G. C. SCHMITZ.

SUCTION CLEANER.

APPLICATION FILED MAR. 1, 1910.

1,108,248.

Patented Aug. 25, 1914.

2 SHEETS—SHEET 1.

Fig. 1

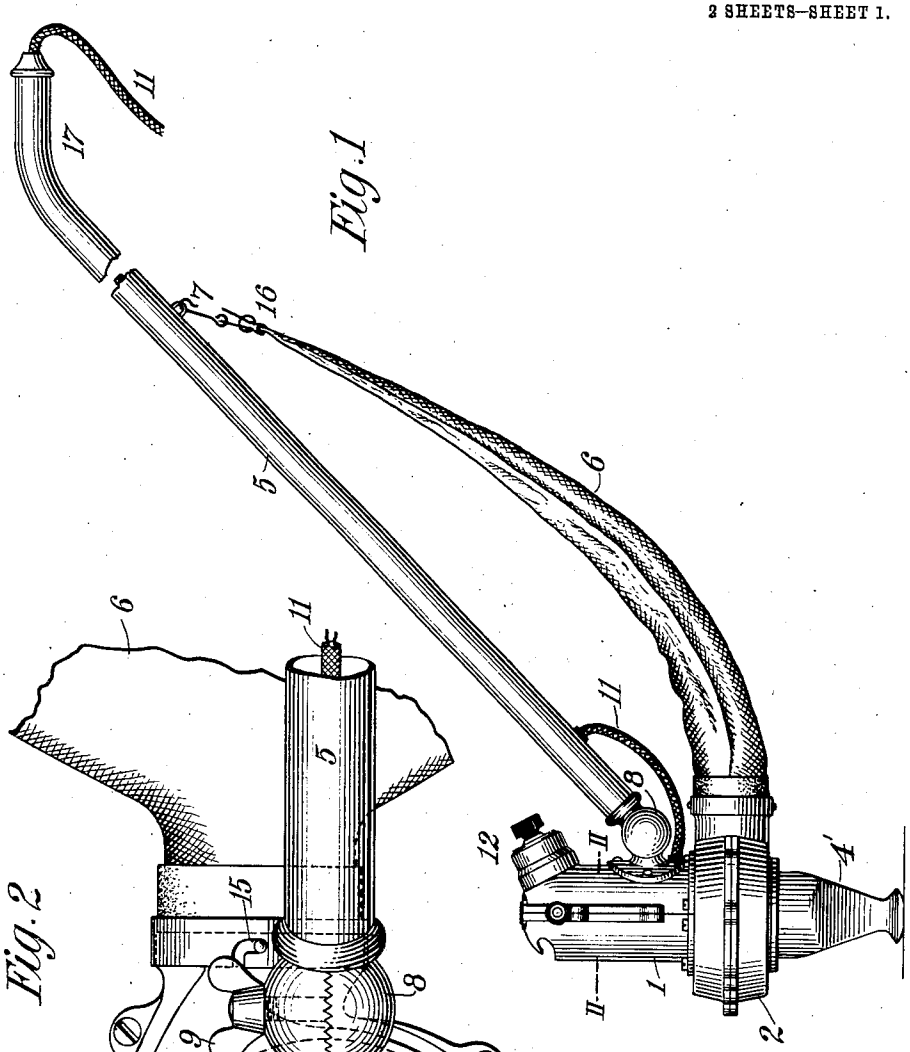

Fig. 2

Witnesses:
Elise B. Krug
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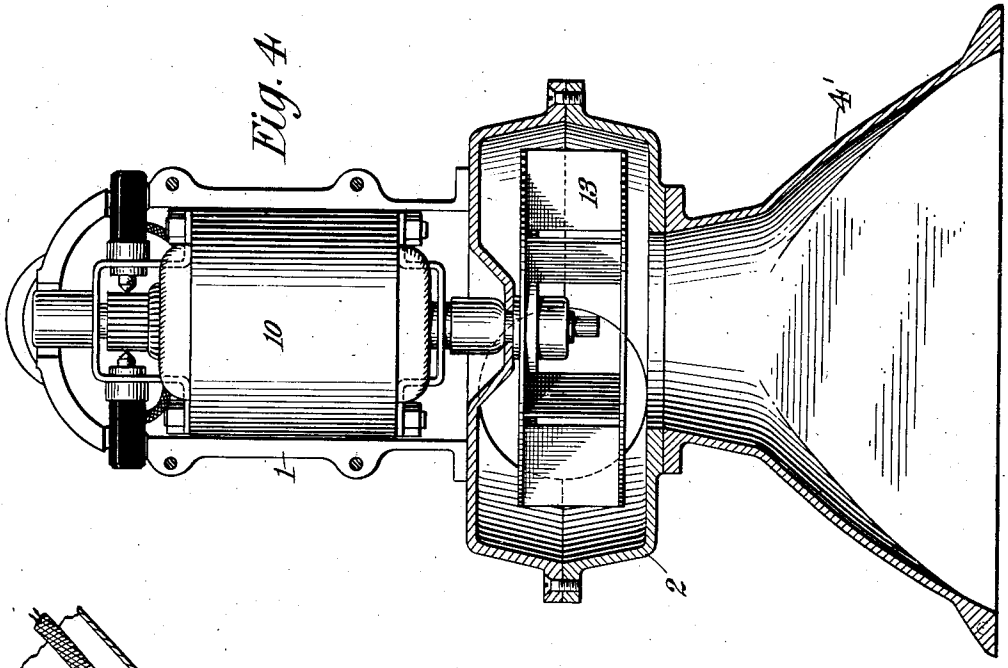
2 SHEETS—SHEET 2.

Fig. 4



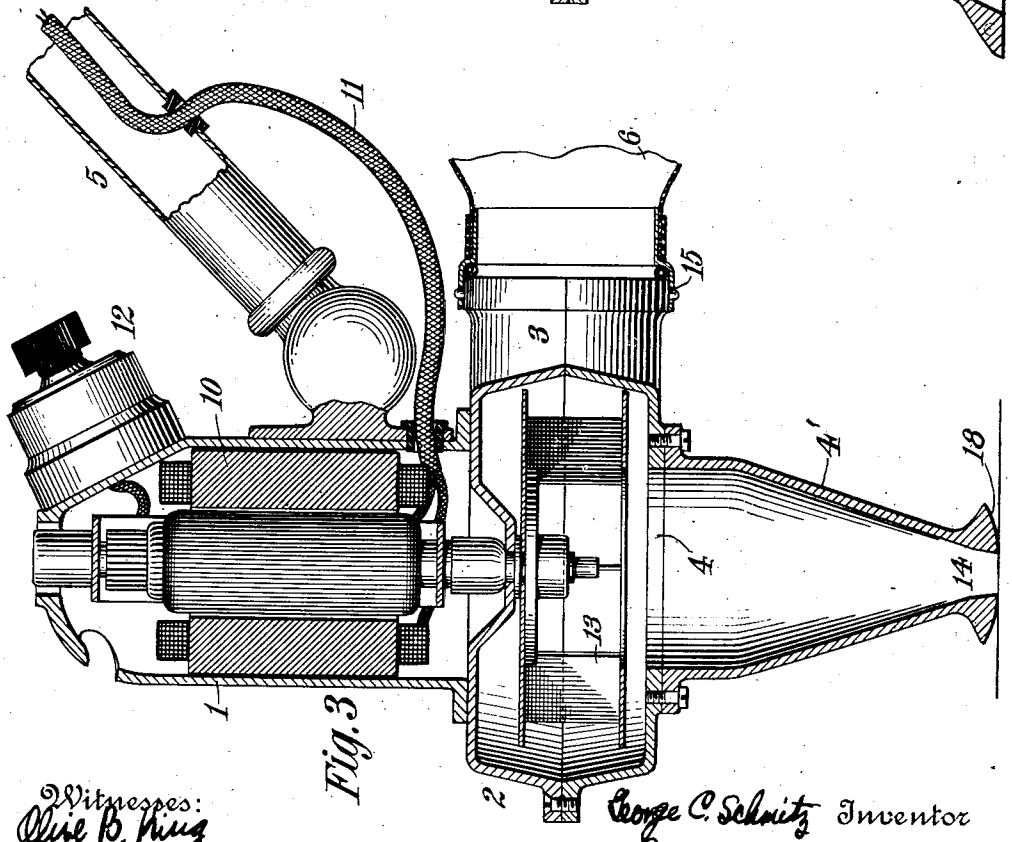


Fig. 3

Witnesses:
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UNITED STATES PATENT OFFICE.

GEORGE C. SCHMITZ, OF RACINE, WISCONSIN, ASSIGNOR, BY MESNE ASSIGNMENTS, TO RICHMOND RADIATOR COMPANY, OF NEW YORK, N. Y., A CORPORATION OF DELAWARE.

SUCTION-CLEANER.

1,108,248. Specification of Letters Patent. Patented Aug. 25, 1914

Application filed March 1, 1910. Serial No. 546,640.

To all whom it may concern:

Be it known that I, GEORGE C. SCHMITZ, a citizen of the United States, residing in the city of Racine, county of Racine, State of Wisconsin, have invented certain new and useful Improvements in Suction-Cleaners, of which the following is a specification.

This invention relates to apparatus for removing dust and dirt from floors and floor coverings by means of an air suction, and particularly to that type of apparatus in which the entire apparatus is moved over the surface to be cleaned.

In portable vacuum or suction cleaners of the hand operated type the parts are light and therefore the distribution of the weight is not a matter of great importance, but in motor driven machines the increased weight brings up new problems. In the latter class of machines there have been two types. In the first type the motor, the suction pump or fan, and the dust receptacle or separator have been placed in a more or less portable box or wagon, and the suction nozzle or dust collector has been connected to this box or wagon by means of a hose. In the second type the entire mechanism has been mounted in a frame or carriage so that the weight is borne by the carriage when the mechanism is passed over the surface to be cleaned. Both of these types are portable in a sense, but the use of the box or the carriage involves additional weight and size.

By my invention I materially decrease both the size and weight of the machine and produce a machine which is truly portable in the sense that it may be carried about with as great ease as a carpet sweeper.

By this invention the motor and fan or pump are located directly above and in close proximity to the suction nozzle, so that the weight is borne principally by the suction nozzle, and a handle, which bears little or none of the weight of these parts, is attached as near as possible to the center of gravity of the mass, consisting of the motor, fan and suction nozzle. The dust receptacle is also carried on the apparatus, but as its weight need not be great, it may be carried partly or entirely on the handle.

Preferably I use an electric motor and a rotary fan directly connected thereto, and in this form I make the operating handle adjustable as to inclination, and pass the electric cable through or along it. When this cable is connected to a source of current, the operator merely pushes the weight over the floor without supporting any substantial weight on the handle.

In the accompanying drawings, Figure 1 is a side elevation; Fig. 2 is a plan view, on an enlarged scale, with the motor removed and the motor casing cut through the line II—II of Fig. 1; Fig. 3 is an enlarged central vertical section of the main parts of the machine; and Fig. 4 is an enlarged central vertical section on a plane at right angles to the plane of Fig. 3.

1 is the motor casing mounted on top of the fan casing 2. The fan casing has an outlet passage 3 and an inlet passage 4, the latter connecting with the suction nozzle 4'.

5 is the operating handle, and 6 is the dust receptacle attached at one end to the fan outlet 3 and at the other end to the handle 5 by means of hook 7. The handle 5 is attached to a bracket 8 on the motor casing, and may be adjusted to the desired inclination and there set by means of the wing nut 9.

The motor 10 may be of any desired type, and it receives its current from the cable 11, which preferably passes through or along the handle. This cable may extend for a considerable length beyond the handle, so as to permit the machine to be used over a considerable area from a given point of connection, and it may be provided at its end with a connecting plug (not shown) to permit of attachment to any convenient socket, such as an electric light bracket. Preferably I provide a switch 12 at a convenient point on the machine so that it may be stopped or started without returning to the point of connection.

At the lower end of the motor shaft there is connected a rotary fan 13 of any desired type, adapted to create a suction at the opening 14 in the suction nozzle. I have not described the fan or the motor in detail, as both are well known in the art, and I do not limit myself to any particular construction. Nor do I limit myself herein to any particular form of dust receptacle, so long as it will retain the dust and allow the air to pass through it, but in the form shown it is a

bag made of fabric removably attached to the outlet 3, as by a ring and bayonet joint 15, and at the other end it is normally closed by spring clip 16. The handle 5 may be curved at its free end, as at 17, to form a grip for the operator. The under surface of the suction nozzle may be rounded, as at 18, to make the machine pass more readily over the surface to be cleaned.

The operation of my invention is as follows: The cable 11 is connected to a source of electric current, the handle 5 se at a convenient angle for the operator, and the current turned on at the switch 12. The operator then passes the suction nozzle over and in contact with the surface to be cleaned, and the fan draws a large volume of air through the opening 14 in the suction nozzle, carrying the particles of dust and dirt into the nozzle, through the fan and out through the exhaust opening 3 into the dust receptacle 6, where the dust is retained while the air passes through the material of which the receptacle is made. When a sufficient quantity of dirt has been collected, the dust bag 6 may be removed, emptied and replaced. I prefer to drive the fan at high speed, so as to move a large volume of air without producing a very high vacuum, for I find that volume rather than vacuum is essential to remove the dust which is in and under the carpets, etc.

These suction cleaners are usually used on floors, but they are occasionally used for cleaning hangings, walls, etc., and while my complete machine is so light in weight (less than ten pounds) that it may be used for either purpose, it is particularly adapted and designed for floor use. For this purpose the mounting of the motor and fan above and in line with the nozzle, so that the whole casing is normally vertical when in use, causes the greater portion of the weight of these parts to be on the floor, and the attachment of the handle to this about the balancing point lightens the labor of the operator.

Having described my invention, what I claim is:

1. Apparatus for cleaning floors and floor coverings by suction comprising a suction creating device, means for driving the same, a suction nozzle adapted to support and carry said suction creating device and its driving means, a handle for use in moving the said suction nozzle over the surface to be cleaned and a dust receptacle carried by the apparatus and connected to the discharge from said suction creating device, said suction creating device and driving means being arranged so that the center of gravity thereof will be in a vertical transverse plane passing through the suction nozzle when it is in its operative position.

2. Apparatus for cleaning floors and floor coverings by suction, comprising a rotary fan, a motor operatively connected thereto, a suction nozzle adapted to support and carry said motor and fan, a handle for use in moving said suction nozzle over the surface to be cleaned and secured above the suction nozzle, and a dust receptacle carried by the apparatus and connected to the exhaust from said fan, said parts being arranged so that the center of gravity thereof will be substantially in a central transverse vertical plane passing through the suction nozzle when the same is held in its operative position.

3. Apparatus for cleaning floors and floor coverings by suction comprising a rotary fan, a motor operatively connected thereto, a suction nozzle, said motor and fan being supported entirely by the suction nozzle and operating handle, and a dust receptacle supported in part by said nozzle when the same is in its operative position.

In testimony whereof I have hereunto set my hand in the presence of two witnesses.

GEO. C. SCHMITZ.

Witnesses:
ELBERT B. HAND,
HENRY S. KEEFE.