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CLEANING APPARATUS

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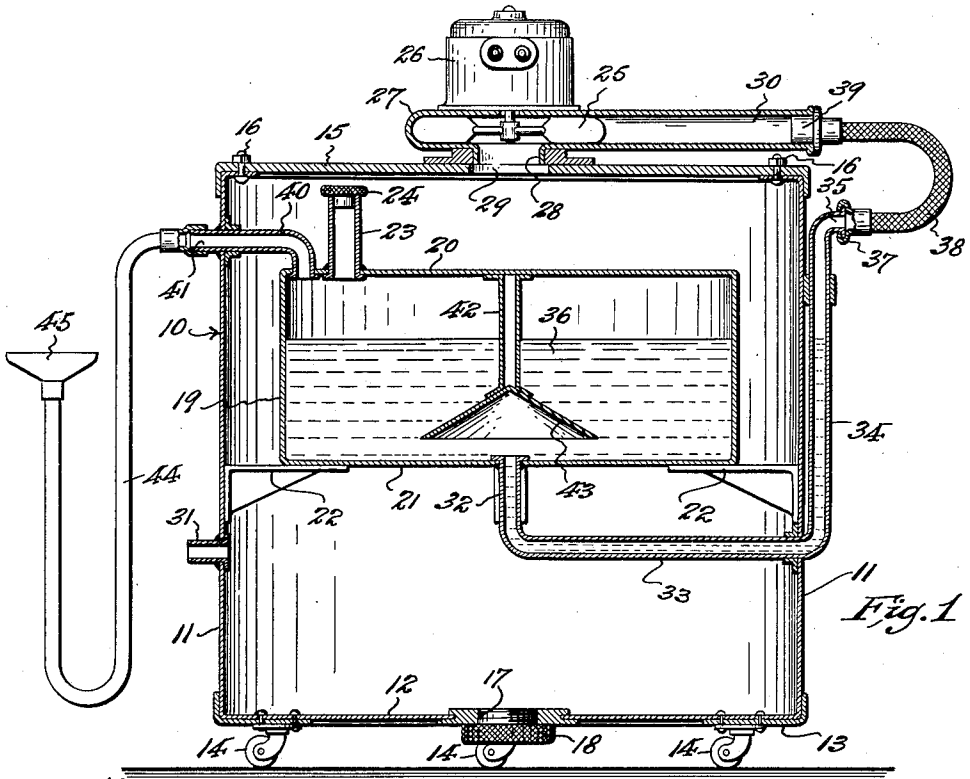


Fig. 1

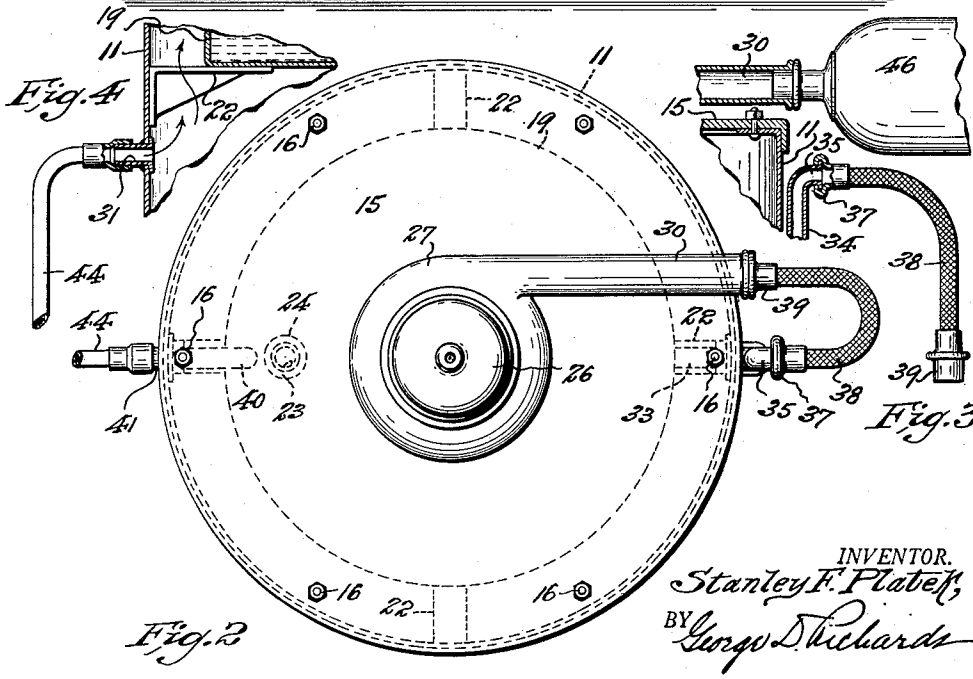


Fig. 4

Fig. 3



Fig. 2

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## CLEANING APPARATUS

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3 Claims. (Cl. 261—30)

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This invention relates to novel apparatus for cleaning furniture upholstery, carpets, rugs, and the like, and for similar cleaning operations.

The invention has for an object to provide a novel cleaning apparatus for carrying on cleaning operations by either a shampooing method or a dry vacuum method or both; the apparatus being so constructed as to be readily and quickly selectively conditioned for operation by either said method.

The invention has for another object to provide a compact, simple and easily operated mobile cleaning apparatus for the above stated purposes which can be economically produced, and which, to these ends, includes a main container, a second container, adapted to hold a detergent solution, mounted within said main container, an electrically operated blower fan mounted on the main container with its intake or suction side in communication with the interior of said main container, means being provided for disconnectibly coupling the discharge of said blower fan in communication with the bottom interior of said second container, whereby to pass forced air through said second container and its contained liquid detergent for suds producing effect and for delivery of the produced suds from said second container to a manipulatable suds applying means; and said main container having an inlet means to which a manipulatable suction means may be coupled.

The invention has for a further object to provide a novel form and disposition of air deflector means within the second container for efficiently directing admitted air for substantially uniformly distributed suds forming flow through the detergent solution contained in said second container.

Other objects of the invention, not at this time more particularly enumerated, will be understood from the following detailed description of the same.

An illustrative embodiment of the invention is shown in the accompanying drawings, in which:

Fig. 1 is a central vertical cross sectional view through the cleaning apparatus made according to the invention; Fig. 2 is a top plan view of said cleaning apparatus; Fig. 3 is a fragmentary vertical cross sectional view, similar to that of Fig. 1, but showing the means for delivering forced air to the second container disconnected from the discharge of the blower fan, and showing a dust collecting bag connected with the latter; and Fig. 4 is another fragmentary vertical cross sectional view showing a suction means operatively

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coupled to the inlet means of the main container.

Similar characters of reference are employed in the above described views, to indicate corresponding parts.

Referring to the drawings, the reference character 10 indicates the complete cleaning apparatus embodying the principles of this invention, the same comprising a main container 11 having a bottom wall 12 which is supported by and suitably affixed to a carriage member 13. The carriage member 13 is equipped with casters 14, so that the cleaning apparatus as a whole is rendered mobile, and thus subject to be conveniently moved about from place to place. The open top end of the main container 11 is normally closed by a cover member 15 which is removably affixed to the main container by fastening bolt and nut means 16, or by any other suitable form of fastening means. Although said main container 11 may be made of any suitable shape, it is preferably of the cylindrical shape shown. The bottom wall 12 of the main container 11 is provided with a clean-out opening 17 which is normally closed by a removable closure plug 18.

Supported within the interior of the main container 11, intermediate the top and bottom of the latter, is a second container 19 which is closed top and bottom by a top wall 20 and a bottom wall 21. Said second container 19 is of smaller diameter than that of the main container 11, and is mounted within the latter, so as to be preferably disposed in concentric relation thereto. The second container 19 may be supported within the main container by any suitable means, such e. g. as by the radial brackets 22 which extend from the side walls of said main container 11. The second container 19 is provided in connection with its top wall 20 with a filling neck 23, the outer open end of which is normally closed by a removable closure plug 24.

Suitably mounted on and affixed to the cover member 15 of the main container 11 is a blower fan 25 and its actuating electric motor 26. The casing or housing 27 of the blower fan is provided with an axial air intake 28 which communicates with the interior of the main container 11 through an opening 29 in said cover member 15 with which it is aligned. The blower fan casing or housing 27 is further provided with an outlet or discharge member 30 which extends outwardly therefrom.

The main container 11 is provided, preferably in a suitable location for exterior projection from a side thereof, with an air inlet nozzle or spout 31.

Connected with the bottom wall 21 of the second or interior container 19, so as to discharge into the bottom interior of the latter, is the discharge end portion 32 of an air delivery conduit 33. Said air delivery conduit 33 extends to and through the side wall of said main container 11, and terminates in an external upstanding intake portion 34. The inlet end 35 of said intake portion 34 is disposed in a plane above the level of a liquid detergent solution 36 with which the second or interior container 19 is supplied when the cleaning apparatus is in use. To said inlet end 35 of the air delivery conduit is connected, preferably by a swiveling connection 37 of suitable design, a flexible air hose 38. The free end of said flexible air hose 38 is provided with a suitable coupler member 39 adapted for detachable engagement with the outlet or discharge member 30 of the blower fan casing or housing 27, whereby, when required, to connect the air delivery conduit with the blower fan so as to deliver the air output of the latter through the air delivery conduit to and through the second or interior container 19 for purposes hereinafter more particularly set forth.

Leading outwardly from the top of said second or interior container 19 is a discharge conduit 40, which extends to and through the side wall of the main container 11, and which terminates in a discharge nozzle or spout 41 which projects exteriorly from said main container 11.

Suspended within the second or interior container 19, by suitable supporting means such e. g. as the hanger 42, and so as to overhang the discharge end 32 of the air delivery conduit 33, in suitably spaced relation to and above the latter, is an air deflector or spreader baffle 43. Preferably, the form of said air deflector or spreader baffle is that of a hollow cone, the open bottom of which opposes the discharge end 32 of the air delivery conduit 33.

Prior to putting the cleaning apparatus in use, a liquid detergent solution 36 is supplied to the second or interior container 19 in quantity sufficient to submerge the air deflector or spreader baffle 43, and yet to but partially fill said container, so as to leave open space within the interior of the latter above the level of the supplied solution.

In the use of the cleaning apparatus, when it is desired to operate the same to carry on a cleaning operation by a shampooing method, the flexible air hose 38 is connected to the discharge member 30 of the blower fan, whereupon electric current is supplied to motor 26 so as to operate said blower fan. The air inlet nozzle or spout 31 being open to the atmosphere, the operating blower fan sucks air from the atmosphere into the main container 11 and thence through the opening 29 and blower fan intake 28. The thus operating blower fan discharges air from its discharge member 30 through the air hose 38 and air delivery conduit 33 for discharge into and through the liquid detergent solution within the second or interior container 19. The stream of air thus entering the container 19 will be deflected by the air deflector or spreader baffle 43 so as to be directed outwardly from the rim of the latter to pass into the solution in such manner as to be substantially uniformly distributed laterally in all directions, and thereupon so as to bubble upwardly therethrough. The ebullition of air through the solution so agitates and aerates portions of the same as to produce lather, foam or suds which is accumulated within the upper



interior of the container 19 above the level of the solution therein. The continued flow of forced air thus discharged by the blower fan through the container 19 will discharge the produced lather, foam or suds through the discharge conduit 40 and discharge nozzle or spout 41. Thence the lather, foam or suds may be delivered to the furniture upholstery, rug, carpet or other material, desired to be cleaned by a shampoo treatment, by attaching to the discharge nozzle or spout 41 a flexible hose 44 which terminates in a suitable applicator member 45, through which the lather, foam or suds may be discharged for application to the material to be cleaned.

After application of the lather, foam or suds to the material to be cleaned has been satisfactorily accomplished, the applied lather, foam or suds, together with the dirt taken up thereby, can be removed from the material under treatment by adjusted operation of the cleaning apparatus. To condition the apparatus for lather, foam or suds removal, the hose 44 and its applicator member 45 is detached from the discharge nozzle or spout 41, and attached to the inlet nozzle or spout 31, or a similar hose having a suitable suction head is attached to said inlet nozzle or spout 31 (see Fig. 4). The flexible air hose 38 is thereupon disconnected from the discharge member 30 of the blower fan (see Fig. 3), thus preventing delivery of air from the blower fan through the second or interior container 19 and its detergent solution content. When the apparatus is thus conditioned, and the blower fan again put in operation, air will be sucked through the applied hose and its suction head into the interior of the main container 11. The air suction thus induced will take up the soiled lather, foam or suds from the material being cleaned, and will carry the same into the interior of the main container 11, where it will fall out of the air stream so as to accumulate in the bottom of said container 11. The main container may be emptied of accumulated soiled lather, foam or suds through the bottom opening 17 of the main container 11 when the closure plug 18 is removed. The interior of the main container 11 may be thoroughly cleansed by removing the cover member 15 for access thereto. The supply of detergent solution in the second or interior container 19 may be renewed while the cover member 15 is removed so as to give access to the filling neck 23.

When it is desired to operate the cleaning apparatus by a dry vacuum method, the apparatus is conditioned in the same manner as above described for soiled lather, foam or suds collection, except that a dust collection bag 46 (see Fig. 3) is coupled to the discharge member 30 of the blower fan.

From the above, it will be apparent that the instant invention provides a very simple, compact and light weight cleaning apparatus adapted to be optionally conditioned for either shampoo cleaning effect or for dry vacuum cleaning effect. The apparatus is further simplified in that but a single blower fan is required, the air circulation which is induced thereby being quickly and easily conditioned and controlled by the mere coupling and uncoupling of the flexible air hose 38 relative to the discharge member 30 of the blower fan.

It will be obvious that various changes could be made in the constructions and arrangements of the above described cleaning apparatus and its parts without departing from the scope of this invention as defined by the here-following claims.

It is therefore intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

I claim:

1. A cleaning apparatus for the purposes described comprising a main container for soiled suds and dirt having an air intake means normally directly open to the atmosphere and adapted for occasional connection to a suction head for soiled suds and dirt collection, a second container of reduced dimensions supported within the interior of said main container, said second container being adapted to be supplied with a liquid detergent solution to partially fill the same, a dual purpose blower fan mounted on said main container with its intake in communication with the interior thereof and with its discharge means exteriorly directed, means to deliver blower fan forced air to the second container for passage through its contained detergent solution with suds forming effect, means to detachably couple said delivery means with the air discharge of said blower fan, and suds discharge means leading from said second container to extend through and exteriorly from said main container.

2. A cleaning apparatus for the purposes described comprising outer and inner closed containers disposed in concentric spaced relation, a power actuated dual purpose blower fan mounted on the top of the outer container having its intake in communication with the interior of said container and having an exteriorly projecting discharge member, said outer container having an exteriorly projecting air inlet nozzle normally open to the atmosphere and subject to occasional connection to a suction head for soiled suds and dirt collection, the second container being adapted to be supplied with a liquid detergent solution to partially fill the same, means to deliver blower fan forced air into the bottom of said inner container for passage through its contained detergent solution with suds forming effect, means to



detachably couple said latter means with the air discharge member of said blower fan, and suds discharge means leading outwardly from the top of the inner container, said suds discharge means terminating in a discharge nozzle which projects exteriorly from said outer container and is adapted for connection to a suds applicator.

3. A cleaning apparatus for the purposes described comprising a main container for soiled suds and dirt having an air intake means normally directly open to the atmosphere and adapted for occasional connection to a suction head for soiled suds and dirt collection, a second container associated with said main container and adapted to be supplied with a liquid detergent solution to partially fill the same, a dual-purpose blower fan having its intake in communication with the interior of said main container and its discharge means exteriorly directed, means to deliver blower fan forced air to said second container for passage through its contained detergent solution with suds forming effect, means to detachably couple said delivery means with the air discharge means of said blower fan, and suds discharge means leading exteriorly from said second container.

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