

J. J. DUFFIE.
VACUUM CLEANER.
APPLICATION FILED AUG. 31, 1910.

1,057,812.

Patented Apr. 1, 1913.

2 SHEETS-SHEET 1.

Fig. 1

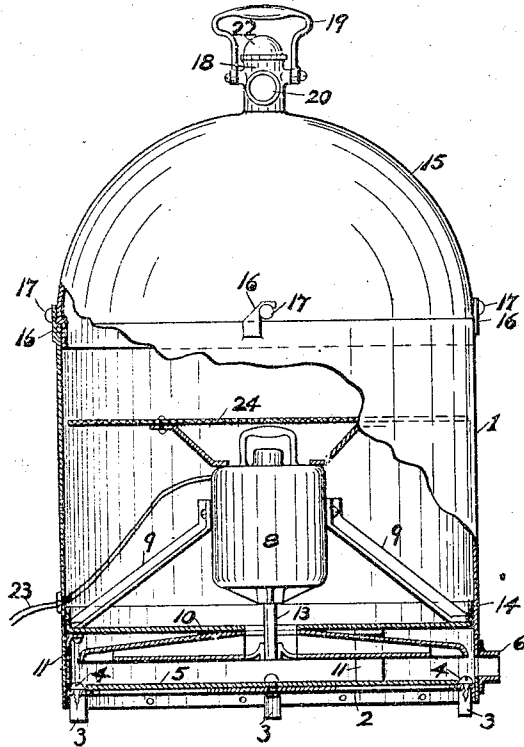
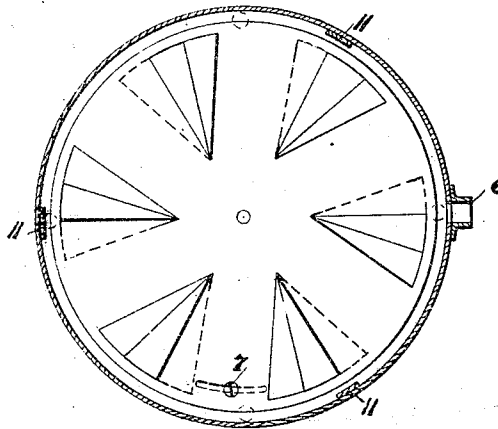


Fig. 2.



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Fig. 3

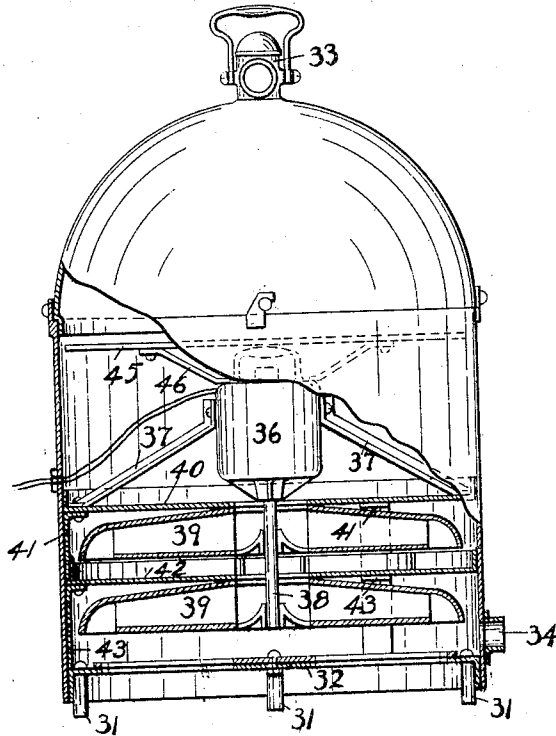
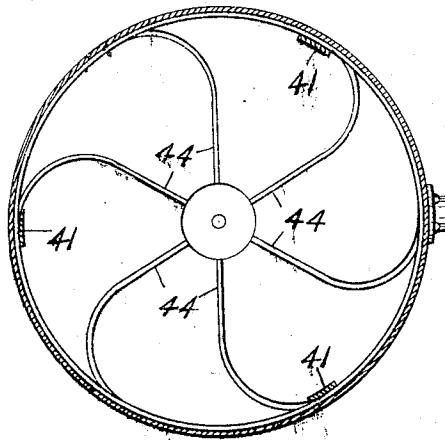


Fig. 4



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UNITED STATES PATENT OFFICE.

JOHN J. DUFFIE, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO THE VACUUM SPECIALTY MANUFACTURING COMPANY, A CORPORATION OF ARIZONA.

VACUUM-CLEANER.

1,057,812.

Specification of Letters Patent.

Patented Apr. 1, 1913.

Application filed August 31, 1910. Serial No. 579,966.

To all whom it may concern:

Be it known that I, JOHN J. DUFFIE, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented a new and useful Vacuum-Cleaner, of which the following is a specification in such full and clear terms as will enable those skilled in the art to construct and use the same.

This invention relates to a vacuum cleaner and its object is to make a machine which can be easily carried from place to place and which may be readily inspected for cleaning and repairs.

It is to be observed that such machines as the one herein contemplated are used in the home and usually by women, therefore it is necessary for them to present an attractive appearance, but the casing which covers the operating parts of the machine makes it inconvenient of access unless some means is especially provided for the removal of the motor and other parts therefrom.

It is an object of the present invention to permit the removal of the motor and fan from the casing without interfering with the latter in any way more than to lift the cover off and to pull the motor and fan out, a disk immediately over the fan making a tight joint with the fan casing and producing the proper suction of the air by the fan.

Another object of the invention is to provide a machine which may be used as a blower for drying the hair and for other common household uses.

Another object of the invention is to so position the fan with respect to the motor that the smallest possible space is occupied thereby. This is accomplished by supporting the fan below the motor and providing legs to support the motor which are secured thereto on the sides thereof thus reducing the vertical height of the fan and motor by a small amount.

In the drawings, in which the same numeral of reference is applied to the same portion throughout the several views, Figure 1 is a side elevation of the cleaner with a portion of the casing broken away to show the motor and fan therein, the fan being shown in section. Fig. 2 is a plan view of the bottom of the casing of the machine showing the manner of directing the air to the blowing fixture, or of allowing the same

to escape without back pressure against the fan, when the machine is used as a suction machine. Fig. 3 is a side elevation partly broken away of a slightly modified form of the invention, and Fig. 4 is a plan view of the vane holding disk used in the modified form of the machine.

The numeral 1 represents the casing of the machine which is cylindrical, and at the bottom of which is the base 2, said base having a number of holes therein through which the air passes when the machine is used as a suction machine. This base 2 has a number of rubber feet 3 secured thereto by means of screws 4, said feet lifting the machine high enough from the floor to permit the escape of the air therefrom. The base is secured to the cylinder by means of rivets and it carries a disk 5 which is pivoted thereto near the center thereof, said disk having holes which correspond with the holes in the base 2, thus enabling the latter holes to be entirely closed when it may be desired to use the machine as a blower, in which event the pipe used therewith is inserted in a fitting 6 below the fan. The disk 5 is rotated by means of a short screw 7 which projects through a slot in the bottom of the casing, said slot being curved and of such length as to permit the proper movement of the disk to close said openings.

The motor 8 is supported by means of a number of legs 9 which are secured thereto on the side thereof, said legs being secured at their lower ends to the disk 10, which latter is supported above the bottom of the casing by means of short legs 11 secured thereto immediately under the legs supporting the motor. This disk 10 has an opening therein at the center thereof for the purpose of allowing the air to pass to the center of the fan 12 which is supported on the shaft 13 below the motor. The disk 10 has a rim 14 formed thereon said rim being for the purpose of forming a tight joint with the casing of the machine when the motor and fan are placed therein.

The upper part of the casing is formed by means of the dome 15 which may be secured to the cylindrical part of the casing by means of the bayonet joint 16. The bayonet joint is formed by the hooks 21 on the upper edge of the cylindrical portion of the casing and they hold small pins 17 which are se-

cured on the dome 15. The dome is made air tight by means of a well known form of friction joint, as illustrated in Fig. 1.

The dust collecting apparatus of whatever form may be used is installed within the dome and has the air led thereto by means of an air inlet head 18 on the top of the dome and which is secured thereto. The air inlet head is provided with a handle 19 for carrying the machine from place to place and it is also provided with an opening 20 in, which may be inserted the pipe used for cleaning the dust from the desired places. In order that the incoming dust laden air may be observed the inlet head 18 has a glass dome 22 secured thereto and through which the incoming dust and air may be looked at by the operator. The motor is provided with the usual lead wires 23 which pass out of the casing near the disk 10, the wires having an air tight fitting therewith. In order that the dust collecting sack may not interfere with the operation of the motor a screen 24 is placed above the motor, said screen being supported by means of legs 24 resting on the top of the motor.

The foregoing description applies to the smaller machines which are adapted to be easily carried from place to place. In Figs. 3 and 4 there is illustrated a slightly modified form of construction which is intended to be applied to machines of slightly greater power and air displacement. In this form of the invention a casing 30 is provided which is substantially the same as the casing used with the other form of the invention, said casing having rubber feet 31 to support it above the floor and having a damper plate 32 the same as is used with the previously described machine. The dome 33 and inlet head are the same as in the previous form of the invention, as is the blower fitting 34 at the bottom of the casing. The difference between this form of the invention and the one previously described lies in the use of a double fan to increase the air suction, or pressure as the case may be. The motor is shown at 36 and it is supported by means of the legs 37, of which there may be a number. The shaft 38 of the motor depends below the same and carries two fans 39 of substantially the same kind as the fan shown in Fig. 1. Above the upper fan is a disk 40 which fits tightly in the outer casing and which has an opening therein immediately

over the center of the fan. This disk has the motor supporting legs secured thereto, and it in turn is supported by means of legs 41 secured to a second disk 42, the latter disk being supported from the bottom of the casing by means of the legs 43. The result of this construction is that the air from the top of the casing of the machine is drawn into the upper fan and by it discharged against the lower disk 42. In order that the air may not cause a back pressure owing to its impact against the disk surface guide vanes 44 are secured to the said disk, said vanes being so curved as to break the impact of the air as it leaves the fan and direct the same to the central opening in said disk whereupon it is then passed to the lower fan to be discharged therefrom at a higher pressure than would be possible with one fan alone. A screen plate 45 is placed over the motor to prevent the dust collecting receptacle from becoming entangled with the motor, legs 46 supporting the said screen above the motor a short distance. It is to be noted that the motor and fans in this form of the invention may be taken out of the main casing in the same manner as in the preceding form thereof, there being no means whatever for directly securing the fans and motor to the outer casing other than the mere friction of the tightly fitting disks 40 and 42. Suitable electrical wires lead from the motor through the casing near the top of the upper disk 40.

Having thus described my invention what I claim as new and desire to secure by Letters Patent of the United States is as follows:

In a vacuum cleaner, a casing, a vertical shaft motor therein, a fan below the motor and secured to the shaft thereof, a disk above the fan, legs supporting said motor, other shorter legs supporting the disk a short distance above the bottom of the casing, a cover for said casing, and an air and dust inlet pipe into the chamber formed in the upper portion of said casing, substantially as described.

In testimony whereof I have hereunto set my hand this 5th day of August, A. D. 1910, in the presence of the two subscribed witnesses.

JOHN J. DUFFIE.

Witnesses:

C. P. GRIFFIN,
R. P. ROGERS.