

Aug. 26, 1924.

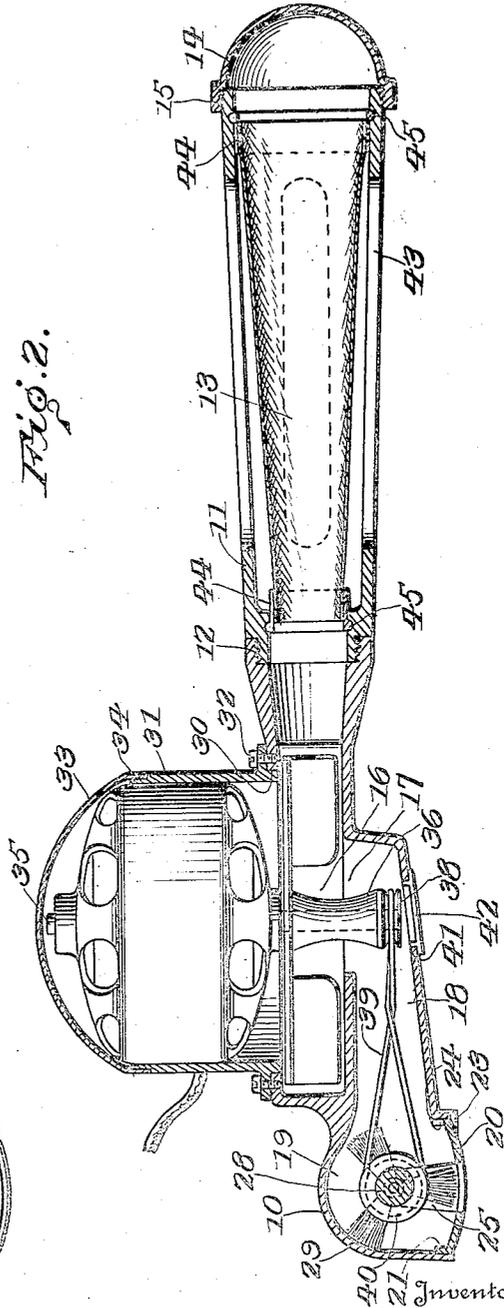
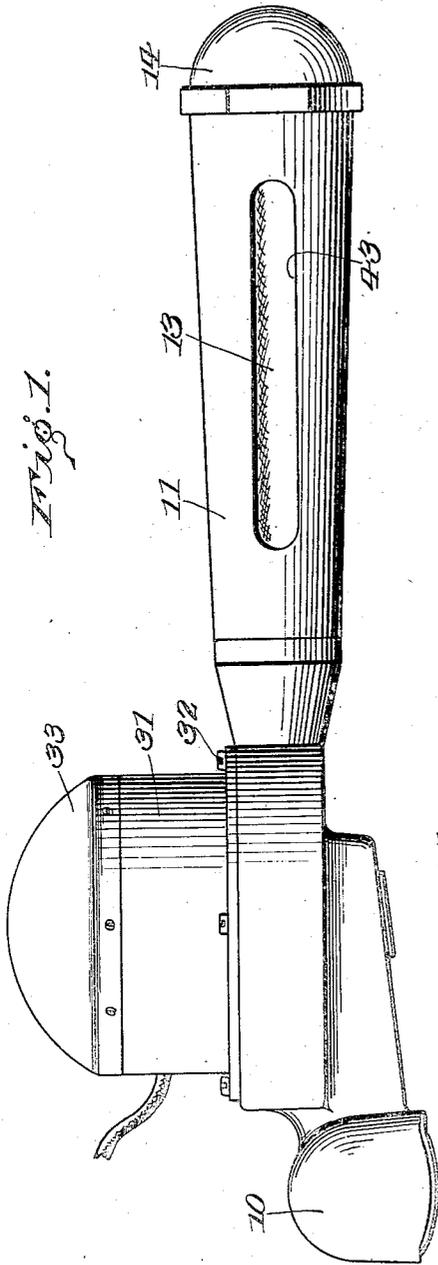
1,506,231

F. W. FINKHOUSEN

VACUUM CLEANER

Filed Feb. 28, 1921

2 Sheets-Sheet 1



Witness

*James F. FitzGibbon*

*Frank W. Pinkhousen*

By

*Charles Charles*

Attorneys.

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2 Sheets-Sheet 2

Fig. 3.

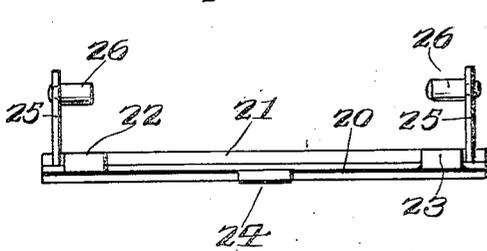


Fig. 4.

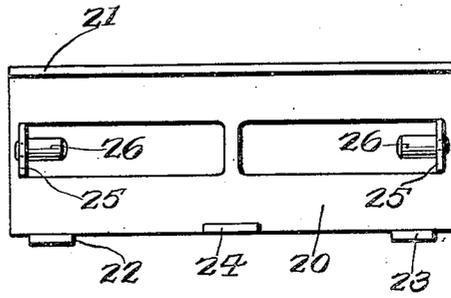


Fig. 5.

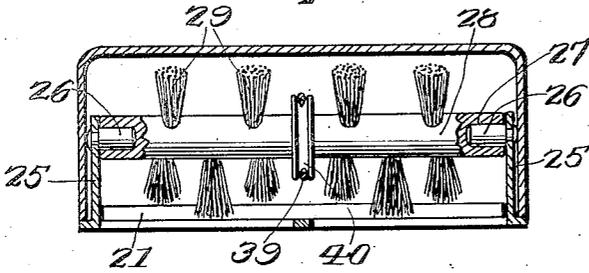


Fig. 6.

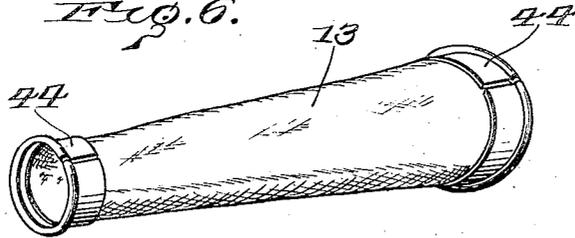
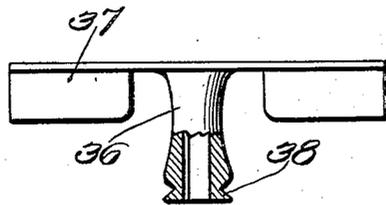


Fig. 7.



Inventor

Frank W. Finkhausen

Witness

James F. FitzGibbon

By

*Charles Chandler*

Attorney S

Patented Aug. 26, 1924.

# UNITED STATES PATENT OFFICE.

FRANK W. FINKHOUSEN, OF FORT WAYNE, INDIANA.

VACUUM CLEANER.

Application filed February 28, 1921. Serial No. 448,469.

*To all whom it may concern:*

Be it known that I, FRANK W. FINKHOUSEN, a citizen of the United States, residing at Fort Wayne, in the county of Allen, State of Indiana, have invented certain new and useful Improvements in Vacuum Cleaners; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The object of the invention is to provide a motor actuated vacuum cleaner suitable particularly for use in removing dust from clothing, tapestries, fabrics and the like and designed with a view to facilitate the manual direction and positioning thereof with reference to the surfaces to be cleaned and of effecting the detachment and removal of accumulations of dust with the minimum risk of injury to the fabric or pile regardless of the relative delicacy thereof; and furthermore to provide a device for the purpose indicated which in matters of construction and the assemblage of parts is simplified to the utmost extent with due consideration for facility of operation and removal of the collection of dust made in the course of the operation of the mechanism; and with these objects in view, the invention consists in a construction and combination of parts of which a preferred embodiment is shown in the accompanying drawings wherein:

Figure 1 is a side view of the cleaner.  
Figure 2 is a longitudinal sectional view of the same.

Figure 3 is a side view and Figure 4 is a plan or face view of the combined brush holder and guard.

Figure 5 is a transverse sectional view of the nozzle.

Figure 6 is a detail view of the removable dust bag or container.

Figure 7 is a similar view of the suction fan.

The casing of the apparatus embodies essentially a nozzle 10 and a handle 11 of which the latter is connected with the former by means of a threaded joint 12 and of which the latter constitutes a receptacle for a dust container or bag 13 removably fitted therein and displaceable therefrom upon the removal of a cap 14 threaded upon the rear

end thereof and preferably engageable therewith by a screw joint 15.

The nozzle preferably consists of a one-piece casting of suitable, preferably light, metal such as aluminum having a fan chamber 16 communicating by means of an opening 17 with a forwardly directed conveyor 18 which communicates at its front end with a brush chamber 19 having an open face which is fitted with a removable plate 20 adapted to be sprung or snapped into place for facility in removal and having an outwardly convexed or arcuate form as indicated clearly in Figures 1 and 2, the chord of the arc being transverse to the length of the implement.

The plate is provided at its front edge with an upwardly directed flange 21 designed to lie in contact with the inner surface of the front wall of the brush chamber, and is further provided at its rear edge with ears 22 and 23 for contact with the rear edge of the opening in the brush chamber spanned by said plate, and is further provided at its rear edge with an ear 24 arranged to project inwardly and lie in terminal engagement with the inner surface of the lower or front wall of the nozzle as a means of locking the guard removably in place in spanning relation with the opening in the brush chamber. Said plate is further provided with terminal upstanding ears 25 designed to lie in contact with the inner surfaces of the end walls of the brush chamber and fitted with pintles 26 for reception by the terminal bearings 27 of the brush core 28 which carries the bristles 29. Obviously when the plate is positioned in the nozzle the ears 25 are held in position to prevent the dismounting of the brush whereas after the removal of the plate the ears are free to be sprung outward to disengage the pintles thereof from the bearings of the brush to release and allow of the removal of the latter for cleaning purposes and the like. It will thus be seen that the mounting of the brush in the guard involves the use of axially detachable bearing members, which are normally held in engagement by the end walls of the brush chamber.

Attached to the upper side or back of the casting forming the nozzle and in registration with an opening 30 formed therein, is

the cylindrical wall 31 of a motor casing, secured in place, for example, by screws 32 and fitted with a removable domed cap 33 having a screw joint connection 34 with said wall, and fitted upon the motor shaft 35 which extends downward into the fan chamber 16 is a sleeve hub 36 carrying the fan 37 and provided at its lower end with a pulley 38 connected by a belt 39 with a similar pulley 40 on the core of the brush. The lower wall of the conveyer 18 is also preferably provided with an opening 41 fitted with a removable cap 42 adapted to be sprung into place and hence removable to give access to the pulley 38 and provide for the proper engagement of the belt therewith.

The side walls of the handle member of the casing are provided with slots 43 forming vents for the relief of air pressure in the apparatus due to the action of the suction fan, while the dust receptacle or bag 13 which is open at both ends and is designed for the reception of the dust drawn into the nozzle through the slots of the plate serves to retain the dust while permitting the escape of the air. The dust bag or receptacle is provided with expansion springs 44 at its extremities for engagement with annular grooves or seats 45 in the inner surface of the wall of the handle to insure the passage of the dust thereinto, and from which the dust may be discharged by the removal of the cap 14. Obviously the bag or receptacle may be readily removed for thorough cleansing, simply by the contraction of the retaining springs or bands, and such removal is facilitated by the fact that the handle member of the casing is preferably enlarged toward its rear end and the bag or receptacle is correspondingly tapered as will be obvious by reference to Figure 6. The construction of the dust collecting means herein described and forming a part of the herein described vacuum cleaner, forms the subject matter of a separate divisional ap-

plication, filed July 26, 1922, Serial No. 577,645.

What is claimed is:

1. A vacuum cleaner having a nozzle opening downwardly, a plate fitted in spanning relation with the nozzle opening, the said plate being formed with ears carrying pintles, and a brush removably fitted upon the pintles.

2. A vacuum cleaner having a nozzle member provided with a dust receiving opening, a fan mounted in the nozzle in rear of said opening, a transversely arcuate plate removably fitted in spanning relation with said opening, and a rotary brush mounted upon upstanding laterally yieldable ears of the plate and having operating connection with said fan, said plate having ears for engaging the exterior and interior surfaces of the walls of the nozzle adjacent to said opening.

3. A vacuum cleaner having a nozzle member provided with a dust receiving opening, a fan mounted in the nozzle, a transversely arcuate plate removably fitted in spanning relation with said opening, and a rotary brush mounted upon the plate and having operating connection with said fan, said plate having inwardly extending laterally yieldable ears having pintles for receiving terminal bearings of the brush.

4. A vacuum cleaner having a nozzle opening downwardly, a transversely arcuate plate having a dust receiving opening and removably fitted in spanning relation with the nozzle opening, said plate being formed with a pair of inwardly directed, laterally yieldable ears having pintles, and a rotary brush having its bearings mounted in the said pintles.

In testimony whereof, I affix my signature in the presence of two witnesses.

FRANK W. FINKHOUSEN.

Witnesses:

JOS. LUYBEN,  
LILLIAN STEFFEN.