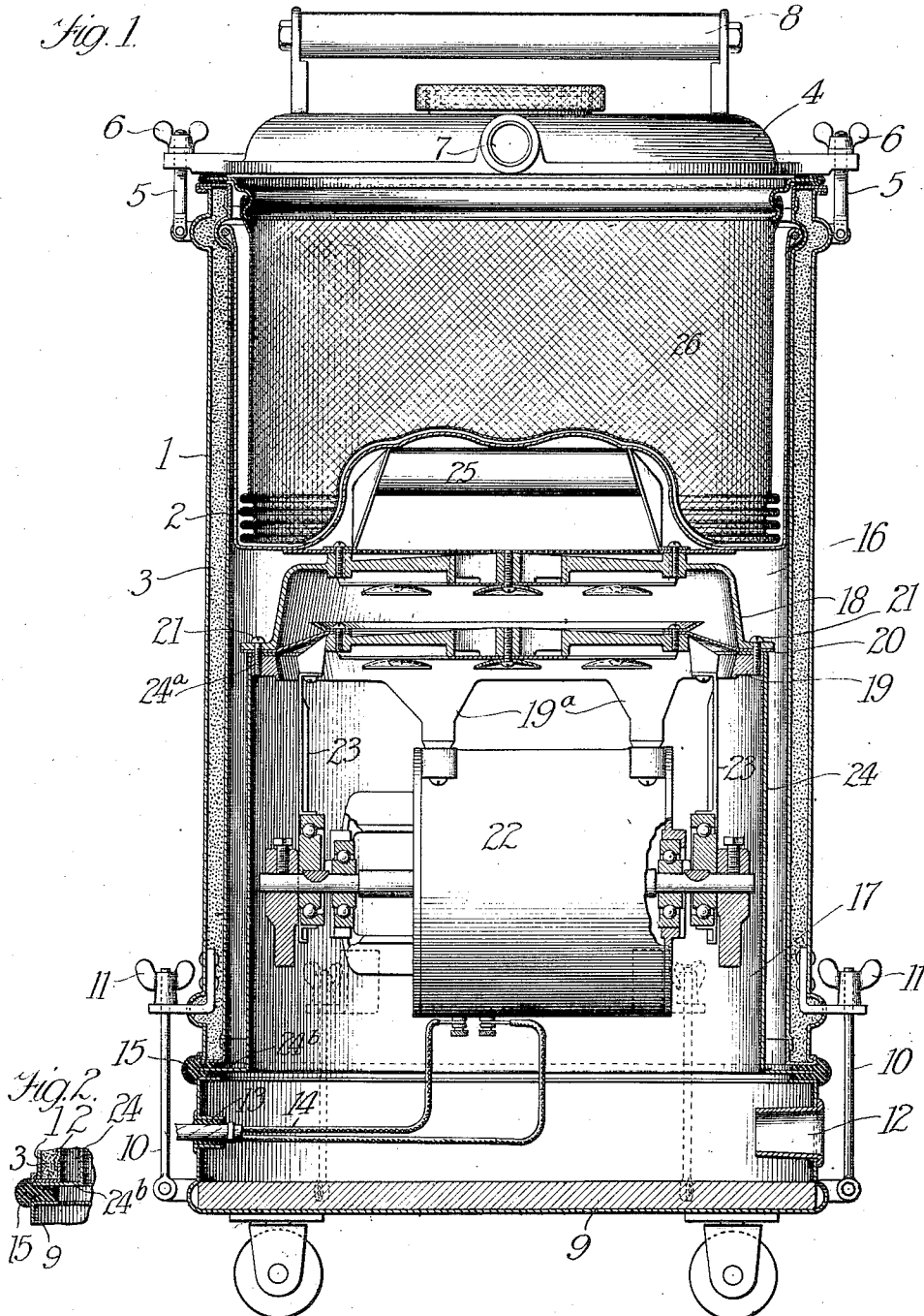


J. W. SMITH.
VACUUM CLEANER.
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995,299.

Patented June 13, 1911.



Witnesses
Martin A. Olsen.
Robert Dobberman.

Inventor
John W. Smith
By Rector, Hibben, Davison Macaulay
His Attys

UNITED STATES PATENT OFFICE.

JOHN W. SMITH, OF CHICAGO, ILLINOIS.

VACUUM-CLEANER.

995,299.

Specification of Letters Patent. Patented June 13, 1911.

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To all whom it may concern:

Be it known that I, JOHN W. SMITH, a citizen of the United States, residing in Chicago, Cook county, Illinois, have invented certain new and useful Improvements in Vacuum-Cleaners, of which the following is a specification.

My invention relates to vacuum cleaners, particularly those of the small portable type such as those for house-hold use.

The object thereof is to provide a simple, compact and efficient machine of this character, the various features of advantage and utility of which will be apparent from the description hereinafter given.

In the drawings, Figure 1 is a central sectional elevation of my cleaner and Fig. 2 a detail view of a modified form of construction as to one of the features.

Inasmuch as the vacuum cleaner of this application is of the same general construction and mode of operation as that described in my Patent No. 921,632, issued May 11, 1909, reference may be had thereto for a more detailed explanation than is necessary for a description of the present invention.

Referring to the vacuum cleaner as herein illustrated, the same comprises a casing preferably of cylindrical form and in the present instance composed of two concentric shells 1 and 2, the space therebetween being preferably filled with some suitable sound-deadening material 3. These shells are connected at their top and bottom in any suitable manner as by the interlocking of flanges as clearly shown in Fig. 1.

The form of wall with its sound-deadening material is not herein claimed but with certain other details of construction forms the subject matter of a co-pending application Serial No. 496,756.

The top of the casing is closed by a suitable cover 4 and clamped thereto in any desired way, as by means of the swing bolts 5 and thumb-nuts 6. This top has the usual inlet 7 and a handle 8 for carrying purposes. The bottom is formed as a separate and removable section 9 which is held clamped to the casing in suitable manner as by means of the swing bolts 10 and thumb-nuts 11. This bottom section is provided with an exhaust opening 12 in which the usual blowing hose may be inserted for blowing purposes and such section is also provided with an opening 13 through which pass the cables 14 for

the electric motor hereinafter described. In order to seal the connection between the casing proper and the bottom section and make the space therewithin air tight except for said exhaust opening 12 I employ a ring gasket 15 interposed as shown in Fig. 1 between the bottom edge of the casing and the top inward flange edge of the bottom section.

The interior of the casing has at its upper portion a vacuum chamber 16, and at its lower portion a pressure chamber 17 and between said chambers is located the pumping mechanism which includes among other elements a case or curved plate 18, a ring-like plate 19 and a diaphragm 20 of suitable material and clamped at its edges between said plates 18 and 19 by means of the series of screws 21. The electric motor 22 is held suspended from the depending brackets or flanges 19^a extending from the lower plate 19 of the pumping mechanism and such motor is operatively connected with the diaphragm by means of the one-piece direct connecting rods 23 in substantially the same manner, as shown and described in my patent aforesaid. Likewise the valve mechanism of this particular pump is of the same general construction and operation as in said patent, so that further description of the pumping mechanism is unnecessary.

The pumping mechanism constitutes the subject matter of a co-pending application Serial No. 466,476, filed December 8, 1908.

The pumping mechanism is mounted upon and secured to the upper end of a shell 24 which is concentric of the cleaner casing and flanged both at its top and bottom, the top flange 24^a being inwardly directed and the bottom flange 24^b being outwardly directed. The top flange is interposed between the plates 18 and 19 and together with the diaphragm are clamped therebetween. The lower flange coöperates with the joint between the casing and its bottom section and is secured thereat and also sealed. In the instance shown in Fig. 1, this bottom flange of the shell is embedded in the gasket 15 but this while preferable is not essential inasmuch as it may be interposed between the gasket and either the casing or the bottom section, the interposing of such flange between the casing and the gasket being illustrated in the detail view of Fig. 2.

According to the above described con-

struction, a very compact and readily assembled and disassembled construction is provided, it being understood that when the swing bolts 10 are released the casing may be removed, leaving the pumping mechanism and its motor free to be also removed for any purpose desired, a handle 25 being preferably provided at the top of the pumping mechanism for handling purposes. It is also understood that this pumping mechanism is secured to the shell 24 by being clamped between the plate 18 and 19 of the pumping mechanism, while the motor depends and is located within said shell. This shell is sealed at its lower end as shown in order that all of the air passing through the vacuum chamber in which suitable dust collecting devices 26 are located shall pass through the pumping mechanism and be discharged into the pressure chamber.

I claim:

1. In a vacuum cleaner, the combination of a casing having a vacuum chamber and a pressure chamber, vacuum pumping mechanism arranged within the casing, means for operating said mechanism, and a shell connected at one end with the casing and at its other end with the pumping mechanism; substantially as described.

2. In a vacuum cleaner, the combination of a casing having a vacuum chamber and a pressure chamber, vacuum pumping mechanism arranged within the casing, means for operating said mechanism, and a shell connected at one end with the casing and at its other end with the pumping mechanism, said shell being sealed at its connection with the casing; substantially as described.

3. In a vacuum cleaner, the combination of a casing having a vacuum chamber and a pressure chamber, vacuum pumping mechanism arranged within the casing, means for operating said mechanism, and a shell located within and concentric of said casing, and arranged to support at its upper end said pumping mechanism; substantially as described.

4. In a vacuum cleaner, the combination of a casing having a vacuum chamber and a pressure chamber, vacuum pumping mechanism arranged within the casing, an electric motor suspended from the pumping mechanism for operating the latter, and a shell arranged within the casing and at its upper end supporting the pumping mechanism, said motor being located within the shell; substantially as described.

5. In a vacuum cleaner, the combination of a casing, having a vacuum chamber and a pressure chamber, vacuum pumping mechanism arranged within the casing, means for operating said mechanism, and a shell connected at one end with the casing and at its other end with the pumping mechanism; said shell having flanged ends for its said

connections with the pumping mechanism and casing respectively; substantially as described.

6. In a vacuum cleaner, the combination of a casing having a vacuum chamber and a pressure chamber, vacuum pumping mechanism arranged within the casing, a removable bottom for said casing, a gasket between the bottom and the lower edge of the casing, and a shell connected at its lower end with the gasket and at its upper end supporting the pumping mechanism; substantially as described.

7. In a vacuum cleaner, the combination of a casing having a vacuum chamber and a pressure chamber, vacuum pumping mechanism arranged within the casing, means for operating said mechanism, and a shell connected at one end with the casing and at its other end with the pumping mechanism, said pumping mechanism including two plates and a diaphragm clamped between them, and said shell having at its upper end a flange which is also clamped between said plates; substantially as described.

8. In a vacuum cleaner, the combination of a casing having a vacuum chamber and a pressure chamber, vacuum pumping mechanism arranged within the casing, a removable bottom for said casing, a gasket between the bottom and the lower edge of the casing, and a shell connected at its lower end with the gasket and at its upper end supporting the pumping mechanism, said shell having at its lower end a flange embedded in said gasket; substantially as described.

9. In a vacuum cleaner, the combination of a casing having a vacuum chamber and a pressure chamber, vacuum pumping mechanism arranged within the casing, a removable bottom for said casing, a gasket between the bottom and the lower edge of the casing, and a shell connected at its lower end with the gasket and at its upper end supporting the pumping mechanism; said shell having flanges at its ends, that at its upper end being inwardly directed and that at its lower end being outwardly directed, the upper flange being connected with the pumping mechanism and the lower flange to the gasket; substantially as described.

10. In a vacuum cleaner, the combination of a casing having a vacuum chamber and a pressure chamber, vacuum pumping mechanism arranged within the casing, a removable bottom for said casing, a gasket between the bottom and the lower edge of the casing, and a shell connected at its lower end with the gasket and at its upper end supporting the pumping mechanism, said shell having flanges at its ends, that at its upper end being inwardly directed and that at its lower end being outwardly directed, and the pumping mechanism including two

plates and a diaphragm clamped at its margin therebetween, the upper flange being also so clamped and the lower flange being embedded in the gasket; substantially as described.

5 11. In a vacuum cleaner, the combination of a casing having a vacuum chamber and a pressure chamber, vacuum pumping mechanism arranged within the casing, a removable bottom for said casing, a gasket be-

tween the bottom and the lower edge of the casing, a shell supporting the pumping mechanism and having at its lower end a flange embedded in the gasket, and means for clamping the bottom onto the casing; 15 substantially as described.

JOHN W. SMITH.

Witnesses:

S. E. HIBBEN,
ROBERT DOBBERMAN.