle. It is ordinarily held elevated by the spring 31 but is depressed by the insertion of the hose connection. In case the spring 31 is reasonably strong the friction of the door will hold the connection against accidental disconnection, but additional means can be employed if desired.

I do not restrict myself to any shape or

construction of nozzle, nor position of the parts, nor details of construction except as defined in the annexed claims.

Having thus described my invention what I claim is:

1. In a suction cleaner a casing having a vertical motor casing and a fan casing spaced apart to provide a passageway and a nozzle communicating with said passageway, said fan casing having an axial inlet opening communicating with said passageway and also having a peripheral outlet neck, and a fan in said casing having a circular disk adjacent to the floor and at the side opposite said inlet opening and having a plurality of open vanes on the side adjacent said opening.

2. In a suction cleaner, a casing having a motor and a fan chamber having a common vertical axis, the fan chamber having

an inlet opening upon the side next to the motor, a shaft projecting from the motor into the fan chamber, a fan on said shaft having a circular imperforate disk located horizontally adjacent to the floor at the side opposite said inlet, and a nozzle projecting from one side of the casing and communicating with said inlet opening.

3. In a suction cleaner, a casing, having a motor chamber at the top, a fan chamber at the bottom and a passageway between them, and a nozzle at one side of said casing communicating with said passageway, said nozzle terminating in a downturned inlet mouth, and the fan chamber having an axial inlet opening into said passageway.

In testimony whereof, I hereunto affix my signature.

WALTER A. FRANTZ.