Sept. 2, 1952 H. F. JACKSON 2,609,190

SUCTION APPARATUS FOR CLEANING ROOMS

Filed July 22, 1949 2 SHEETS—SHEET 1

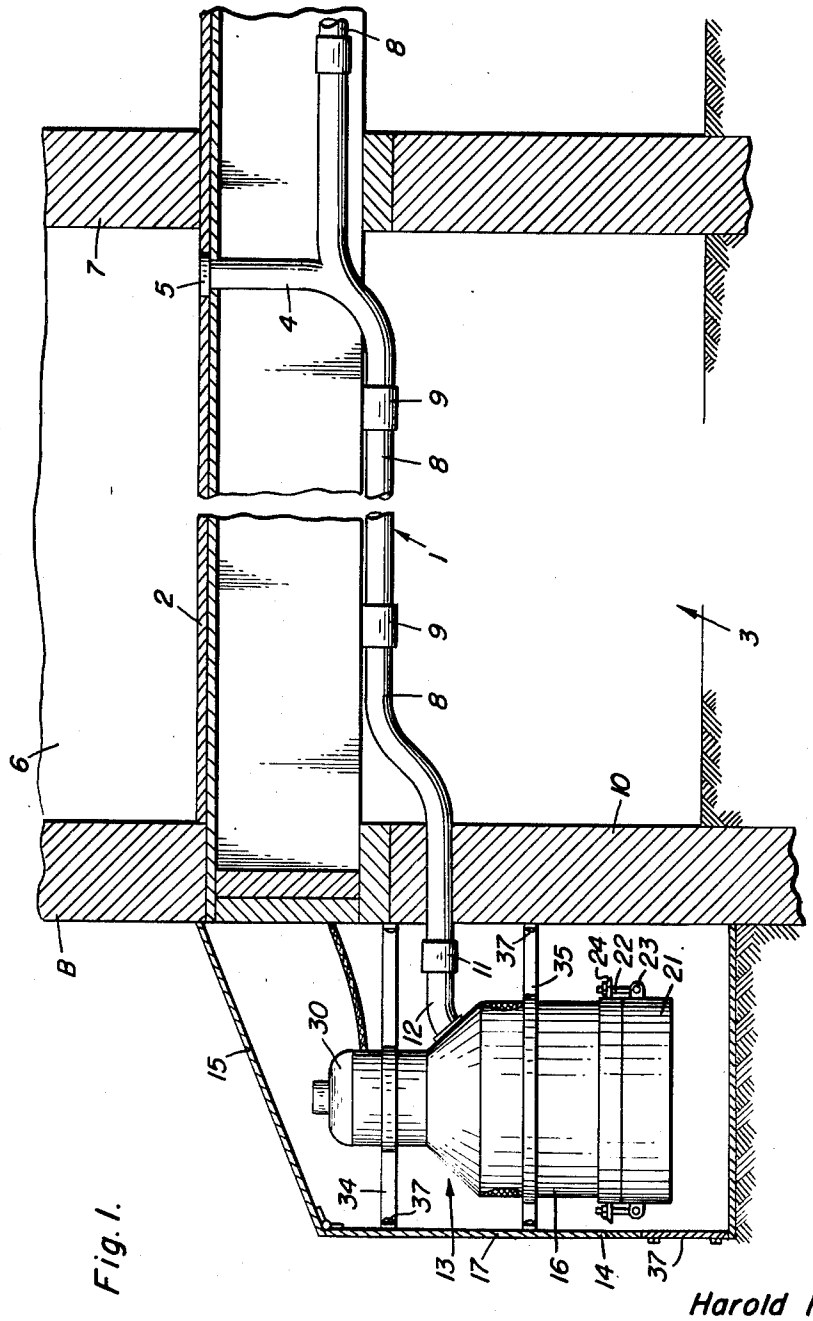


Fig. 1.

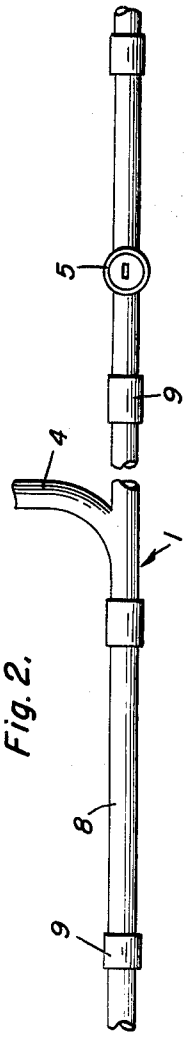


Fig. 2.

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Fig. 3.

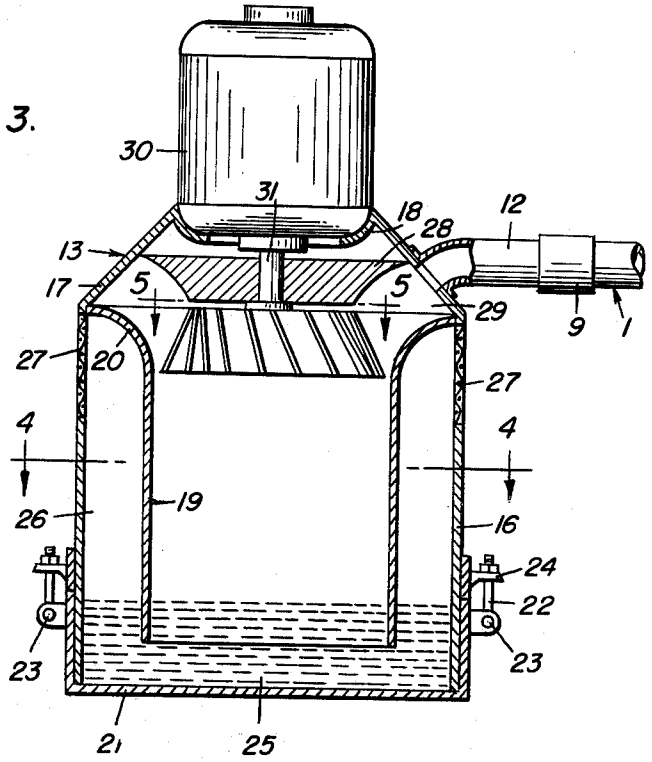


Fig. 4.

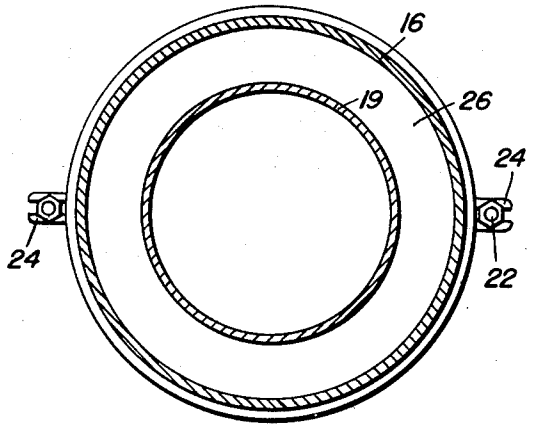
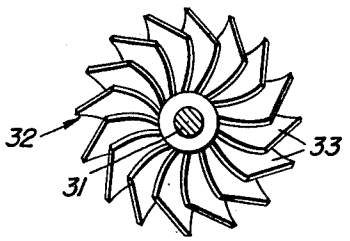


Fig. 5.



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SUCTION APPARATUS FOR CLEANING ROOMS

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2 Claims. (Cl. 261—121)

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My invention relates to improvements in suction apparatus for cleaning rooms particularly in inhabited buildings.

The primary object of my invention is to provide suction apparatus for conveying dirt, dust and the like from rooms being cleaned in a building to the outside of the building, separating and collecting the dust and dirt from the air sucked out of the rooms, filtering the air to remove odors and dust therefrom and discharging the filtered odorless air outside the building.

Another object is to provide an apparatus of the character and for the purpose above set forth adapted for silent operation, low cost of installation and operation, and for use therewith and quick easy attachment thereto of suction cleaning implements in the rooms, such as nozzles obviating handling of the usual heavy and cumbersome vacuum cleaners.

Other and subordinate objects, within the purview of my invention, together with the precise nature of my improvements will be readily understood when the succeeding description and claims are read with reference to the drawings accompanying and forming part of this specification.

In said drawings:

Figure 1 is a fragmentary view in vertical section, partly in elevation, of my improved suction apparatus installed in connection with a building and connected to a room therein;

Figure 2 is a fragmentary view in elevation of the suction tubing;

Figure 3 is a view in vertical section partly in elevation of the combined suction producing, dirt collecting, and air filtering unit, drawn to a larger scale;

Figure 4 is a view in horizontal section taken on the line 4—4 in Figure 3;

Figure 5 is a view in horizontal section taken on the line 5—5 of Figure 3.

Referring to the drawings by numerals, according to my invention, a suction line of tubing 1 is installed, substantially horizontally, beneath the main floor 2 of a building B, for instance in the cellar 3. The tubing 1 is provided with vertical branches to the various rooms of the biulding, one of which, designated 4, is shown as sufficient for the present purposes, and which extends upwardly to a floor socket 5 in the room 6, preferably adjacent a wall 7. The floor socket 5 is of the conventional type for coupling thereto an end of a flexible nozzle implement, not shown, for suction cleaning in the room.

The suction tubing 1 is preferably formed of sections 8 connected together by the usual couplings 9 and is formed of transparent plastic for the purpose of rendering visible in any section 8 any impediment to free passage of dirt through the suction tubing, whereby blocked sections may be spotted, removed, cleaned out and replaced. The suction tubing 1 extends out of the outside or cellar wall 10 and is coupled, as at 11 to the intake nipple 12 of a combined suction producing, dirt collecting and air filtering unit 13 located outside the building B, preferably close thereto, and in a suitable cabinet 14 for protecting the same and provided with a hinged top door 15 for access to the unit 13.

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The combined suction producing, dirt collecting and air filtering unit 13 comprises a cylindrical casing 16, of any suitable metal, open at its bottom and having an upwardly tapering top section 17 to which the nipple 12 is suitably fixed and which is formed with an annular dished top seat 18 for a purpose presently explained.

A relatively smaller diameter, down take flue 19 depends into the casing 16 concentrically thereof with a flaring upper end 20 suitably fixed to said casing 16 at the bottom of the top section 17. The lower end of the down take flue 19 is spaced from the bottom of the casing 16 for a purpose presently apparent.

A cylindrical pan 21 is fitted over the bottom of the casing 16 and detachably attached thereto by suitable nut equipped bolts 22 hinged to said pan, as at 23, to be swung upwardly into keeper lugs 24 suitably mounted on the casing 16. The pan 21 closes and seals the bottom of the casing 16 to hold water 25 in the bottom of said casing and in said pan, and into which the lower end of the down take flue 19 is partly submerged. Above the level of the water 25, the down take flue 19 and the casing 16 form an annular uptake chamber 26 in the casing 16 and around said duct 19 communicating at its upper end with upper, screened, air discharge openings 27 provided in said casing 16.

An annular, downwardly tapering deflecting member 28 is fitted horizontally and suitably fixed at its upper edge in the top section 17 of the casing 16 above the down take flue 19 and the nipple 12, and which forms with the upper end 20 of the down take flue 19 a downwardly converging, annular suction channel 29 at the upper end of said flue 19 into which the nipple 12 discharges.

A motor 30 is suitably seated at one end in the seat 18 with the armature shaft 31 thereof depending through said member 28 and suitably

journalled therein in the axis of the down take flue 19.

A suction and blower fan 32 is fixed on the lower end of the armature shaft 31 and is circumscribed by the annular section channel 29. The fan blades 33 are suitably pitched to cause suction in the suction channel 29 and forced down draft in the down take flue 19. The motor 30 may be energized from the usual building circuit, not shown, and controlled from within the room 4 by any suitable means.

Suitable brackets 34, 35, bolted, as at 36, to the cabinet 14 and to the wall 10 suspend the motor 30 and the casing 16 in the cabinet 14.

The manner in which the described invention operates will be readily understood. With the motor 30 running, suction is created in the suction tubing 1 to draw dirt and dust from the socket end of said tubing into the suction channel 29 from which the dirt, dust and air therewith will be blown downwardly through the down take flue 19 into the water 25. The dust, dirt and like matter settle in the lower end of the casing 16 on the pan 21 and is thereby separated from the air which passes upwardly through the water 25 and is filtered to remove odors therefrom. The filtered and cleaned air ascends through the uptake chamber 26 to be blown free of odors and dust out of the discharge openings 27 in the cabinet 14. With the door 15 of the cabinet 14 open, the cleaned and purified air escapes to the atmosphere outside the building. The pan 21 can be detached, in a manner which will be clear, knocked downwardly off the bottom of the casing 16 and removed through a small hinged door 37 in the cabinet 14 for disposal of dirt and dust collected therein at will.

As will now be seen, the cleaning of the room 4 is accomplished substantially noiselessly, without vibration, or lifting of heavy vacuum cleaning equipment. The apparatus is economical to install because it is simple in construction and the entire unit 13 can be formed of a light weight material rendering it easy to handle and install. Another advantage of my invention is eliminating the handling of collected dirt in living quarters.

The foregoing will, it is believed, suffice to impart a clear understanding of my invention, without further explanation.

Manifestly the invention, as described, is susceptible of modification, without departing from the inventive concept, and right is herein reserved to such modifications as fall within the scope of the appended claims.

Having described the invention, what is claimed as new is:

1. A combined dirt collecting and air filtering device for cleaning a room comprising a casing having a bottom water containing receptacle for collecting dirt from dirt-laden air forced into the water to escape out of the same and be filtered thereby, said casing having upper discharge openings therein for the filtered air, a suction and blower fan in the upper part of the casing, means in said casing forming therewith an annular suction channel around said fan opening onto the same and adapted to receive dirt-laden air drawn into the same by said fan and forced downwardly by the fan into the water, said means including a down-take duct depending into said casing and into the water to direct the downwardly forced air into the water, said duct having a flaring upper end forming one side of said channel and connected to said casing above said openings, and said duct below said upper end thereof being spaced from said casing to form with said casing and said upper end of said duct an annular filtered air up-take chamber leading to said openings, said channel having an inlet nipple adapted to be connected to a suction line leading to a room.

2. A combined dirt collecting and air filtering device according to claim 1 wherein said means further includes a downwardly tapered deflecting member in said casing above said nipple forming the other side of said channel, and a shaft for said fan journaled in said member.

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