April 18, 1961 L. M. McCASKILL 2,979,755

CENTRAL VACUUM SYSTEM FOR HOMES

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Fig. 1

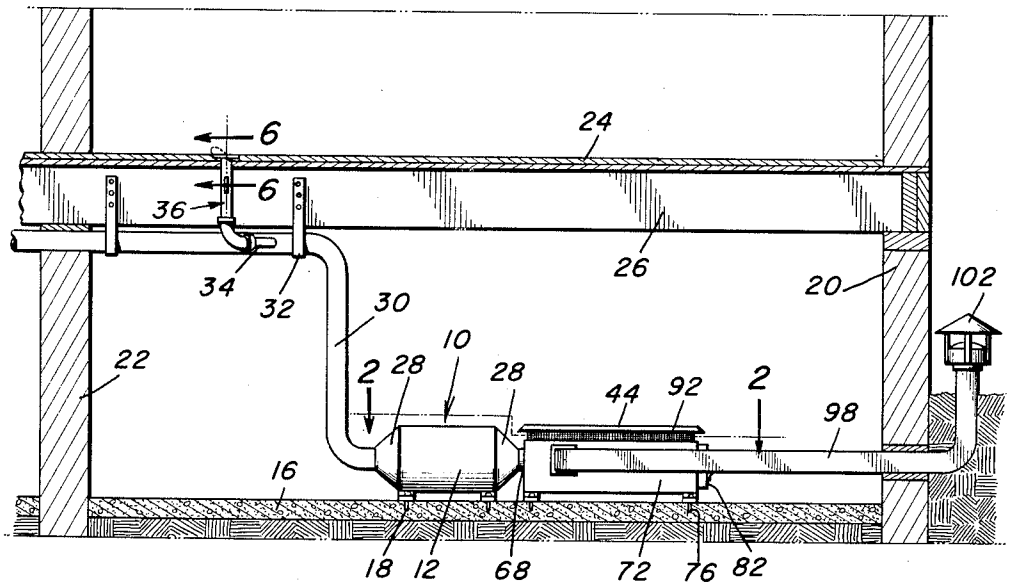
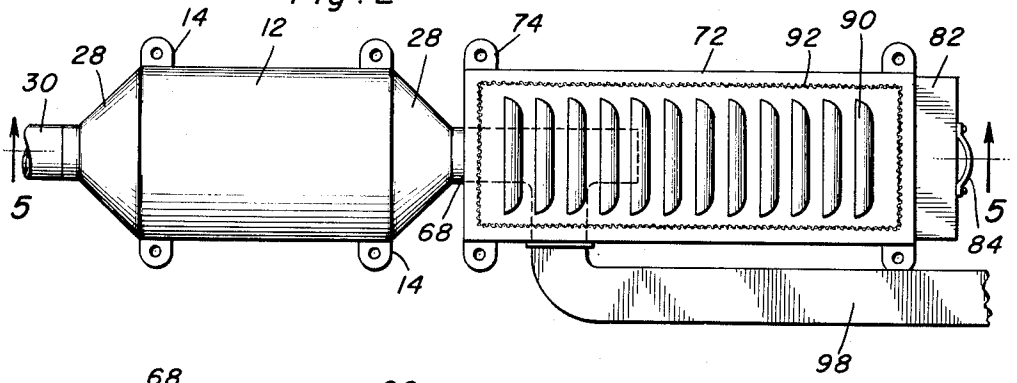


Fig. 2



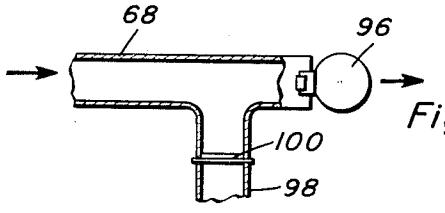


Fig. 3

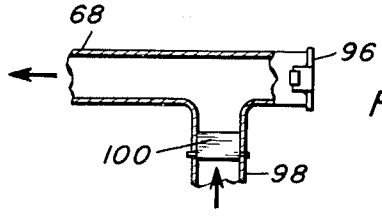


Fig. 4

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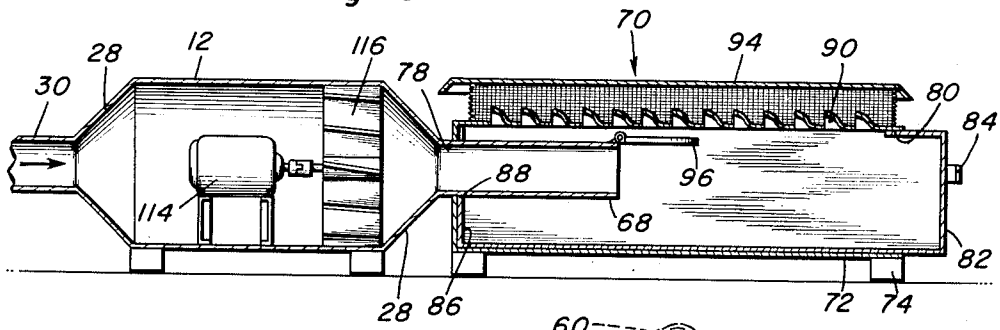
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Fig. 5



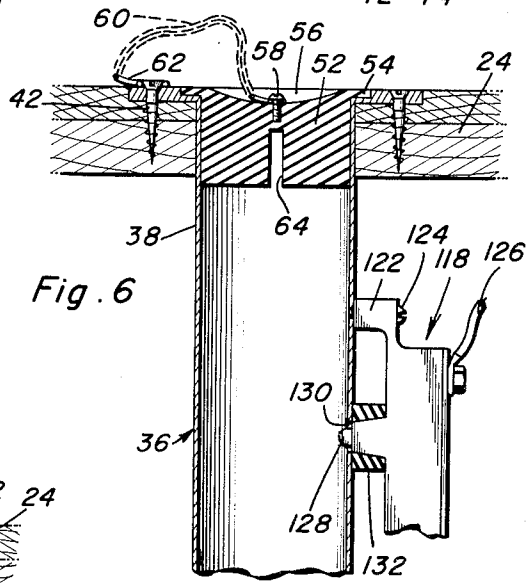


Fig. 6

Fig. 7

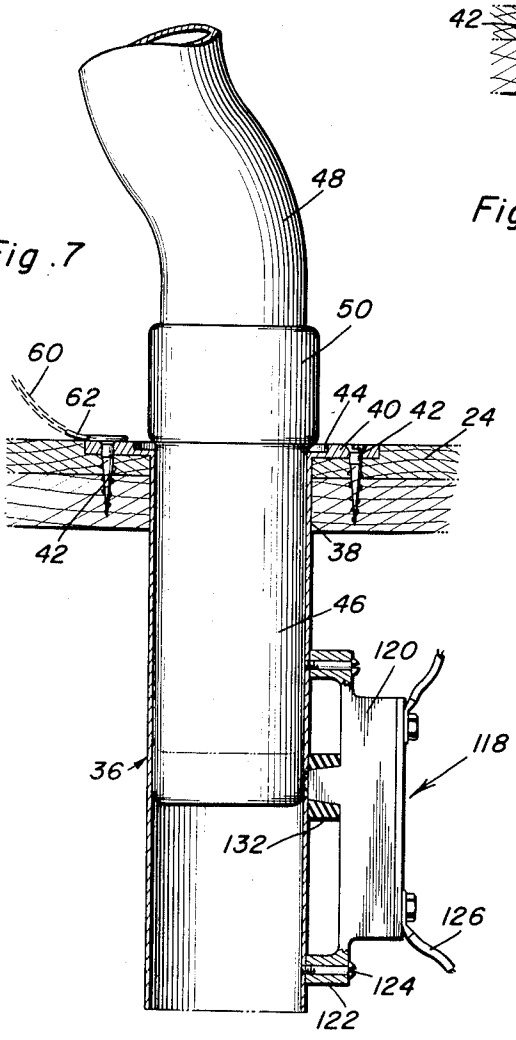
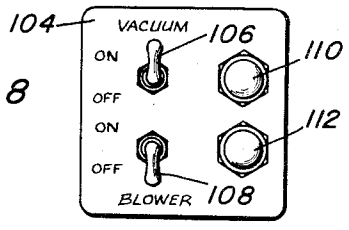


Fig. 8



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CENTRAL VACUUM SYSTEM FOR HOMES

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1 Claim. (Cl. 15—314)

This invention relates generally to a central vacuum system for buildings such as private residences or the like which includes a conduit system having an outlet for the various rooms together with a blower for creating a vacuum in the conduit system for cleaning the rooms by vacuum cleaning.

An object of the present invention is to provide a central vacuum system for buildings including a blower mounted in the basement or suitable room of the building together with an enclosure for a discharge tube from the blower which includes a screened portion for permitting discharge of the air and retaining the dirt in a slidable removable drawer for permitting the dirt to be collected and discharged in a suitable manner.

Still another object of the present invention is to provide a switch at each outlet of the conduit system for actuating the blower only when the vacuum hose is inserted into the outlet.

Other important objects of the present invention will reside in its simplicity of construction, ease of installation, adaption for various buildings, effectiveness for its particular purposes and its relatively inexpensive and maintenance cost.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is generally a side elevational view of the vacuum system of the present invention installed in a building with portions of the building being broken away illustrating the relationship of the vacuum system to the building;

Figure 2 is a plan view taken substantially upon reference line 2—2 of Figure 1 illustrating the relationship of the blower, the enclosure and the branch line;

Figure 3 is a detailed sectional view illustrating the relationship of the check valve and the discharge pipe from the blower and the check valve in the branch pipe during discharge of air from the blower into the closure when the blower is used as a vacuum pump;

Figure 4 is a detailed sectional view similar to Figure 3 illustrating the relative positions of the closure valve when the blower is utilized for supplying fresh air into the building wherein the check valve to the outside air is opened;

Figure 5 is a longitudinal, sectional view taken substantially upon a plane passing along section line 5—5 of Figure 2 illustrating the details of construction of the enclosure and the relationship thereof with the blower and the discharge pipe;

Figure 6 is a detailed sectional view taken substantially upon a plane passing along section line 6—6 of Figure 1 illustrating the construction of the room outlet or fitting when in its closed position;

Figure 7 is a detailed sectional view similar to Figure 6 with the vacuum tube inserted therein and the switch closed; and

Figure 8 is a front view of the switch mechanism for operating the blower illustrating the light for indicating in which manner the blower is being operated.

Referring now specifically to the drawings, a reversible blower generally designated by the numeral 10 and including a substantially cylindrical housing 12 is provided with mounting lugs 14 secured to a base 16 by fastening members 18. The base 16 may be the basement floor of a building which has an outside wall 20 and a partition wall 22 as well as a floor 24 supported by suitable floor joists 26 all of which represents conventional building structure and the present invention may be installed in any type of building but preferably in a building having numerous rooms such as a home that frequently needs cleaning.

The cylindrical housing 12 is provided with frusto-conical end portions 28 with one of the end portions being formed with an elongated conduit 30 supported from the joist 26 by suitable brackets 32. The conduit 30 is provided with a plurality of lead-off lines 34 which have a fitting generally designated by the numeral 36 extending through and secured to the floor 24.

Referring now specifically to Figures 6 and 7, it will be seen that the fitting 36 includes a generally cylindrical terminal end 38 on the conduit lead-off line 34 wherein the end of the cylindrical member 38 is provided with a horizontal annular plate 40 which is countersunk in the floor 24 and secured thereto by screwthreaded fasteners 42. The inner edge of the plate 40 is flush with the inner surface of the cylindrical member 38 and is recessed as indicated by numeral 44 for slidably receiving the fitting 46 on a vacuum hose 48 which has a peripheral projection 50 which is disposed in recess 44 thus providing a coupling between the hose 48 and the fitting 36.

A closure plug is provided for the fitting 36 when the hose 48 is not being employed and this closure plug includes a cylindrical member of rubber material designated by the numeral 52 which is relatively thick and is substantially the same diameter as the cylindrical member 38 but slightly smaller to permit insertion therein as illustrated in Figure 6.

The plug 52 is provided with an annular peripheral flange 54 at the upper end thereof for reception in the recess portion 44 of the plate 40 thus providing a flush surface with the upper edge of the plate 40. The central area of the upper surface of the plug 52 is provided with a concave portion 56 having an inwardly extending screw threaded fastener 58 in the bottom thereof for attachment of one end of a keeper chain 60 having the other end thereof provided with an eye member 62 received under one of the screw threaded fasteners 42 thereby maintaining the plug 52 in an area adjacent the cylindrical member 38 so that the plug 52 will always be available for insertion into the cylindrical member 38 and forming a closure therefor. This will prevent accidental loss of the plug 52. The lower end of the plug 52 is provided with inwardly extending slot or recess 64 which permits flexing inwardly of the cylindrical plug 52 thereby permitting the insertion of the plug 52 into the cylindrical member 38 whereafter the plug 52 will resiliently grip and be retained in the cylindrical member 38 for forming a seal for each cylindrical member 38.

The other end of the cylindrical housing 12 has a frusto-conical portion 28 formed with a discharge pipe 68 which extends into an enclosure generally designated by the numeral 70 wherein the enclosure 70 generally includes a rectangular metallic receptacle 72 having supporting lugs 74 on the bottom thereof for attachment to the base 16 by fastening members 76. One end of the receptacle 72 is provided with an opening 78 closely receiving and secured to the discharge pipe 68. The other end of the receptacle 72 is provided with an enlarged opening 80 slidably receiving a drawer 82 having

a handle 84 thereon wherein the drawer 82 is provided with an inner end wall 86 disposed against the end wall of the receptacle 72 which also has an opening 88 telescopically received over the discharge pipe 68 wherein dirt discharged from the pipe 68 will be deposed in the drawer 82 for removal from the enclosure 70.

The top of the receptacle 72 is provided with a plurality of upwardly struck louvers 90 which are surrounded by an upstanding screen wall 92 having a closure top plate 94 on the upper end thereof wherein air may be discharged through the louvers 90 and then through the screen 92 whereby air is discharged and dirt is retained in the receptacle 72.

The outer end of the pipe 68 is provided with a flap type check valve 96 for permitting one way entry of air into the enclosure 70.

A branch line 98 is integrally formed with the discharge pipe 68 and provided with a check valve 100 and the branch line 98 extends outwardly through the side wall of the receptacle 72 and then out through the building wall 20 and terminates in an air intake fitting 102 exteriorly of the building whereby air may be pumped from the exterior of the building through the branch pipe line 98 and into the pipe 68 past the check valve 100 when the reversible blower 10 is reversed for pumping air into the building at which time the check valve 96 will become closed substantially as illustrated in Figures 3 and 4.

Figure 8 illustrates a switch plate 104 having two switch members 106 and 108 thereon together with signal lights 110 and 112 in alignment with the switch members 106 and 108 whereby the lights 110 and 112 will indicate whether the switch 106 or 108 is energizing the electric motor 114 for driving the fan impeller 116 in order that visual observation may be employed to determine whether the blower 10 is being utilized to create a vacuum in the conduit 30 or to create a pressure therein so that proper operation of the system may be maintained.

A switch generally designated by the numeral 118 is mounted on each cylindrical member 38 with the switch 118 including a body member of suitable insulative material 120 which is provided with projecting ears 122 for receiving screw threaded fastener means 124 for mounting the switch 118 on the cylindrical member 38. It is pointed out that the screw threaded fasteners 124 do not project into the interior surface of the cylindrical member 38 thereby providing a continuous smooth surface. A pair of electrical conductors 126 are connected to the switch 118 for selectively energizing and deenergizing the blower or fan impeller 116. The switch 118 is provided with a spring urged reciprocating actuating arm 128 which extends through an opening 130 in the cylindrical member 38 and provides a rounded surface projecting into the interior of the cylindrical member 38. When the fitting 46 on the vacuum hose 48 is inserted into the cylindrical member 38, the projecting plunger or arm 128 is contacted thereby and forced inwardly thereby closing the switch 118 and energizing the fan impeller 116 for rotating the same and forcing air through the hose 48 or drawing air in through the hose 48 depending upon the position of the switch 106 and the switch 108. Thus it will be seen that the fan impeller 116 is being operated only when the air pumped thereby is being employed thus providing a saving in electrical energy and also eliminating unnecessary wear on the parts.

In practical use, the blower 10 may be employed for a vacuum cleaner with the hose 48 being attached to the fitting 36 in the various rooms for cleaning the rooms in the usual manner. With this type of system, a more effective cleaning operation may be carried out since a higher vacuum may be obtained than may be provided

with the small portable type vacuum cleaners. Additionally, this system eliminates the necessity for long extension cords and cumbersome tanks or canisters normally employed with portable type vacuum cleaners. After the entire building has been cleaned the dirt may be removed from the closure 70 and disposed of in any suitable manner. Of course, it may not be necessary to remove the dirt after the cleaning but the dirt should be removed periodically to assure proper discharge of the air through the screen 92 and to assure that the top of the receptacle 72 acts properly as a baffle for separating the dirt from the air.

When it is desired to utilize the blower 10 as a fresh air circulator, it is only necessary to move the switch 106 to an off position at which time the light 110 will be deenergized and then move the switch 108 to its on position at which time the light 112 will be energized thereby indicating the manner of operation of the blower 10.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described and accordingly, all suitable modifications, and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

A vacuum cleaning apparatus comprising a hollow casing constructed with an air inlet and air discharge means, a suction fan forcing air through said casing with the fan discharging air into the air inlet disposed in said casing, a removable receptacle disposed in said casing, baffle means overlying the receptacle and including discharge louvers for reversing the flow of air in the casing for separating dirt particles from the air and deflecting the air above the receptacle, said suction fan having an intake, a normally closed floor receptacle communicated with the intake of said suction fan, a rigid suction tube telescoped into the floor receptacle, an electric motor for driving said fan, an electric circuit connected with said motor, an electric switch in said circuit, said electric switch having an actuating plunger extending laterally through the floor receptacle into the path of movement of said suction tube when telescoped into the floor receptacle thereby closing the circuit and energizing the motor and opening the circuit when the suction tube is withdrawn from the receptacle, said casing having a screened closure above the baffle means for additionally separating dirt particles in the air.

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