Nov. 11, 1952 C. K. BROWN, SR., ET AL 2,617,138

VACUUM FLOOR MOPPER

Filed Dec. 31, 1948

FIG. 2.

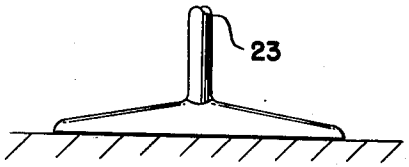


FIG. 1.

FIG. 3.

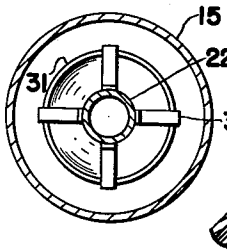


FIG. 4.

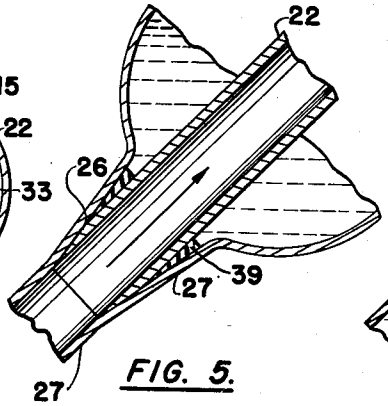


FIG. 5.

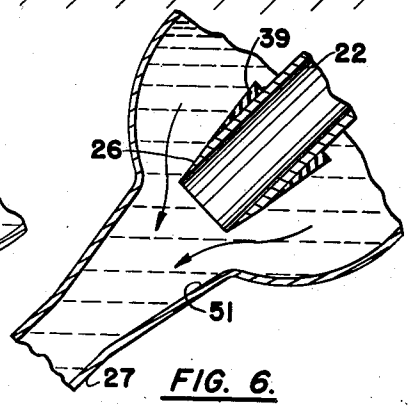


FIG. 6.

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VACUUM FLOOR MOPPER

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4 Claims. (Cl. 15—321)

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This invention relates to washing and cleaning equipment and more particularly to mops operating on a vacuum principle.

The conventional method for drying up water from a floor being washed with water or other liquids consists generally in the use of a cloth or rope mop on the end of a handle or a mopping cloth alone, which is relatively dry at the beginning and absorbs the water into itself, until about saturated. Then the mop is wrung or squeezed so the water is ejected and the mop made relatively dry again and ready for reuse. The process is an inconvenient one no matter how well done. It takes time and effort to wring out the water and the mop becomes so dirty and saturated with water after a little use that it does not remove as much of the dirt and water as it should. The operator therefore has in most cases, to clean up again after a first mopping with clean water and a new or washed out and dried mop. The mop when relatively dry, absorbs the water by capillary action. The mop decreases in its power of absorption as it becomes more or less filled by the water drawn up in it, and holds it in suspension in a very loose manner. In fact some of the water usually drops on the floor from the mop as it is raised or carried to the bucket into which the water is to be squeezed. The drops of water then have to be mopped up in another mopping. The several additional moppings, together with the squeezing, and the several handlings and carrying of the mop to and from the bucket used with the mop make the work very inconvenient, strenuous and long. It is therefore an object of this invention to provide a new and improved device for mopping up the water used in the washing of floors and similar surfaces, that will avoid one or more of the disadvantages and limitations of the prior art.

Another object of the present invention is to provide a new and improved mechanical mop that will draw up the water or liquid used for washing a surface effectively and quickly.

A further object of the herein described invention is to provide a new and improved mechanical mop that will avoid the use of cloth or absorbing material for the removal of water or cleaning liquids, used for washing a surface, during the drying thereof.

An additional object of this invention is to provide a new and improved suction mop that will absorb cleaning water or liquids during the drying of a surface being cleaned, and hold same securely together, and be provided with a convenient and clean arrangement for discharging it in a controlled manner.

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Other objects will become apparent as the invention is more fully set forth.

For a better understanding of the invention and the objects thereof, reference is made to the accompanying drawings and the description following. These together detail a particular form of the invention by way of example for illustrating its principles of construction and operation, while the appended claims indicate the scope of the invention.

In this invention, the structure employed operates under a vacuum principle, in that it uses a nozzle connected with a container, which is run over to suck up the water or liquid to be removed from a surface. The container and nozzle are connected with a vacuum system which when operating, sucks up water through the nozzle and deposits it in the receptor or container, where it stays until ready for disposal by the operator. For general domestic use, this type of mop is preferably connected to a conventional vacuum cleaning machine. The device is so arranged that the water gathered up does not flow through the parts of the machine where it might cause damage thereto.

In the accompanying drawings:

Figure 1 is a vacuum or mechanical mop partly in section to show its internal construction and embodying this invention, and it is shown attached to a conventional vacuum cleaning machine;

Figure 2 is a detail of a portion of the nozzle used with the embodiment shown in Figure 1;

Figure 3 is a complete transverse sectional view taken on the line 3—3 of Figure 1;

Figure 4 is a complete transverse sectional view taken on the line 4—4 of Figure 1;

Figure 5 is a sectional view taken in a longitudinal direction of the joint where the nozzle and receptor tank fit into one another, the joint being in closed position;

Figure 6 is a similar view to that of Figure 5, with the joint in open position, to allow the water or fluid to pass from the receptor tank and be discharged therefrom;

Similar reference numerals refer to the similar parts throughout the drawings.

Referring to Figure 1 in particular, a vacuum cleaning machine structure 10 is shown in dotted outline as conventional equipment which has its flexible hose 11 connected with a tubular handle 12 by a coupling 13. The handle 12 is preferably made as indicated and is provided with an ex-

tension tube 16 that fits through a stuffing box 14 into a receptor tank 15, which is adapted to hold the water or liquid 17 raised from a surface during washing and drying process. The extension tube has a collar 18 mounted peripherally on it, and serving as an abutment against which a coiled spring 19 presses at one end while its other end contacts the stuffing box end of the tank 15. This keeps the liquid from running out of the tank until released. The end portion 20 of the tube disposed in the interior of the tank is surmounted by a liquid and air separator 21. This diverter is attached to the lower end of the tube 16. The lower end of the diverter is connected to a nozzle tube 22 of similar interior and exterior dimensions as the tube 16. It offers a passage for the flow of liquid from a nozzle 23 into the tank 15. The tube 22 is slidably held in the central collars 24 of spiders 25 rigidly attached to the interior surface wall of the tank 15. The tubes 16 and 22 with the interconnected separator 21 are rigidly connected with one another, so that the telescoping or pulling of the tube 16 through the stuffing box 14 will move them all together until the lower end tapered portion of the tube 22 fits in the angular portion 51 of the hose 27 at the lower end of the tank 15, or lifted out therefrom for emptying the tank as the case may be. A rubber or plastic hollow gasket 39 on the exterior of the portion 26 serves to make a tight joint. The nozzle 23 is held on the nose 27 by a coupling 28. The nozzle may be of several contours but that of a spreaded design as indicated in Figure 2 is preferred in this embodiment.

The separator 21 is tapered from each collar end portion 29 and 30 respectively towards the middle, as shown, with an inverted cone 31 situated internally to act as barrier or baffle to the liquids sucked up through the tube 22 into the diverter and separate the air therefrom. The collars 29 and 30 are supported on spaced straps 32 and 33 welded to the cone 31 so the liquid from the tube 22 can spill out directly into the tank 15 without passing beyond the barrier cone 31, while the air creating the vacuum or sucking action in the tube will pass freely into the tube 16 free from the liquid, and back into and through the vacuum machine 10. In this instance the tube 22 is inserted tightly into the nose 27 so all the suction is on the nozzle and there is no leakage of liquid out of the tank through the nose 27. When the tank is full enough to require the emptying of the water from it, the handle 12 is pulled upward by the operator with one hand against the resistance of spring 19, while his other hand resists the pull on the tank or receptor 15 by holding the tank handle 34, until the tube end portion 26 is lifted out of the nose 27, as shown in Figure 6 and the water is allowed to flow out of the nozzle into a bucket. During the dumping of the water, the vacuum machine is preferably stopped, so there will be no tendency for the water to hold or stay in the tank during this dumping action under a vacuum tension.

The use of the vacuum for sucking up the washing liquids provides a clean and effective method for their removal from the floor and is done expeditiously and with the complete removal of the dirt with them, and avoids the necessity of repetition in the process in the same area or recleaning as required by the usual of cloth or rope mop method.

While but one general form of the invention is shown in the drawings and described in the specification it is not desired to limit this application for patent to this particular form, as it is appreciated that other forms could be made that would use the same principles and come within the scope of the appended claims.

Having thus described the invention, what is claimed is:

1. An apparatus of the class described comprising in combination, a suction nozzle, a receiving tank communicating therewith and secured thereto at its bottom, conduit means within said tank communicating with a source of suction, the outer periphery of said conduit means normally blocking both ends of the tank, said conduit means having an opening in the receiving tank intermediate the ends of said conduit means, means in the aforesaid opening for diverting liquid sucked up through the nozzle and directing the liquid into the receiving tank where it is trapped, said conduit means being slidable within said tank to move the end of the said conduit means adjacent the nozzle away from the bottom end of the tank to place the tank in direct communication with said nozzle, whereby the liquid trapped in the tank may flow outwardly therefrom through the nozzle.

2. An apparatus as set forth in claim 1, wherein the means for diverting liquid include a baffle to separate air from liquid sucked within said tank.

3. An apparatus as set forth in claim 1, including a spring normally opposing sliding movement of said conduit means away from the bottom end of the tank.

4. An apparatus of the class described comprising in combination, a suction nozzle, a receiving tank communicating therewith and secured thereto at its bottom, piping within said tank communicating with a source of suction, said piping comprising a lower section normally abutting and peripherally blocking the bottom end of said tank, and an upper section extending through the upper end of said tank and peripherally blocking said end, baffle means intermediate said piping sections, said piping being slidable within said tank whereby the lower piping section may move away from the bottom end of the tank, a spring coiled about the upper piping section and abutting the upper end of the tank, and an abutment for the opposite end of the spring carried by the upper piping section.

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