

H. E. FANSHAWE.  
VACUUM CLEANING APPARATUS.  
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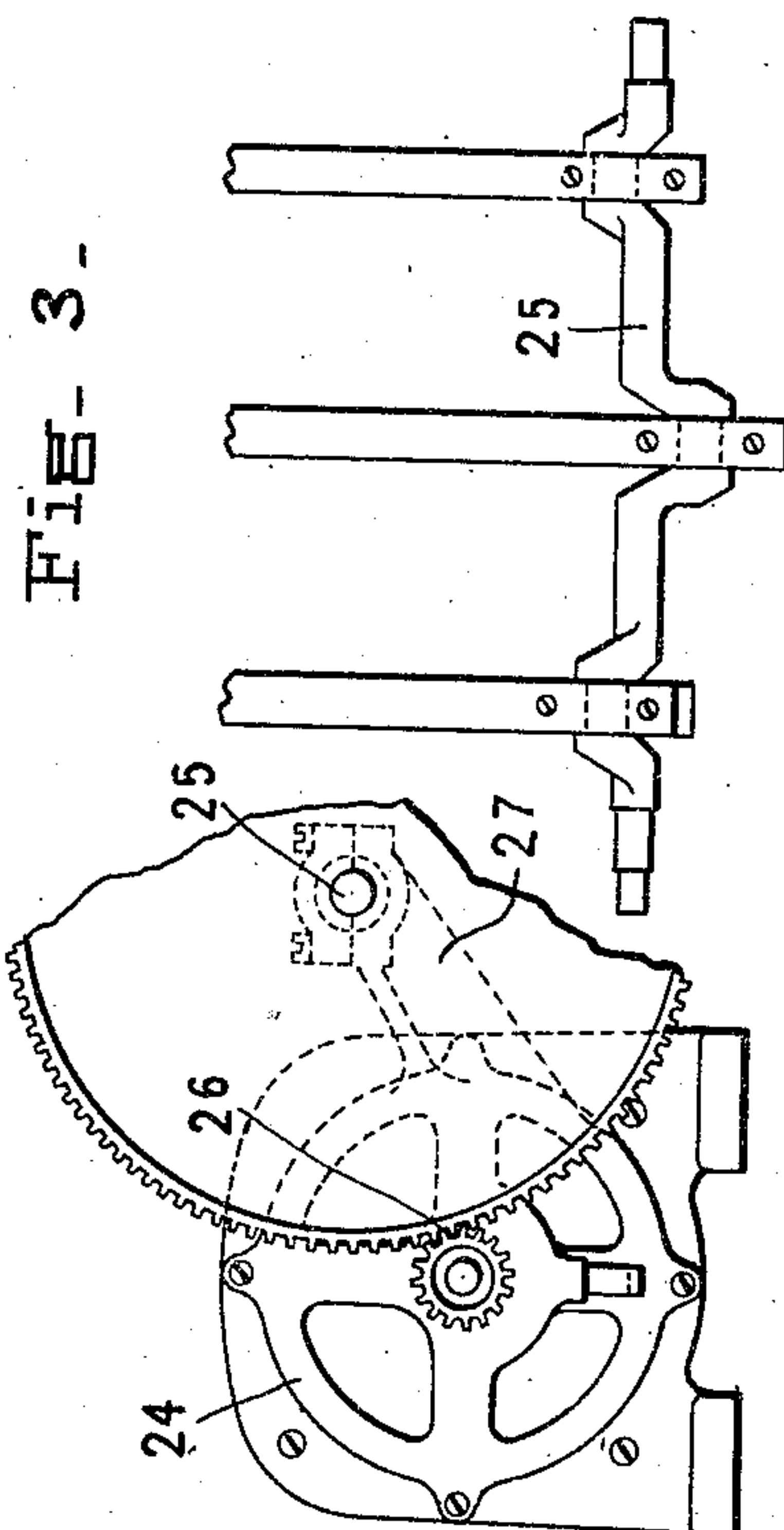
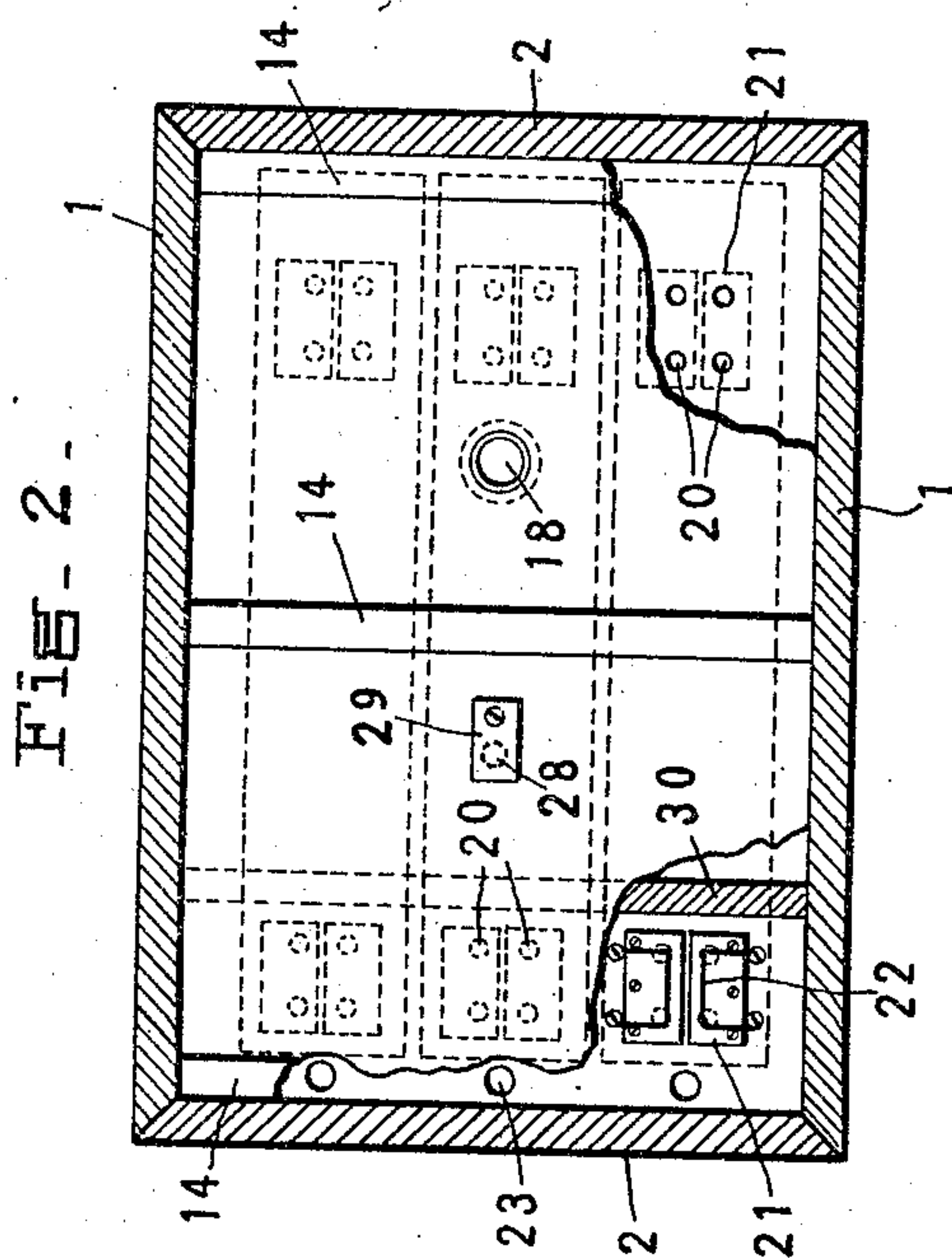
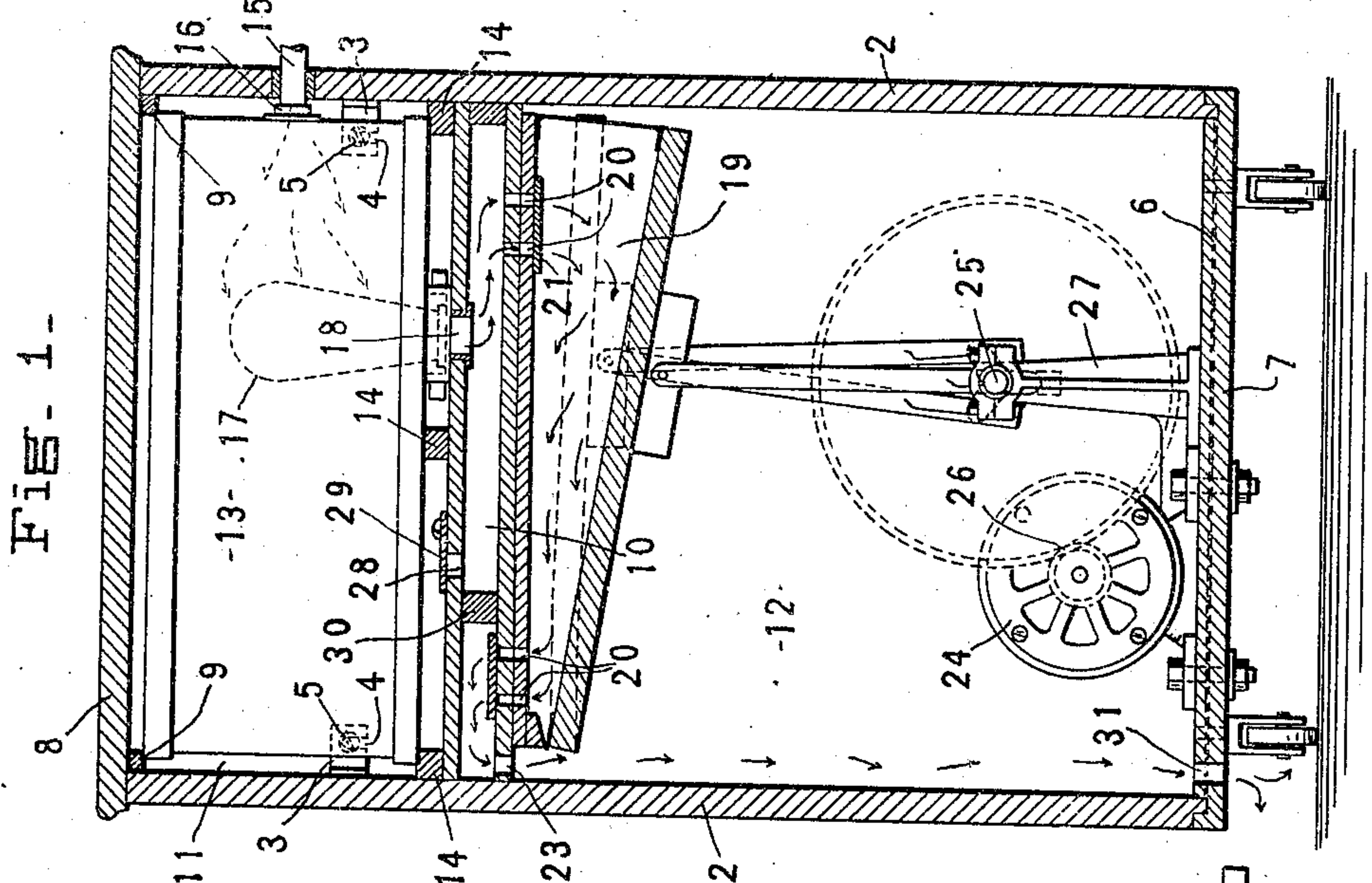
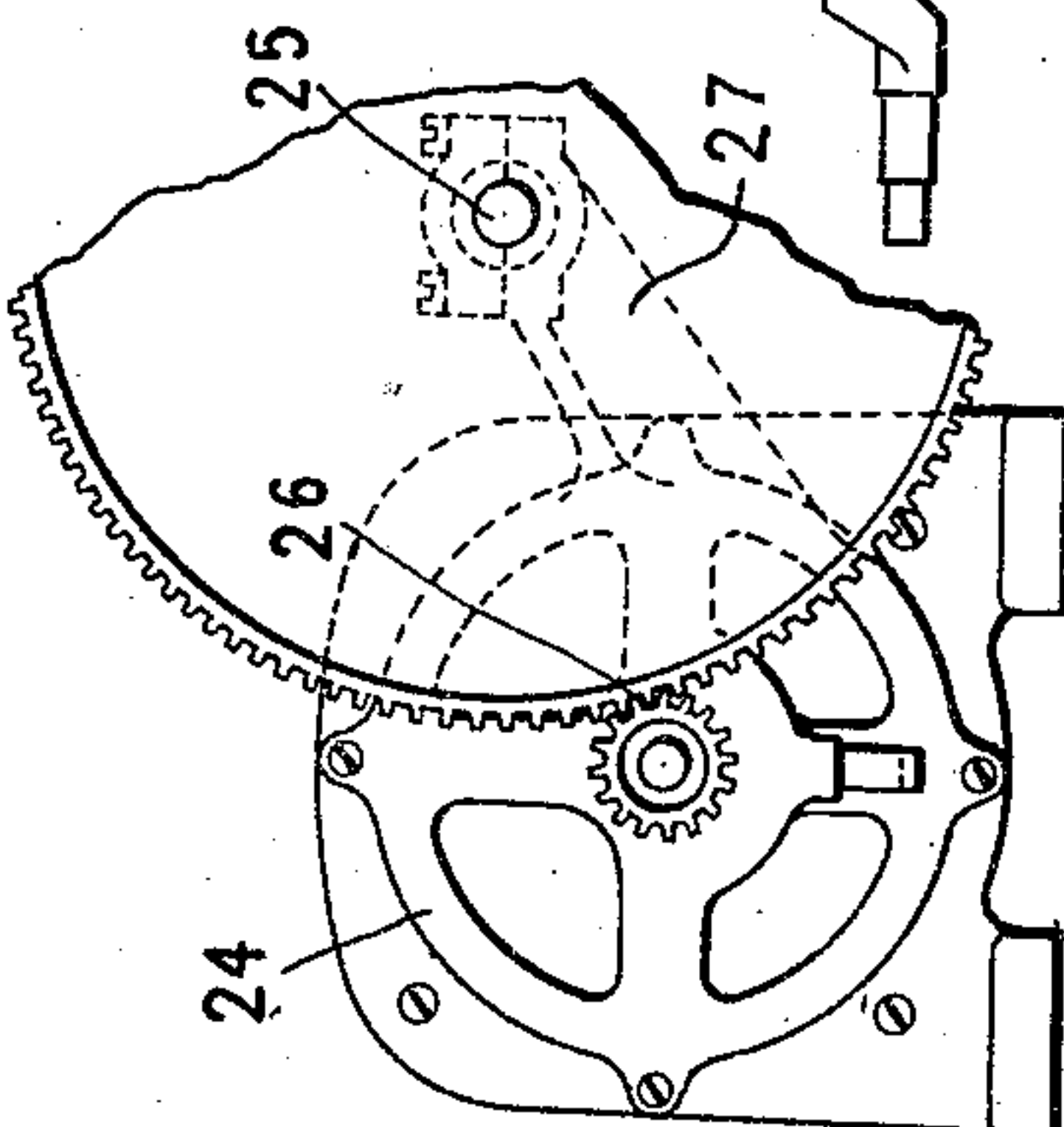


Fig- 4-



WITNESSES

*J. Clyde Kipley*  
*Philip S. McLean*

INVENTOR

*Henry E. Fanshawe*

BY

*Brook Beeken Smith*  
ATTORNEYS



# UNITED STATES PATENT OFFICE.

HENRY E. FANSHAW, OF NEW YORK, N. Y.

## VACUUM CLEANING APPARATUS.

955,118.

Specification of Letters Patent.

Patented Apr. 12, 1910.

Application filed February 10, 1909. Serial No. 477,106.

*To all whom it may concern:*

Be it known that I, HENRY E. FANSHAW, citizen of the United States, and resident of the borough of Manhattan, city of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Vacuum Cleaning Apparatus, of which the following is a specification.

10 My invention relates to improvements in vacuum cleaning apparatus and more particularly to those operated by a motor, as distinguished from the ones which are operated by hand.

15 One object of the invention is to provide a device of this character which will effectually and quickly remove all dust, dirt, etc., and which will require but a very small motor for the operation of the same, so that the expense of running the device will be very light.

20 Another object is to make the apparatus as small and compact as possible, light in weight, attractive in appearance and easily handled and operated, so as to be particularly useful for household purposes.

25 One feature of the invention resides in journaling the crank shaft which operates the bellows, in journal brackets or standards carried by the motor itself and rigid with respect to the motor, so that the motor shaft and crank shaft will always be held in true parallelism. This construction also permits of the bodily removal of the entire power plant of the apparatus without disturbing the other parts and without altering the adjustment of any of the parts comprising the power plant.

30 Another feature consists in mounting the wind chest in the casing to form a horizontal partition therein, thereby providing a clear unobstructed compartment in the upper portion of the casing, and in mounting the dust box in this compartment where it will be readily accessible. In this way, the entire upper compartment may be utilized as a container for the dust box and the dust box may be made large enough to occupy the whole of the compartment, thus making the use of a larger dust box possible. The apparatus would therefore have a greater cleaning capacity since with the use of this extra large receptacle, a greater territory could be covered and the receptacle would not have to be emptied as often as if a

smaller receptacle were used. The disadvantage of handling a larger dust receptacle is obviated to a great extent by having the dust box right in the top of the casing in a compartment all by itself so as to be very easily accessible.

While the foregoing sets forth in concise form the important parts of my invention and the preferred arrangement and construction of the parts, still I would have it understood that certain changes may be made in the construction and arrangement of the different parts without departing from the legitimate and intended scope of the invention.

Referring now to the drawings illustrating the invention: Figure 1, is a vertical sectional view of a device embodying the preferred form of my invention, the motor and certain other parts being shown in elevation. Fig. 2, is a horizontal sectional view taken through the upper portion of the casing looking down upon the wind chest, there being parts broken away to illustrate the valves of the wind chest and bellows. Fig. 3, is a detached detail view of the crank shaft and pitmen thereon, and, Fig. 4, is a detached view of the motor and the crank shaft, showing the driving connection between the two and illustrating a slightly modified form of journal support for the crank shaft.

In the drawings, like figures indicate like parts, throughout the different views.

The casing of the apparatus is preferably made with one or more removable sides 1, so as to render the motor and correlated parts readily accessible, the removable side or sides being preferably held to the fixed sides 2, by the angular brackets 3, which have slotted portions 4, as shown in Fig. 1, which engage over the headed projections 5, on the fixed sides. Furthermore, the lower edges of the removable sides preferably make a rabbet joint 6, with the bottom 7. While I find this a very simple and effective way of securing the removable sides in place, I do not wish to limit myself to this precise manner of fastening the sides as other equally effective means could be devised. The top of the casing is also made removable to permit access to the dust box. This top might be hinged or otherwise secured to the walls of the casing, but in the present instance it is shown as capable of being lifted entirely



free of the casing, the cleats 9 on the under face of the top engaging the inner walls of the casing to hold the top in place and at the same time permit an easy removal thereof.

The wind chest 10 of the apparatus is preferably secured between the fixed parts of the casing so as to form a horizontal partition as shown, thereby dividing the casing into an upper compartment 11 and a lower compartment 12. The interior of the upper compartment is entirely unobstructed so as to receive the dust box 13, which may be made substantially the full size of the casing or cabinet. Cleats 14 are preferably provided for the direct support of the dust box. The suction tube 15, makes connection with the dust box by means of the slip joint 16. The usual dust filter 17, is mounted in the dust box and a slip joint connection 18 is made between the dust box and wind-chest.

The bellows 19, are preferably secured direct to the under side of the wind-chest so as to leave as much available space as possible in the lower compartment for the power plant, and valve openings 20, are provided between the wind-chest and bellows, the openings being closed by the flap valves 21. The valve openings are preferably arranged in pairs as shown in Figs. 1 and 2 and the flaps are normally held closed by springs 22. These valves are more particularly described and claimed in a companion application filed by me. The exhaust air is conducted from the rear end of the wind-chest through passage 23 to the lower compartment and escapes through the openings 31 in the bottom of the casing. This disposition of the exhaust air simplifies the construction considerably as no tubes or other conductors are necessary and as the outlet for the air may be made as large as desired, there is absolutely no back pressure. The transverse wall or partition 30, divides the wind chest into the inlet and exhaust side.

For the motive power I prefer to use a small electric motor 24, but other power could be used as well. The crank shaft 25, which is driven from the motor either by gear and pinion connections 26, belt, chain, friction drive or other suitable devices, is journaled in brackets or standards 27, and these journal brackets are carried by the motor itself so that true parallelism will always be maintained between the motor shaft and the crank shaft. The journal supports may rise from the base of the motor as in Fig. 1, or they could be carried by the frame of the motor as in Fig. 4. In the latter case, the brackets would stand outwardly from the motor frame at an angle so as to allow the interposition of suitable reduction gearing between the two shafts. By reason of this arrangement, the entire power plant,

crank shaft, motor and all, may readily be removed from the casing by detaching the pitmen either at the crank shaft or at the connection with the bellows. To regulate the degree of suction in the wind-chest, an auxiliary inlet opening 28, may be provided in the top of the wind-chest, which may be either wholly or partially closed by the valve 29.

It will be noted that the apparatus is divided substantially into three sections, or parts, one above the other. A dust box section, a pneumatic section (including bellows and wind-chest) and a power plant section. By reason of this arrangement, the device may be made in very compact form, the sections are separate and independent of each other so that the parts of one section may be removed or adjusted without interfering with the parts of the other sections, and the device as a whole is simpler and may be made more cheaply.

What I claim is:—

1. In a vacuum cleaning apparatus, a casing, a horizontal partition therein dividing the casing into an upper and a lower compartment, a receptacle occupying the upper compartment, a wind chest and bellows, a motor, supports rigid with the frame of the motor, a crank shaft journaled in said supports, a pinion on the motor shaft and a gear on the crank shaft meshing therewith, and pitmen on the crank shaft having connection with the bellows.

2. A vacuum cleaning apparatus comprising a casing, a wind chest forming a horizontal partition therein to provide an upper unobstructed compartment and a lower compartment, a box received in and occupying the whole of the upper compartment, bellows supported by the wind chest, a valve controlling the degree of vacuum in the wind chest, a motor mounted on the bottom of the casing, journal brackets outstanding from and rigid with the motor frame, a crank shaft journaled in said brackets, driving connection between the motor and crank shaft, pitmen on the crank shaft making connection with the bellows, the entire operating mechanism for the device being wholly contained in the lower compartment of the casing.

3. In a vacuum cleaning apparatus, a casing, a wind chest forming a horizontal partition therein to provide an upper unobstructed compartment and a lower compartment, a box received in and occupying the whole of the upper compartment, bellows supported by the wind-chest, a motor mounted on the bottom of the casing, journal brackets outstanding from and rigid with the motor frame, a crank shaft journaled in said brackets, driving connection between the motor and crank shaft, pitmen on the crank shaft making connection with



the bellows, the entire operating mechanism for the device being wholly contained in the lower compartment of the casing.

4. In a vacuum cleaning apparatus, a casing, a wind-chest mounted horizontally in the casing, a box supported on the wind chest, bellows dependent from the under side of the wind chest, means for operating the bellows, passages between the dust box, wind chest and bellows, and an outlet passage from the wind chest.

5. In a vacuum cleaning apparatus, a casing, a wind-chest and bellows carried in said casing, a box above said wind-chest removable through the top of the casing, a motor and driving connections for the bellows below the wind chest, removable through the side of the casing.

6. In a vacuum cleaning apparatus, a casing, a wind chest forming a horizontal partition therein dividing the casing into an upper and a lower compartment, a receptacle located in the upper compartment and supported upon the wind chest, bellows and a motor for operating the same located in the lower compartment.

7. In a vacuum cleaning apparatus, a casing, a wind chest forming a horizontal partition therein, a receptacle supported on top

of the wind chest, and bellows dependent from the lower side of the wind chest.

8. In a vacuum cleaning apparatus, a casing, a wind chest forming a horizontal support therein, a receptacle seated on said support, a suction tube connected to the receptacle, connection between the receptacle and wind chest, bellows, passages between the wind chest and bellows, and means for operating the bellows.

9. In combination, a casing, a wind chest therein divided into a front and a rear compartment, a receptacle, a suction inlet to the receptacle, a removable connection between the receptacle and the front end of the wind chest, bellows formed in part by one of the side walls of the wind chest, valved passages between the bellows and the front and rear compartments of the wind chest, and means for operating the bellows.

Signed at borough of Manhattan, city of New York in the county of New York and State of New York this 8th day of February A. D. 1909.

HENRY E. FANSHAW.

Witnesses:

H. L. STEWART,  
PHILIP S. McLEAN.