

J. B. KIRBY.
VACUUM CLEANER.

APPLICATION FILED JULY 9, 1909. RENEWED JAN. 10, 1914.

Patented June 16, 1914.

2 SHEETS—SHEET 1.

1,100,575.

FIG. 1.

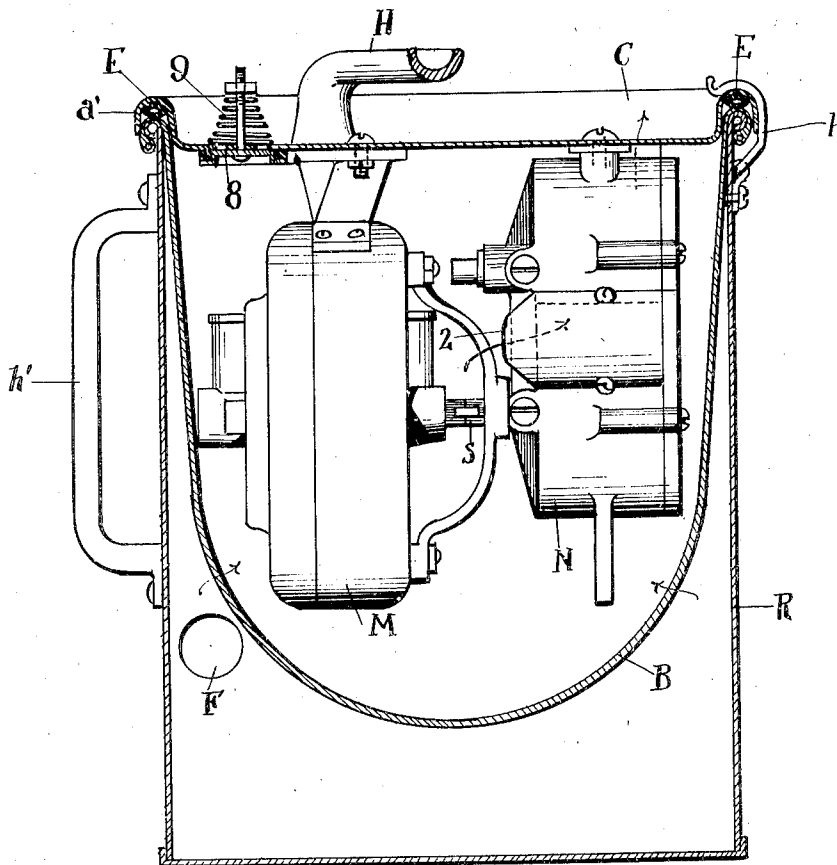
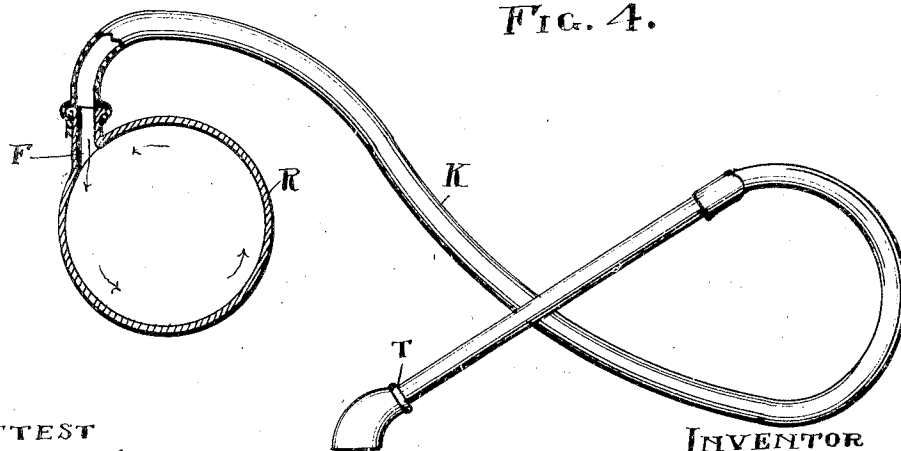


FIG. 4.



ATTEST
E. M. Fisher
J. C. Musson.

INVENTOR
James B. Kirby
BY Fisher & Musson ATTYS.

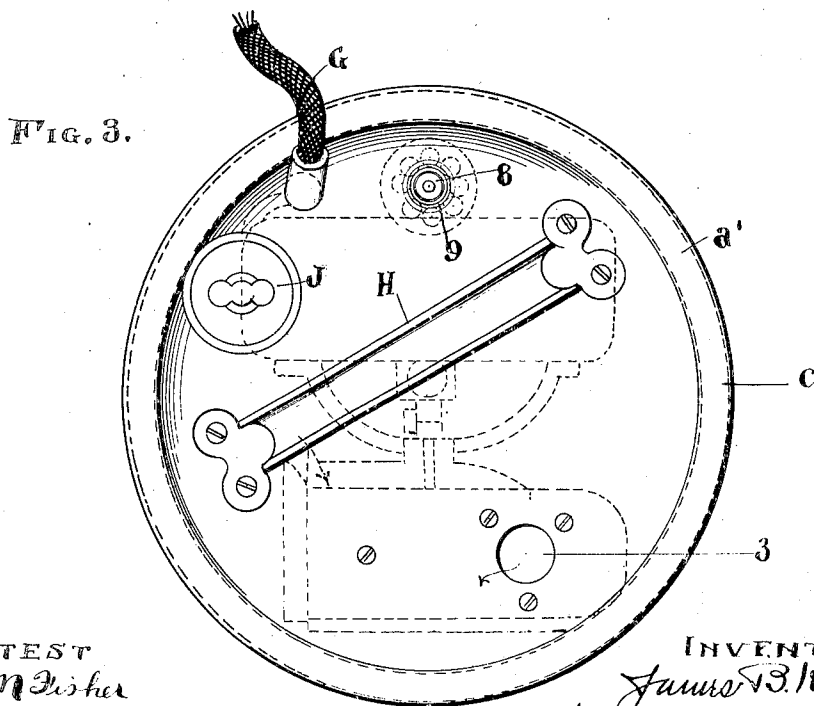
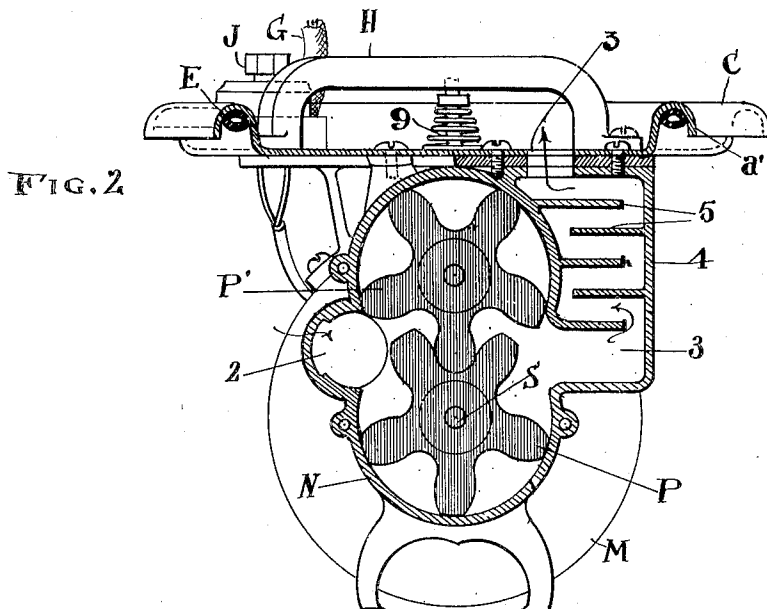
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UNITED STATES PATENT OFFICE.

JAMES B. KIRBY, OF CLEVELAND, OHIO, ASSIGNOR TO HARLEY B. BARNETT AND H. M. FARNSWORTH, OF CLEVELAND, OHIO.

VACUUM-CLEANER.

1,100,575.

Specification of Letters Patent.

Patented June 16, 1914.

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To all whom it may concern:

Be it known that I, JAMES B. KIRBY, citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Vacuum-Cleaners, of which the following is a specification.

My invention relates to an improvement in vacuum cleaners, and the invention consists in the construction and combination of parts, substantially as shown and described and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a sectional elevation of the machine, disclosing the arrangement of the parts as they are supported in and upon the outer receptacle. Fig. 2 is a sectional elevation of the vacuum or exhaust pump and its casing and other parts immediately associated therewith. Fig. 3 is a plan view of the machine. Fig. 4 is a cross section of the receptacle R on the line of its tangentially arranged intake and showing a hose and floor tool attached thereto.

The machine or cleaner as thus shown comprises a vessel or receptacle R of can shape and preferably made of a light sheet metal, say of tin so as to be easily handled by one person and having a cover C removably engaged thereon. To this end and for the further purpose of making the cover air tight on the receptacle the cover is formed or struck up about its edge *a'* into substantially hook shape in cross section and engages over the edge of the receptacle with a packing ring E interposed between said edges to make an air tight engagement. Hooks *h* or their equivalent, serve to temporarily lock the cover and receptacle together, so that by means of handle H on the cover the entire device can be carried from place to place as it is used. Of course a bail on the receptacle would be the equivalent of said handle and serve the purpose, and a side handle *h'* also is shown. The operating parts are mounted on or suspended from said cover, and comprise an electric motor M of any suitable kind and an exhaust or vacuum pump having a casing N and two intermeshing rotary pistons P and P'. The said pistons are of substantially clover leaf pattern in elevation and piston P is mounted on a shaft S operatively connected with the electric motor shaft, while pis-

ton or wheel P meshes with piston P' and drives the same. As to this style or construction of exhaust pump, I am of course aware that it is not new and original with me as a pump, but it is found to serve my purposes in connection with a rapidly driven motor and hence has been adopted rather than some other and possibly less desirable or effective style. The casing N is built to conform to the pistons, and has an air inlet 2 from receptacle R and an exhaust 3 which issues through cover C but leads by a more or less devious path through a muffler 4 at one side of said casing. In operating a pump of this kind I found that the noise arising from the pump was of a character that materially militated against the use of the machine, and therefore I conceived the idea of interposing means for subduing the sound and adopted the muffler 4, substantially as shown. Thus, in detail it will be seen that the casing N is provided with a specially constructed muffler compartment in which there is a series of staggered vanes 5 horizontally projecting more or less across the path of the air in its discharge from opposite side walls and overlapping but leaving space for the air to travel under baffled conditions between said vanes, and which suffice to deaden the noise from the pistons. Thus it follows that the operations of the machine are quieted to the outside and a rotary pump of this style for creating vacuum is rendered available.

In arrangement of the parts both the motor M and pump N are suspended from cover C and removable therewith, so that when it becomes necessary to empty the vessel or receptacle of accumulated dust these parts are first lifted off together and thus releases the bag or sack B which is confined about its edge between said cover and vessel. Said bag is preferably made of a suitable woven fabric, say drilling or duck or the like, which is close in texture and sifts out the slightest particles of dust in the air, and by reason of its bag shape exposes a very much greater area for cleansing purposes than would be possible if it were a mere diaphragm stretched across the vessel or chamber R, and, being loosely suspended in the receptacle there is sufficient pulsation or shaking by the operations of the pump and motor to cast off the dust accumulating on its under side. Suction may

draw the bag up against casings M and N but it can go no farther nor is its large area diminished.

The cover C shows a spring pressed relief valve 8 arranged to open inward under certain conditions, as when, for any reason, the induction passage or opening F becomes clogged or closed. The tendency then would be to collapse the cover or the receptacle under the power of the exhaust, and this is avoided by said relief valve which supplies the vacuum with air from the outside. The spring 9 is, however, strong enough to prevent valve 8 from opening except in extreme cases, as just stated, so that in the normal operations of the machine the said valve remains closed.

Suitable electric connections G pass through cover C to motor M, and a switch J is also mounted on the cover to control the motor. This makes a very convenient arrangement for controlling the motor and pump and for permitting removal and replacement of the parts intact from receptacle R. Intake F is preferably arranged off center or tangentially in respect to the vertical axis of receptacle R and bag B so that a constant whirling or agitating action is produced within the receptacle and about the bag which will greatly assist in preventing the dust from adhering to and clogging the bag. Any suitable hose K and floor tool T may be attached to intake F.

What I claim is:

1. A vessel having an air inlet and a cover with an outlet, a motor and a vacuum pump operatively connected beneath said cover, and a dust intercepting bag inclosing said motor and pump within said vessel.

2. In a vacuum cleaner, a receptacle having an intake and a removable cover therefor, and a motor and an exhaust pump supported within said receptacle, combined with a dust intercepting bag inclosing said motor and pump and having a large cleansing area within said receptacle.

3. A vacuum cleaning machine having a single vessel with an inlet opening for air and a cover thereon with an outlet for air, in combination with a dust intercepting bag suspended from about its top in the said vessel and a motor and a pump supported beneath said cover and within the said bag and operatively connected.

4. In a vacuum cleaner, a vessel and a separate cover thereon, in combination with a motor and a vacuum pump suspended in said vessel from said cover and operatively connected, and a dust intercepting medium inclosing said motor and pump and engaged about its edge over the edge of the vessel beneath said cover.

5. In a vacuum cleaner, a dust receptacle having an intake, a removable cover for said receptacle having a carrying handle, a dust bag suspended within said receptacle and held in place by said cover, an electric motor and an exhaust pump suspended from the bottom of said cover, and electrical switch connections mounted upon the top of said cover.

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

JAMES B. KIRBY.

Witnesses:

F. C. MUSSUN,
E. M. FISHER.