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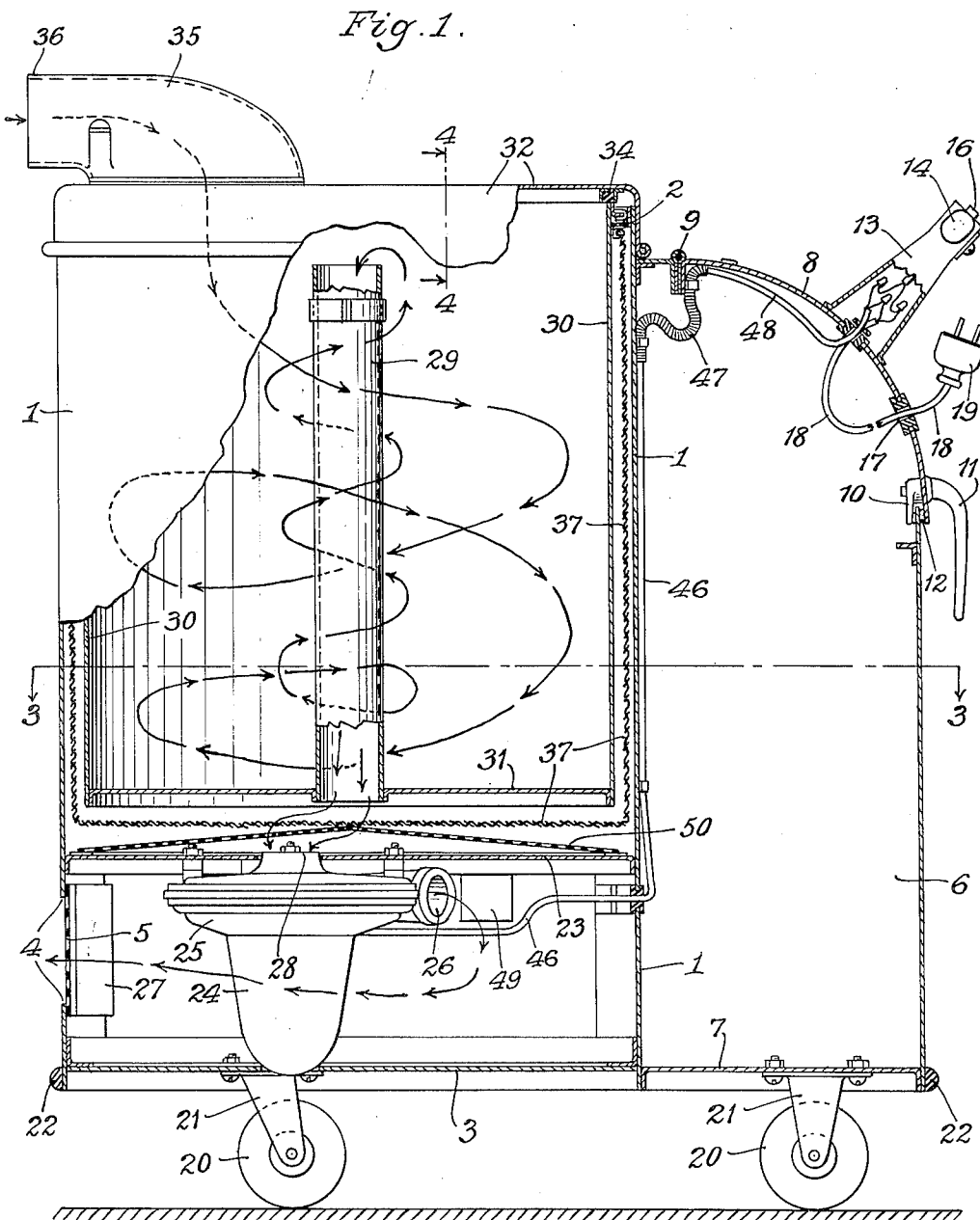
R. D. BECK

2,616,517

TANK TYPE CLEANER

Filed Aug. 30, 1948

3 Sheets-Sheet 1



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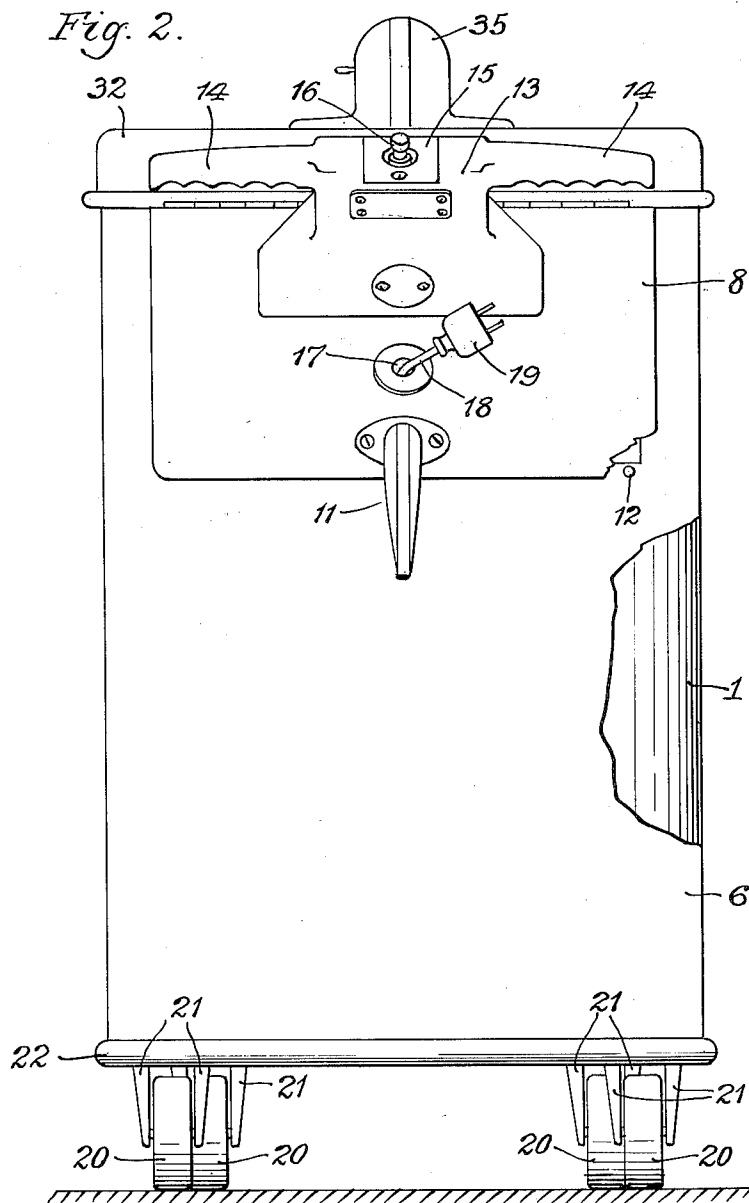
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Fig. 3.

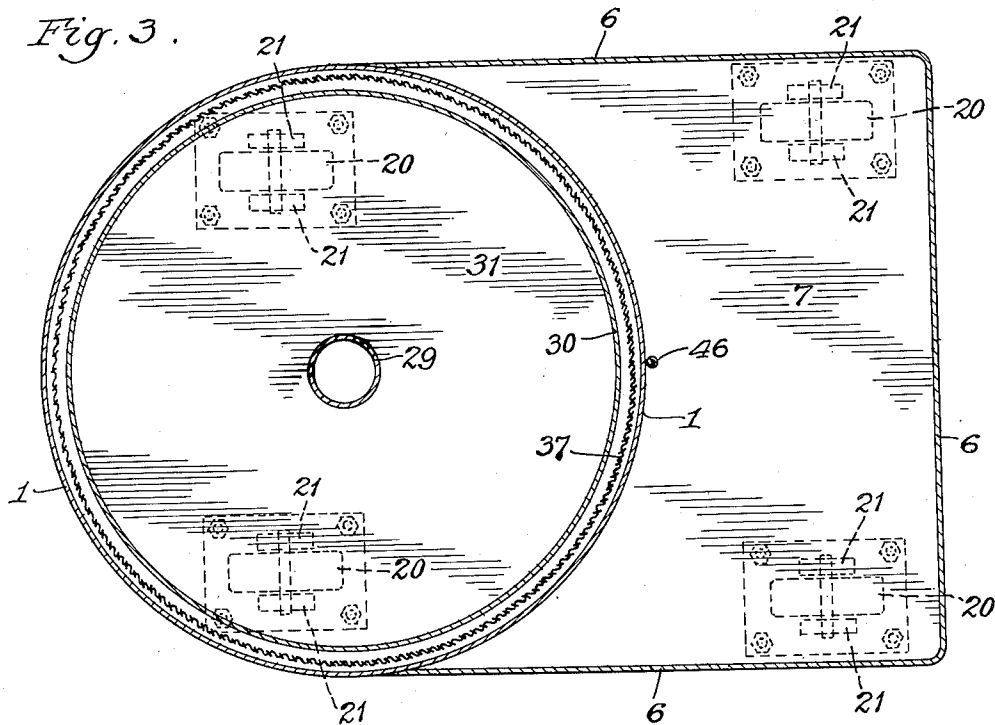
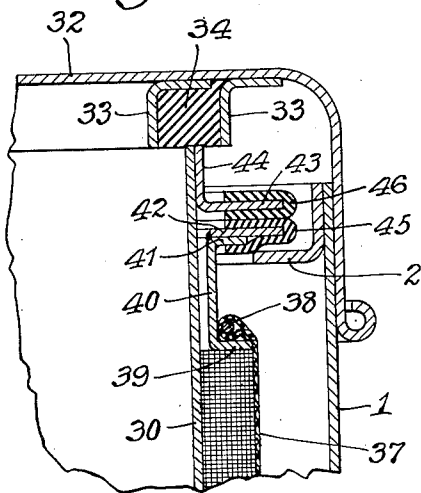


Fig. 4.



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UNITED STATES PATENT OFFICE

2,616,517

TANK TYPE CLEANER

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1 Claim. (Cl. 183—37)

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This invention relates to a cleaner of the so-called "tank" type in which a housing contains a dust receptacle and contains or carries means for producing suction whereby air is drawn into the housing and through the receptacle, and clean air is discharged.

Another object of the invention is to provide a device which may be readily assembled and held together with a minimum of fastening means.

Another object is to provide in a single housing chambers for the dust receptacle and for dust separation and a chamber for storage of tools and accessories.

Another object is to provide in connection with a vacuum cleaner means for holding some, at least, of the parts in place without the use of any fastening means other than the suction or vacuum created within the system.

Other objects will appear from time to time throughout the specification and claim.

This invention is illustrated more or less diagrammatically in the accompanying drawings, wherein:

Figure 1 is a transverse vertical section taken through one form of the device with parts in elevation;

Figure 2 is a rear view of the device of Figure 1;

Figure 3 is a section taken at line 3—3 of Figure 1; and

Figure 4 is a vertical sectional detail taken on an enlarged scale at line 4—4 of Figure 1 and illustrating the formation of a cover.

Like parts are indicated by like characters throughout the specification and the drawings.

The device comprises a generally cylindrical housing member 1 which is open at its top and may be provided inside its upper margin with a flange or shoulder 2. The housing 1 may be closed at its bottom, as at 3, and is preferably provided with a discharge opening 4 in which a grill 5 may be positioned, if desired.

Secured to the housing member 1 is a housing 6 formed as shown in Figures 1 and 3. This housing may have a closure plate 7 as a bottom. If desired, a rounded or curved cover portion 8 may be hingedly positioned at 9 and provided with a latch 10 by means of which it is latched in the closed position. A latch handle 11 is provided for operating the latch and, if desired, one or more bumpers or cushioning members 12 are positioned upon the housing 6 on its rear wall. A main controlling handle 13 is mounted on the lid 8 and is provided with two laterally disposed portions 14 which are shaped for ready engagement by the hands and fingers of an operator.

A switch for controlling the motor may be positioned in the handle. As shown a switch is indicated generally at 15 and is provided with a push or operating member 16. The lid or door

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8 is provided with an opening 17 through which a connecting conduit 18 extends. A plug 19 is provided on the conduit 18 for connection to a source of electric power.

Wheels 20 are mounted beneath the cleaner and are carried on supports 21. Some or all of these supports may be swiveled, if desired. A bumper or cushion member 22 is positioned adjacent its bottom to cushion it against shocks resulting from contact with stationary objects.

A supporting partition member 23 is positioned within the housing 1 and supports an electrical motor 24. A fan or blower casing 25 is joined to the motor and within it is an impeller of standard and well-known type which is not shown herewith. The fan housing 25 is provided with an outlet 26 which discharges into the space between the member 23 and the member 3 within the casing 1. Cleaned air from this outlet passes in the general direction indicated by the arrows in Figure 1 and moves outwardly through the grill 5 or the opening 4. Soundproofing and vibration damping means 27 may be positioned as shown in Figure 1. The fan or blower housing 25 is open, at 28, to receive the air which passes downwardly through the tube 29. This tube is positioned centrally in a tank or housing 30 which is open at its top and closed at its bottom by the member 31.

The tank 30 and the housing 1 are closed by a cover 32 which fits downwardly over the upper ends or edges of these members as shown generally in Figure 1 and in detail in Figure 4. No fastening or holding means are provided for the cover 32 which is held in place in part by friction and in part by the suction created within the system when the fan and motor are in operation. The cover 32 is provided with a pair of annular retaining members 32, 33 beneath which is positioned a packing 34 which may be of rubber or rubber-like material and which bears upon the upper edge of the member 30 and seals it against leakage. The cover is provided with an inlet 35 through which air enters when the system is in operation. The member 35 is mounted to swing horizontally through 360°. Thus a hose connected to the outer end 36 can be directed in any direction as a result of the swinging movement of the member 35 without the necessity of changing the position of the cleaner as a whole. A hand tool or hose or other device may be secured to the outer end 36 of the inlet member 35.

The member 30 with its central tube 29 acts as a guiding means and as a partial separating means. The dust-laden air enters through the connection 35 and passes generally about the tank 30 and tends initially to go downwardly. The heavier dust particles and other material entrained with the entering air or gas are separated by gravity or centrifugally and retained

within the tank 30. The air then passes upwardly to the top of the tube 29 and downwardly under the influence of suction created by the blower within the housing 25. The dust particles which have not been retained within the tank 30 are filtered by the bag 37 which is positioned within the housing 1 and outside of the tank 30. This bag-like member is formed of porous material so that air may escape from it but solids are largely retained within it. This member is provided at its top with a member 38 which may conveniently be made elastic to slip over the flange 39 of the member 40. This member is provided with a flange 41 at its upper end which is secured to a ring 42 which over lies the flange 2 secured to the inner face of the housing 1. A flange 43 is secured to a member 44 which is itself fixed adjacent the top of the tank 30.

Sealing and packing members 45 and 46 are positioned one on the ring 42 and the other on the flange 43. They are compressed when the parts are engaged, as shown in Figure 4, to prevent leakage from within the space bounded by the tank 30 and the housing 1.

The motor 24 is driven by current furnished through a conductor 45 which passes through the space bounded by the members 3 and 23 and upwardly through the space within the housing 6 and is joined to a flexible armored conductor 47. This in turn is joined to a conductor 48 which is connected to the switch 15. If desired, soundproofing means 49 may be positioned adjacent the discharge 26 from the fan casing 25. This soundproofing may be of various types and it is not illustrated in detail, as the invention is independent of the particular details of soundproofing.

The space within the housing 6 is provided for the storage of tools such as hand tools, brushes, hoses and the like, and it may also contain anything else useful generally in the operation and maintenance of the cleaner.

Although I have shown an operative form of my invention, it will be recognized that many changes in the form, shape and arrangement of parts can be made without departing from the spirit of the invention, and my showing is, therefore, to be taken as in a sense diagrammatic.

The use and operation of this invention are as follows:

The device is initially assembled with the housing parts permanently secured in place and the motor and fan or blower assembly secured as shown. The bag 37 is engaged over the flange 39 and the member 40 which is secured through the flange 41 to the ring 42 is put in place, as shown particularly in Figure 4. The cushioning and sealing member 45 is preferably positioned about the ring 42 and rests upon the flange 2. The tank 30 is then inserted within the bag 37 and its flange 43 is provided with the cushioning and sealing member 46 which rests on the cushioning and sealing member 45. Thus the bag 37 and the tank 30 are supported from the main casing or housing member 1 upon the flange 2. The cover 32 is then put in place. It fits with a reasonable tight friction fit and requires no fastening means because when the device is in use the suction created within the housing 1 additionally holds the cover in place upon it. Since the cover 32 and the housing 1 are circular, the cover may be positioned so that the member 35 points in any direction which is convenient.

With the parts assembled as shown in Figure 1, the device is ready for operation. The plug 19 is connected to a suitable source of electric current, and when the switch 15 is operated by operating the member 16, the motor is energized, the fan is driven and suction is developed. This suction draws air through the inlet 35 and the air follows generally the path indicated by the arrows in Figure 1. The heavier particles of material are deposited and retained within the tank 30 and the lighter particles are retained by the bag 37.

Any sort of tool may be applied to the end 36 of the member 35 and frequently this will be a flexible hose to which will be connected a so-called nozzle or tool which is applied to the surface to be cleaned. After use the motor is of course stopped and the tools may be stored in the compartment within the housing 6.

For cleaning or emptying the machine the cover 32 is removed and this may be readily done when suction is not active upon it. The tank 30 is lifted out and is emptied and the bag 37 is removed and emptied or cleaned. The bag 37 may conveniently be handled by the structure comprising the flange 39, the member 40, the flange 41 and the ring 42. For thorough cleaning or washing or emptying the bag 37 may be removed from the rigid ring-like structure by expanding the elastic member 38 and slipping it over the outer edge of the flange 39.

I claim:

In a vacuum cleaner, a casing having an open top, an annular abutment carried by the casing near its open end, a bag-supporting frame member supported upon said abutment, a filter bag depending from said frame member, a separating tank having an open top and means defining an air passage through the tank, an outwardly-directed annular flange carried by the tank overlying the bag-supporting frame and supporting the tank within the filter bag, means sealing the tank flange and the bag-supporting frame to the casing abutment and to each other, a slipcover for the open top of the casing, air inlet means in said cover, suction means for drawing air through said inlet, through the tank and filter bag, and discharging the same from the casing, and an upstanding rim on the tank surrounding the upper open end thereof and adapted to be sealingly engaged by the cover member in circumscribing relation to the air inlet means thereof by suction induced by said suction means within the casing.

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