

Aug. 24, 1948.

E. A. FRENCH

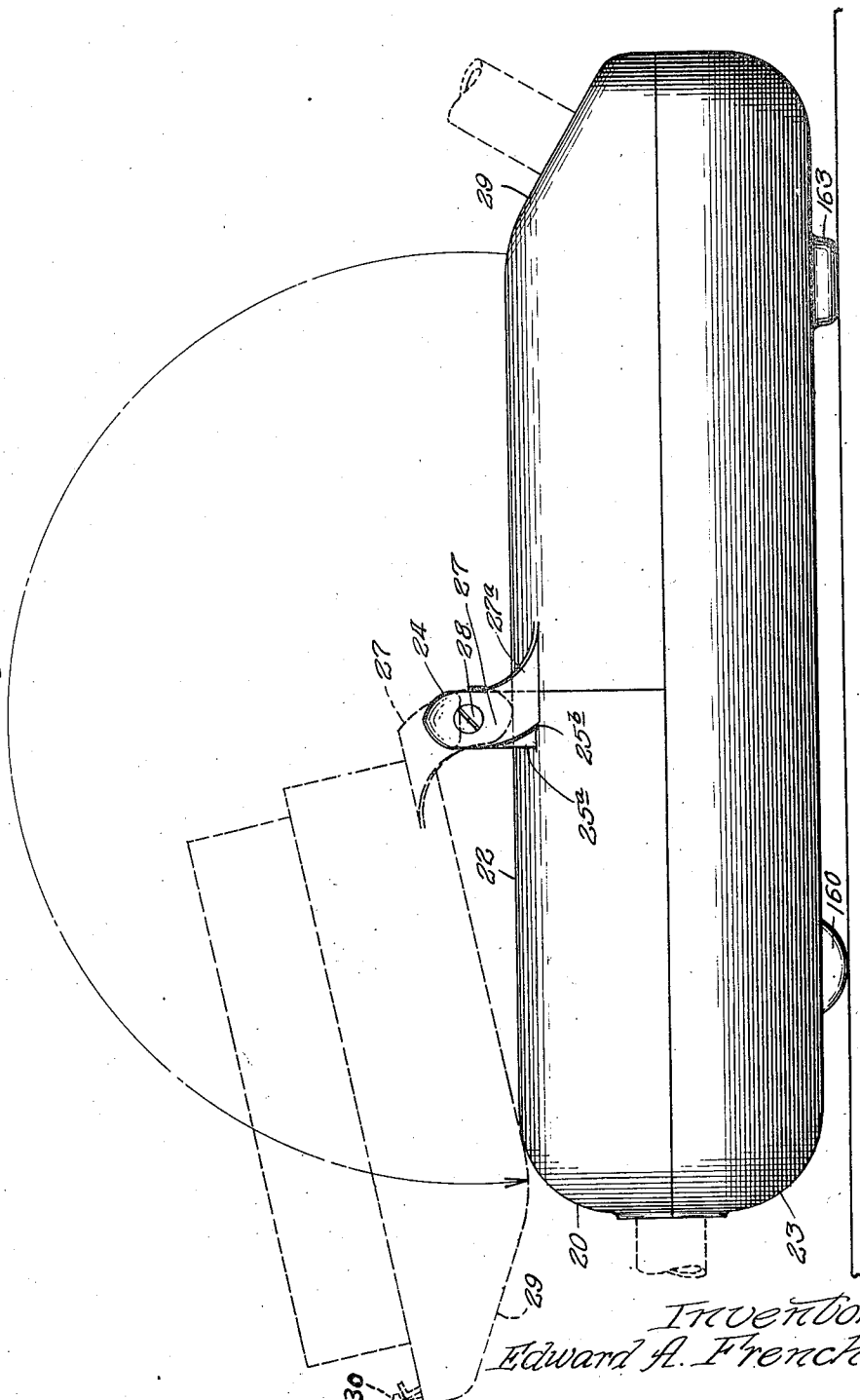
2,447,500

TANK TYPE SUCTION CLEANER

Filed Oct. 2, 1944

4 Sheets-Sheet 1

*Fig. 1.*



*Inventor:*  
*Edward A. French,*  
*By* *Christon, Wiley, Schroeder, Morrison & Hoffman*  
*ATTY'S.*

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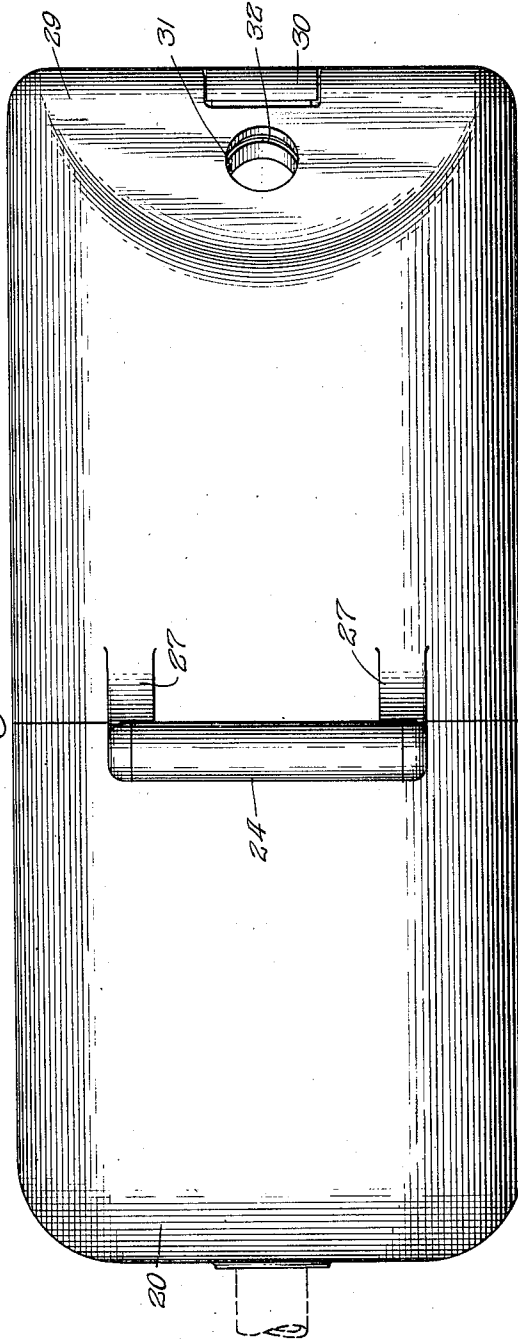
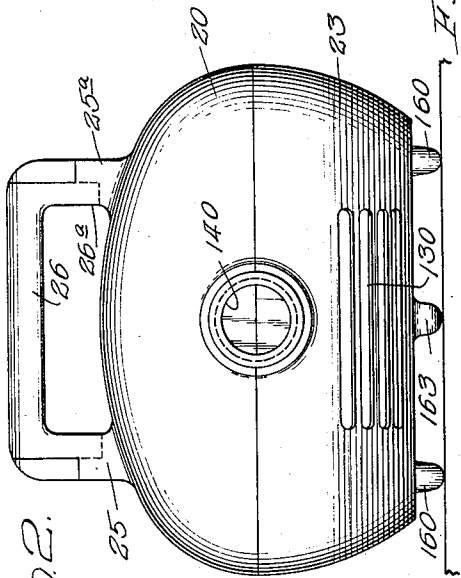
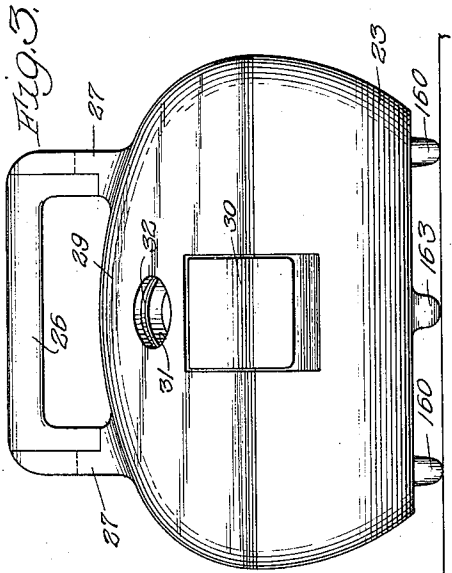
E. A. FRENCH

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TANK TYPE SUCTION CLEANER

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4 Sheets-Sheet 2



Inventor:  
Edward A. French,  
By Chilton, Wiles, Schroeder, Keisner & Hofgren  
Attorneys

Aug. 24, 1948.

E. A. FRENCH

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TANK TYPE SUCTION CLEANER

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Fig. 5<sup>a</sup>

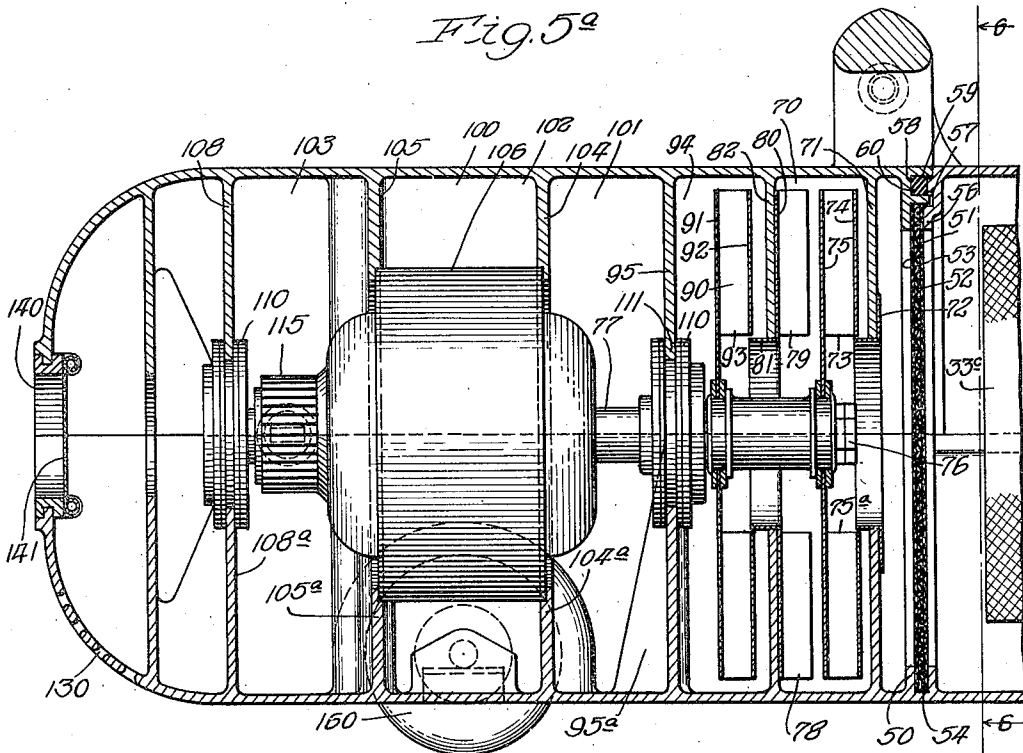
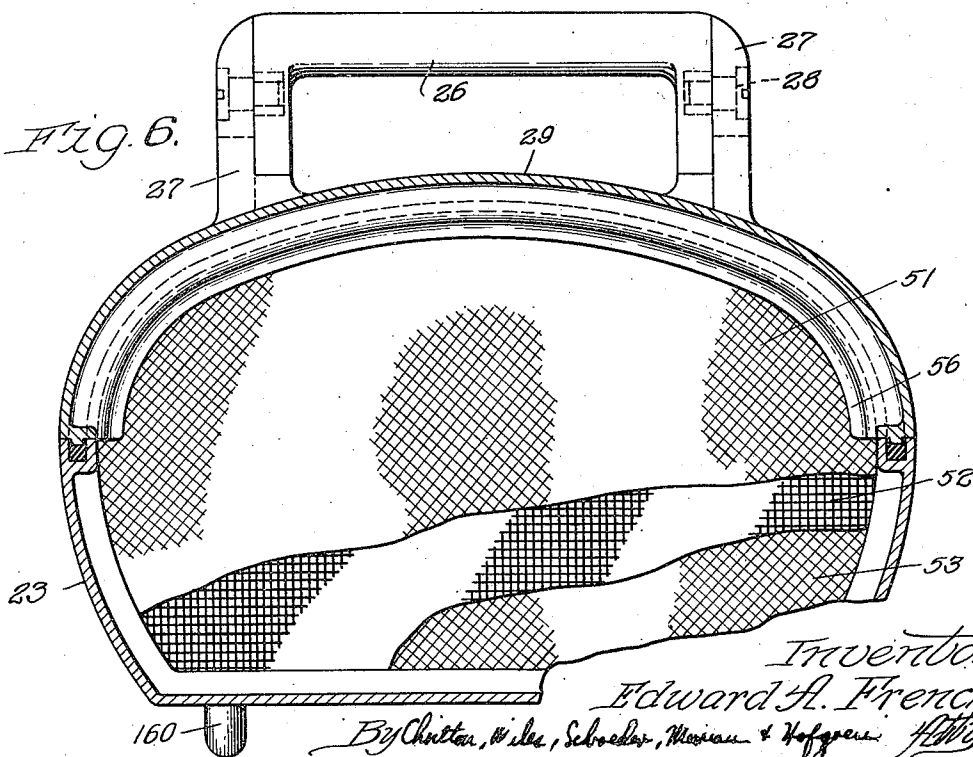


Fig. 6



Inventor:  
Edward A. French  
By Chittan, Miles, Schroeder, Morrison & Hoffmann Attorneys

Aug. 24, 1948.

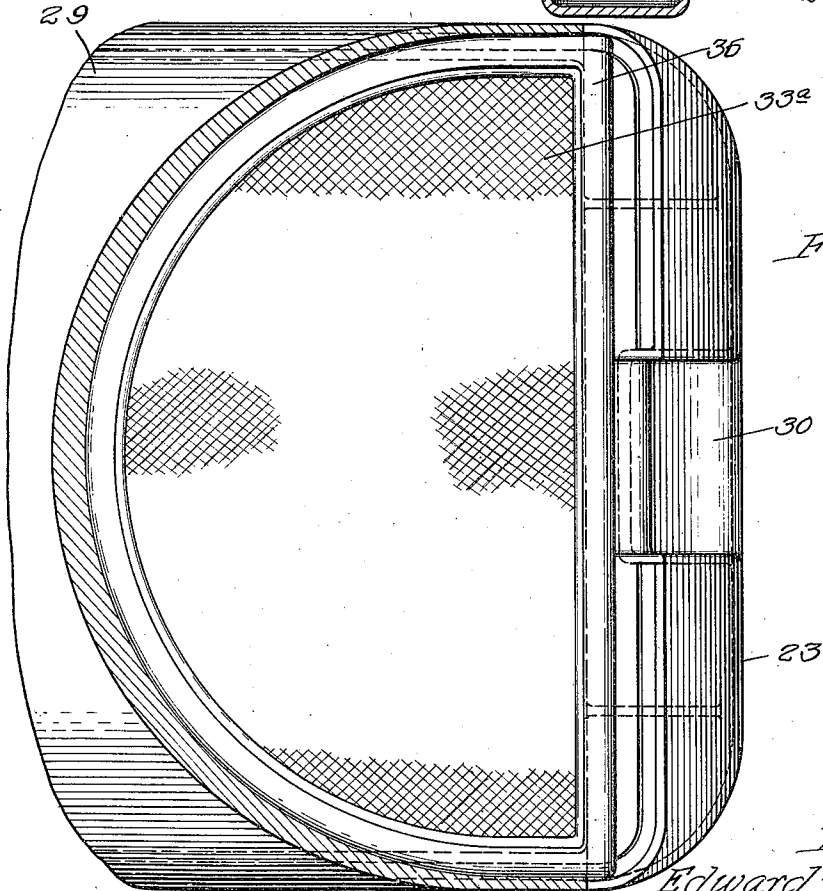
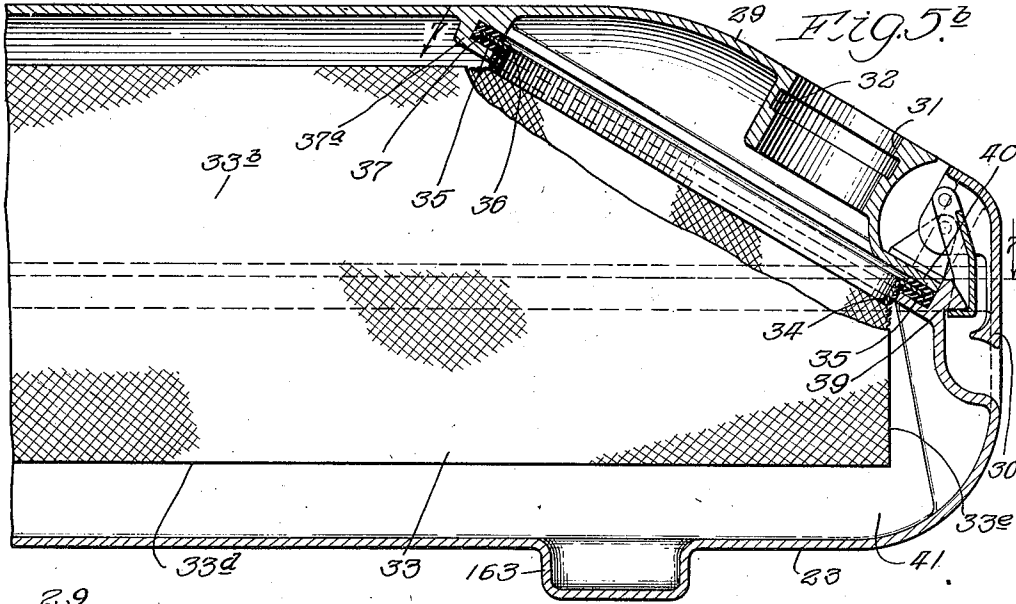
E. A. FRENCH

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TANK TYPE SUCTION CLEANER

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4 Sheets-Sheet 4



Inventor:  
Edward A. French,  
By Christen, Miles, Schroeder, Newman & Hoffmann, Attorneys.

# UNITED STATES PATENT OFFICE

2,447,500

## TANK TYPE SUCTION CLEANER

Edward A. French, Chicago, Ill., assignor to Birtman Electric Company, a corporation of Illinois

Application October 2, 1944. Serial No. 556,824

7 Claims. (Cl. 183-37)

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This invention relates to a tank type suction cleaner and more particularly to a suction cleaner having a substantially cylindrical casing or housing, an exhaust opening in the rear end thereof communicating successively with a motor, a fan, a filter, and a dust chamber in the front of the casing. The invention relates particularly to the structure of the casing whereby access to the customary dust bag in the dust chamber is facilitated without interfering with the appearance of the cleaner or adding to its weight.

The invention is illustrated in the drawings in which Fig. 1 is a side elevation of the cleaner; Fig. 2 is a front elevation of the cleaner; Fig. 3 is a rear elevation; Fig. 4 is a top plan view of the cleaner; Fig. 5—a is a vertical section of the front end of the cleaner; Fig. 5—b is a side elevation of the rear end of the cleaner; Fig. 6 is a sectional elevation taken along the line 6—6 in Fig. 5—a; and Fig. 7 is a section taken along the line 7—7 in Fig. 5—b.

The cleaner comprises the casing or housing 20 which is split on the horizontal plane into an upper casing 22 and a lower casing 23. The handle 24 is centrally located in the top of the upper casing. The handle comprises studs 25 which are an integral part of the casting. The handle grip 26 is secured to the studs by any appropriate means such as screws 26a. Arms 27 are pivotally mounted to the grip in any suitable manner as by the pins 28. Each of the studs has a lateral projection 25a which underlies the arms 27. The forward faces 25b of these extensions are curved parallel to the curve of the rear portion of the arms 27. The front faces 27a of the arms are curved symmetrically with the rear faces.

The arms 27 are an integral part of and carry the lid 29. This lid is secured to the lower casing member 23 by the latch 30. The lid includes an air inlet 31 having an annular groove 32 adapted to engage the ordinary hose connection. The dust bag 33 having a substantially rigid neck portion 34, an annular lip 35 embedded in an annular gasket 36, is carried by the lid.

In the invention the lid, as will be observed, is pivoted about the pins 28 and may be lifted after disengagement of the latch 30. The bag 33 is lifted with the lid and removed from the dust chamber 41 within which it is normally positioned. The preferred mechanism for mounting the bag within the lid is best shown in Figures 5—b and 7. This comprises the grooved stud 37a which extends upwardly from one side of the bag opening to the top, across the top, and down the

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other side, forming a semi-annular groove 37 into which the lip 35 may be slid from the front end of the lid after the lid has been opened. When it is in position within the groove 37, the lower edge of the dust bag lip 35 abuts the horizontal flange 39 of the lower casting, and is pressed against it by the edge 40 of the lid. In this manner the bag, when in position, is sealed between the upper and lower housing members in airtight engagement. On the other hand, the bag is automatically removed by lifting the lid and sliding the bag out of the semi-annular groove 37.

The dust bag, it will be observed in Figure 7, has a semi-circular opening 33a defined by the lip 35 and the rigid neck 34. The bag is so constructed that the upper edge 33b extends rearwardly angularly from the neck, the angle being such as to cause the bag to lie substantially horizontally. The rear side 33c of the bag is at right angles to the upper edge 33b and the lower edge 33d. The front edge 33e is flexible so as to permit removal of the bag. It is preferably sewn so as to permit the bag to occupy a substantial corner of the casing during operation. It will be observed that the major axis of the bag is thus oblique to the neck.

Adjacent the dust collecting chamber, and to the rear thereof, is a filter chamber 50 containing a screen filter 51 extending substantially completely across the casing. This filter may comprise a screen 52 having a cloth cover 53. It is carried in a semi-annular groove 54 in the lower housing member and is pressed against a semi-annular plate 55 in the upper casing member by a stud or depending flange 56 carried by the lid. When the lid 29 is raised it carries with it the flange 56, thereby freeing the upper portion of the filter. The filter may be bent sufficiently to the rear to grasp it and withdraw it upwardly from the groove 54. In order to provide an airtight connection, the stud 56 is provided with a groove 57 into which the flange 53 carried by the plate 55 enters. The flange 53 forms a groove 59 between itself and the casing wall and in this is a gasket 60 against which the flange or stud 56 presses to form an airtight seal.

Immediately to the rear of the filter chamber 50 is a fan chamber 70. The split wall 71 between the filter chamber and the fan chamber defines one side of the fan chamber and is provided with a metal sleeve 72 which directs air from the filter chamber into the fan 73. This fan comprises sheet metal walls 74 and 75, between which are mounted a plurality of curved blades 75a which direct the air outwardly. The

fan is driven by the extension 76 of the motor shaft 77. Behind the wall 75 is a secondary chamber 78 within which are mounted a plurality of stationary blades 79 carried by the metal plate 80 which is mounted by a flange 81 in the split partition wall 82. The internal edges of this wall define a circular opening within which the flange 81 is fitted. A second rotary fan 90, likewise mounted on the shaft extension 76, forms a third division of the fan chamber. This fan, like the first, comprises a pair of spaced parallel sheet metal walls 91 and 92, having curved blades 93 which direct the air outwardly toward the walls of the casing. A fourth sub-compartment 94 of the fan chamber is formed by the sheet metal wall 91 of the fan and the split partition walls 95 and 95a. These walls are provided with openings, not shown, to which the air may pass from the fan chamber.

To the rear of the fan chamber is the motor chamber 100 which is divided into three compartments 101, 102 and 103 by the split partition walls 104, 104a, 105 and 105a. These split walls also provide a circular seat for the field 106 of the motor 107. The compartment 103 is bounded by the walls 105 and 105a and the split walls 108 and 108a. The walls 95 and 95a and walls 108 and 108a are each provided with a circular central opening between them, in each of which one of the bearings of the motor is mounted. These bearings 110 include an annular groove 111 having an internal diameter somewhat less than the diameter of the openings, and an outer diameter somewhat greater. The bearings contain an interior ball bearing assembly which is not shown.

The commutator 115 is immediately adjacent and inside of the rear bearing. Commutator brushes may be inserted through openings in the side walls of the casing. The motor assembly is described more completely in the co-pending application of Charles H. Sparklin, Serial No. 548,920, filed August 10, 1944, now Patent 2,438,133 dated March 23, 1948. In that application the direction of movement of the air through the housing is likewise described. Air leaves the casing by the louvers 130 but an auxiliary exhaust 140 is provided having a split gate 141 through which an attachment may be introduced, thereby sealing off the normal means of exhaust and confining exhaust air to the attachment.

Suitable means for removing the cleaner are provided as, for example, wheels 160 mounted under the casing and a slide or skid 153 at the front of the casing.

The entire casing is preferably cast from a light metal such as aluminum or magnesium, but may be cast or molded from a plastic material.

The foregoing detailed description has been given for clearness of understanding only, and no unnecessary limitations should be understood therefrom.

What I claim as new and desire to secure by Letters Patent is:

1. In a tank type suction cleaner, a generally cylindrical, elongated horizontal casing, a closure forming a portion of the top of the casing, a handle for the cleaner attached to the casing near the rear end of the closure, and a member extending from the closure at the rear end of the closure and rotatably engaging the handle to form a pivotal mounting for the closure.

2. In a tank type suction cleaner, a generally cylindrical, elongated, horizontal casing, a closure forming a portion of the top of the casing and having a flat edge portion at the front of the casing, an entrance opening for dirt-laden air

in the closure at the front of the cleaner adjacent said end portion, a dust bag normally positioned within the casing and having an open end, a curved rigid annular collar to which the open end of the dust bag is fastened with said collar having a flat side, and means for removably fastening the collar within the cleaner and around said entrance opening with the flat side arranged horizontally and the remainder of the collar extending above it, said collar being held in sealed position at least partially by the closure edge portion cooperating with the adjacent portion of the casing when said closure is closed.

3. In a tank type cleaner comprising a generally cylindrical, elongated casing having a dust chamber at one end thereof, a closure member forming a part of said casing and serving as a closure for said dust chamber, said closure member having one end pivotally attached to the casing so as to be capable of being pivoted through an arc of at least 90° and the opposite end detachably secured to the casing, a dust bag having an open end and being not substantially longer than the closure member, said dust bag being normally within the dust chamber, means carried by said opposite end of the closure member for detachably securing the open end of the dust bag thereto in sealed relationship therewith, and a suction opening in the closure member communicating with the open end of the dust bag, said bag being substantially removed from the cleaner when the closure is opened to its fully opened position.

4. A cleaner is set forth in claim 3, in which the rear end of the dust chamber is bounded by a screen filter, and the closure member includes means cooperating with the casing for sealing the filter in operating position when the closure is shut, and freeing the filter for removal from the casing when the closure is in open position.

5. A cleaner as set forth in claim 3 wherein the means for securing the open end of the dust bag to the closure member comprises a flanged neck portion around the open end of the dust bag, an annular groove on the underside of the closure member and open at one side for a portion of its length to receive said flange, and a pressure member on said closure member for pressing that part of the flange that is not within the groove between a portion of the casing and said pressure member when the closure member is in closed position, the flange, groove, pressure member and said portion of the casing thereby forming a seal entirely around the opening in said open end.

6. A cleaner as set forth in claim 2 wherein said collar is provided with an outwardly-extending flange therearound, and the means for removably fastening the collar within the cleaner comprises a groove member with an open side toward the entrance opening and fastened to the closure around said entrance opening, said grooved member having a curvature substantially the same as that of the curved portion of said collar and adapted to receive said curved portion with the ends of the groove located on opposite sides of the entrance opening and adjacent said flat edge portion, and a second flat edge portion on said casing adjacent said first edge portion, said two edge portions being adapted to hold the flat side of said collar between them when the curved portion of the collar is within said groove and the closure is closed.

7. In a tank type cleaner comprising a gen-

erally cylindrical, elongated casing having a dust chamber at one end thereof, a closure member forming a part of said casing and serving as a closure for said dust chamber, said closure member having one end pivotally attached to the casing and the opposite end detachably secured to the casing, a screen filter located at the end of the dust chamber adjacent the pivotal attachment of the closure member to the casing, and means on the closure member for sealing the filter in operating position when the closure is shut and freeing the filter for removal from the casing when the closure is in open position, said means including a transverse flange carried by the upper inner surface of the casing behind the filter and a complementary transverse flange carried by the closure and adapted to press on the front

of the filter adjacent said first mentioned flange.  
EDWARD A. FRENCH.

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5 The following references are of record in the file of this patent:

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**Certificate of Correction**

August 24, 1948.

Patent No. 2,447,500.

EDWARD A. FRENCH

It is hereby certified that errors appear in the printed specification of the above numbered patent requiring correction as follows: Column 4, line 1, for "cuosure" read *closure*; line 2, for the word "end" read *edge*; line 34, for "is set" read *as set*; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 30th day of November, A. D. 1948.

[SEAL]

THOMAS F. MURPHY,  
*Assistant Commissioner of Patents.*