March 17, 1953 H. E. SMITH, JR 2,631,326

MOP WITH SUCTION AND SQUEEGEE FACILITIES

Filed Aug. 15, 1950

Fig. 2

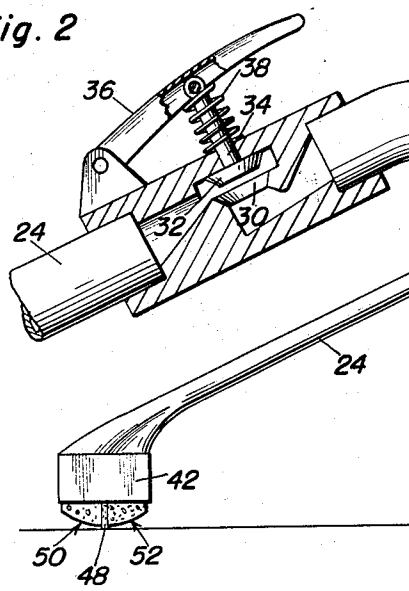


Fig. 1

Fig. 3

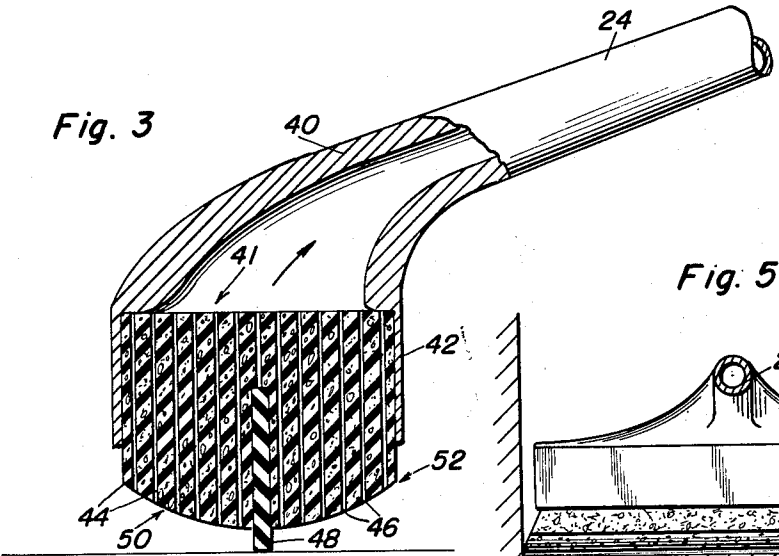
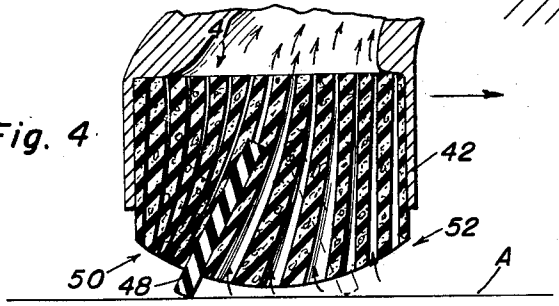


Fig. 5

Fig. 4



Harry E. Smith, Jr.
INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

Patented Mar. 17, 1953 2,631,326

UNITED STATES PATENT OFFICE

2,631,326

MOP WITH SUCTION AND SQUEEGEE FACILITIES

Harry E. Smith, Jr., Tooele, Utah, assignor of forty-nine per cent to Fred A. Davis, Tooele, Utah

Application August 15, 1950, Serial No. 179,545

2 Claims. (Cl. 15—364)

1

The present invention relates to certain new and useful improvements in mops which are expressly designed and adapted to remove surface water from a floor which has been scrubbed by hand or, alternately, through the instrumentality of a so-called wet mop.

It is a matter of common knowledge that a great deal of time and labor is involved in wringing out a wet mop by hand or by a special wringer on a scrubbing bucket. Then, too, mop wringing is exceedingly laborious and tiring to the user. For these and other reasons efforts have been made to provide special implements for taking up the surface water with the aid of a special mop in which suction, from a vacuum cleaner or other source, serves to pull the water into an appropriate collection container. Confronted with this unique problem I seek to substantially solve it through the medium of what is believed to be a structurally distinct and practical implement, that is, one which has the facilities of a clean wiping squeegee as well as conduit means which, aided by suction, pulls the water into a mobile container.

In carrying out a preferred embodiment of the invention, a hollow handle, which also serves as a conduit, is employed and this is provided at one end with an enlarged hollow head including an open suitably shaped frame. A filler block, preferably a block of sponge rubber, is fitted into said frame. This rubber block, although highly porous, is provided with a multiplicity of vertical passages communicatively opening into the head at their upper ends and having their opposite ends opening through what may be called the bottom or work surface side of the block. A relatively rigid squeegee strip is embedded in the filler block and located in the central portion of the latter so that it divides it into alternatively compressible halves, the floor contacting edge of said squeegee strip projecting beyond the floor contacting and wiping surface of the filler block whereby, as the handle is pushed toward and from the user with the squeegee strip in contact with the floor or other surface, said halves are alternatively compressed to the extent that the pores and passages therein are momentarily closed while the pores and passages in the non-compressed halves are open.

Other objects and advantages will become more readily apparent from the following description and the accompanying illustrative drawings:

In the accompanying sheet of drawings wherein like numerals are employed to designate like parts throughout the same:

2

Figure 1 is a side elevational view of the overall apparatus constructed in accordance with the principles of the present invention and showing, in a general way, the manner of using the same;

Figure 2 is an enlarged view in section and elevation showing the valve means;

Figure 3 is a fragmentary view in section and elevation depicting the precise construction of the mop head;

Figure 4 is a view based on Figure 3 and showing the manner in which the squeegee is flopped back and forth to produce the unique valving action;

Figure 5 is a view on a small scale, primarily in elevation, showing the operation of the mop along a floor surface and close to an adjacent wall surface.

Referring now to the drawings and particularly to the apparatus phase of the invention shown in Figure 1, the mobile unit (not claimed) is denoted by the numeral 6 and this comprises a suitable tank or container 8 with roller means 10 on the bottom, handle means 12 and cover means 14. There is a neck or the like 16 on one side near the top to accommodate a suction hose 18. This suction hose, in practice, will be connected with a vacuum cleaner (not shown) or perhaps to a suction pump in a modern-type clothes washing machine or to any other source of suction available. The suction source is, of course, no part of the invention. There is a similar neck 20 on the front upper portion of the container and this is adapted to accommodate a flexible hose 22 for delivering the loose surface water from the floor into the tank in an obvious manner.

The novel implement, the invention herein claimed, comprises a hollow handle 24 of appropriate material and length. The upper end of this is laterally directed as at 26 to provide a suitable hand-grip. The upper end portion is also provided with a coupling or union 28 which serves as a valve casing. This is provided interiorly with an appropriate valve seat 30 for the valve 32 the stem 34 of which is operated by a manually controllable pivotally mounted lever 36. A coiled spring 38 is provided and surrounds the valve stem and bears against the lever and valve casing to normally keep the valve open. The valve (not claimed) is thus arranged conveniently in relation to the hand-grip so that it may be shut off whenever necessary or desired. The lower end portion 40 of the handle is enlarged and merges into a hollow head embodying an open substantially rectangular frame 42. A filler block 41, which is preferably of sponge rubber, is fitted

into and fills said frame 42. Although, the sponge rubber is in itself porous it is desirable to provide extra pores or passages 44 and 46 therethrough. The relatively rigid wiper which may be best referred to as a squeegee strip 48, is centrally embedded in the rubber block and divides the same into complemental halves 50 and 52, respectively. Due to the compressible nature of the rubber and the tendency of the passages to close up when squeezed and put under pressure, a novel valving action is thus made possible. For example, and as best shown in Figure 4, the projecting wiping edge of the squeegee is in movable wiping contact with the floor surface A. Obviously, by grasping the handle and bearing down on the head the squeegee is figuratively rocked back and forth. I have sometimes referred to this as a "floating" squeegee. In any event, it will be plain that when the handle is pulled in a direction toward the operator the pulling and pressing action serves to incline the squeegee to the position shown in Figure 4. Here, the passages in the half portion 50 are virtually squeezed together and closed. On the other side, that is, in the portion 52 the passages are opened up and, therefore, assuming that the suction is "on" water from the surface of the floor is drawn up through the passages, into the handle 24, through the hose 22 and deposited in the container 8. Whenever necessary the water flow and suction flow may be turned off by closing the hand-controlled valve means shown.

I know of no suction-type surface water pick-up and removing mop which is provided with a valved handle having a hose for connection to a trap or the like and through which suction is produced to act on the pores in a compressible head, the head being provided with an embedded squeegee which is sufficiently sturdy that the to and fro movements bring about the valving action described and shown.

It is thought that persons skilled in the art to which the invention relates will be able to obtain a clear understanding of the invention after considering the description in connection with the drawings. Therefore, a more lengthy description is regarded as unnecessary.

Minor changes in the shape, size and arrangement of details coming within the field of invention claimed may be resorted to in actual practice, if desired.

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

1. A mop of the class described comprising a hollow head embodying a rigid open frame, a hollow handle communicatively attached to said head, a filler block fitted in said frame, said filler block being of sponge rubber and having water intake passages passing therethrough to permit water to be sucked from the surface of the floor into said handle, and a relatively rigid squeegee strip embedded in said filler block and located in the central portion of the latter and dividing it into alternately compressible halves, the floor contacting edge of said squeegee strip projecting beyond the floor contacting and wiping surface of said filler block.

2. For use in connection with a conveniently available source of suction, a mop having both suction and squeegee facilities and comprising a hollow head embodying a rigid open frame of general rectangular form, a hollow handle communicatively joined with said head, a substantially rectangular block of porous, compressibly resilient material mounted in and filling said frame and having a floor contacting and wiping surface projecting beyond the corresponding surface approaching portion of said frame, and an imperforate relatively rigid strip of rubber embedded in said block and of a length commensurate with the length of the block, said strip constituting a squeegee and having an edge portion projecting beyond the wiping surface of said block and dividing said block into complemental halves, one fore and one aft, whereby as the handle is pushed toward and from the user with the squeegee strip in contact with the floor or other surface, said halves are alternatively compressed to the extent that the pores therein are momentarily closed while the pores in the non-compressed half are open.

HARRY E. SMITH, JR.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
928,982	Kindel	July 27, 1909
961,816	Squier	June 21, 1910
1,026,104	Moorhead	May 14, 1912
1,042,711	Moorhead	Oct. 29, 1912
1,982,345	Kirby	Nov. 27, 1934
2,218,595	Yutzler	Oct. 22, 1940
2,506,077	Goldsmith	May 2, 1950

FOREIGN PATENTS

Number	Country	Date
520,621	Germany	Mar. 14, 1931