Dec. 1, 1953 S. P. VAUGHN 2,660,747

SPONGE CLEANING DEVICE

Filed March 25, 1950

FIG. 1

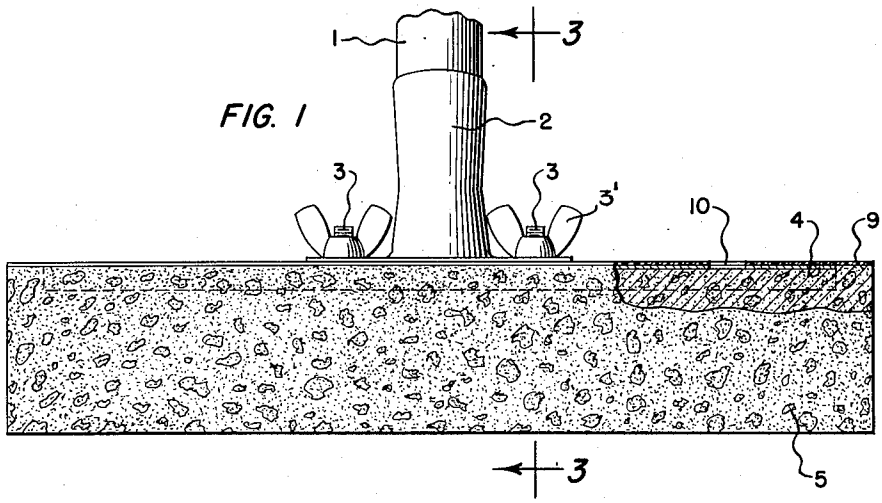
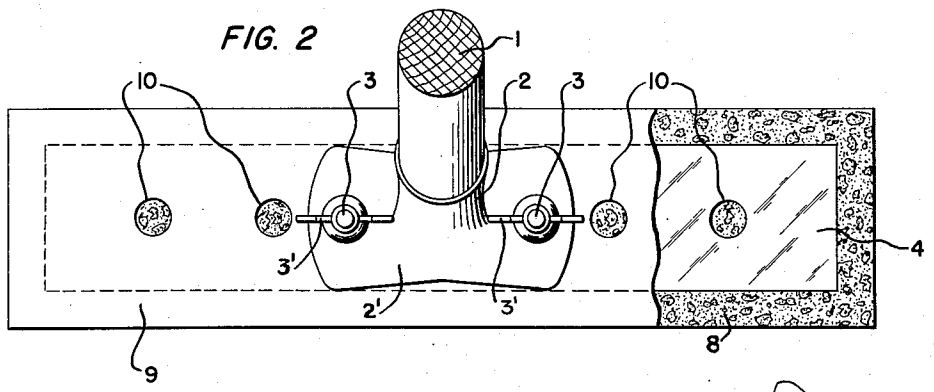


FIG. 2



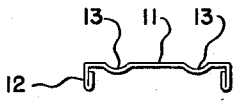


FIG. 5

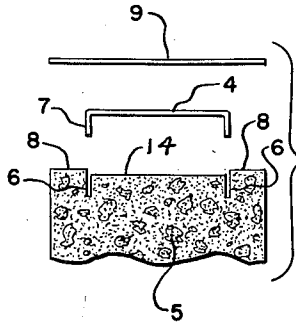
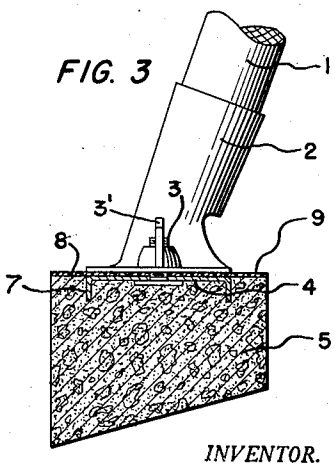


FIG. 4

FIG. 3



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SPONGE CLEANING DEVICE

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10 Claims. (Cl. 15—244)

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This invention relates to improvements in the construction of cleaning devices generally wherein the cleaning element is a block of sponge adhesively secured to a stiff backing member, and more particularly to sponge mops.

The principal object of the invention is to provide a more permanent bond between the sponge and backing member than has heretofore been provided, and to provide a construction wherein the backing member is stiffened and the tendency of the sponge to roll or peel away from the backing will be positively resisted when in use.

A further object is to provide a cleaning device or mop, not only of durable and inexpensive construction, but of attractive and sanitary appearance.

A still further object is to provide in a mop a cleaning element wherein no metal or other hard material is exposed to scratch surfaces contacted in mopping operations.

The principal feature of the invention resides in the provision of an inverted channel shaped metal insert adhesively secured in the side of a block of sponge between the sponge and a flexible backing of cloth or rubber, said backing being adhesively secured to the back of the channel shaped insert and marginal surfaces of the block of sponge adjacent thereto, to form a smooth top surface for the cleaning element, and to prevent the sponge being easily torn away from the metal insert.

Another feature of the invention is the provision of simple means for attaching the cleaning element to a handle, so that the cleaning element may be easily detached for renewal.

Other objects and advantages of the invention will be apparent from the following description when taken in connection with the accompanying drawings, in which:

Fig. 1 is a front elevation of the cleaning device in the form of a mop to which a handle is attached.

Fig. 2 is a plan view of Fig. 1, partly cut away to show more clearly the construction.

Fig. 3 is a sectional elevation of the cleaning device on line 3—3, Fig. 1, showing in detail the construction.

Fig. 4 illustrates the separate parts of the cleaning device and the method of assembly.

Fig. 5 illustrates a modified form of the channel inserted to increase lateral stiffness.

Referring to the drawings, the cleaning device in accordance with this invention is illustrated in the form of a mop, which includes a handle 1 secured in a handle socket 2 having a flanged

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base 2' secured by bolts 3 and wing nuts 3' to an inverted channel-shaped metal insert 4 countersunk in and adhesively attached to a sponge cleaning element 5. In this construction, parallel grooves 6 are cut into the block of sponge on one side between the edges thereof to receive the flanged walls 7 of the metal insert 4. The sponge surface 14 between the grooves 6 is shaved off to a depth corresponding to the thickness of the back of the metal insert, so that when the flanged walls 7 of the metal insert 4 are placed in the grooves 6, the upper surface or back will be flush with the adjacent marginal surfaces 8 of the sponge (see Fig. 4). In order to increase the structural strength of the back of the sponge, and in order to prevent the marginal surfaces 8 of the sponge being pulled away from the flanged walls 7 of the metal insert in mopping operations, a sheet 9 of flexible material, such as cloth or rubber, is adhesively secured to the back of the metal insert 4 and the marginal surfaces 8 of the sponge element, thus forming a smooth upper surface in the cleaning device.

In addition to increasing the structural strength of the sponge at points adjacent the flanged walls of the metal insert where the greatest strains are applied which tend to tear the sponge away from the metal insert in mopping operations, the flexible backing acts as a buffer and prevents the metal insert making contact with furniture and adjacent surfaces when mopping floors or cleaning walls.

In assembling the parts forming the cleaning device, the bolts 3 are secured in holes formed in the back of the metal insert 4, after which the metal insert and the attaching surface of the sponge cleaning element are coated with a flexible cement such as rubber or neoprene cement. The metal insert is then placed on the recessed portion of the sponge with the flanged walls 7 resting in the grooves 6 formed in the sponge, after which the flexible backing 9 is applied to the back of the metal insert 4 and the marginal surfaces 8 of the sponge adjacent the metal insert. The flexible backing is smoothed out and pressed down until the cement has set, thus obtaining a smooth and attractive upper surface for the cleaning device. The cloth or rubber backing may be colored as desired to obtain a pleasing appearance. The flanges 7 are secured to the walls of the grooves 6 by an adhesive.

A plurality of aligned ventilating holes 10 are formed in the backing 9 and insert 4 of the cleaning device to permit free circulation of air through the sponge when not in use, and to allow

water to escape through the holes when the sponge is squeezed to expel the water when in use.

In order to obtain maximum lateral strength in the metal insert for quantity of metal used, the metal insert may be formed as illustrative in Fig. 5, in which the flanged walls 12 are double folded and longitudinal ribs 13 are embossed in the backing 11 of the metal insert.

In accordance with the patent statutes I have described what I now believe to be the preferred embodiment of the invention, but obviously many changes and modifications may be made without departing from the spirit of the invention and it is intended that all such changes and modifications be included within the spirit and scope of the appended claims.

What is claimed is:

1. A cleaning device, comprising an absorbent and compressible sponge element having an attaching face, said attaching face being cut away to provide a permanent recess extending throughout the major portion of the area of the attaching face and terminating short of the edges of the attaching face to provide marginal edge faces, said attaching face being also cut away at the edges of the recess for providing permanent grooves, a plate arranged within the recess and having substantially the same dimensions as the recess and having a thickness substantially equal to the depth of the recess so that the outer face of the plate is substantially flush with the marginal edge faces, said plate being spaced from the edges of the sponge element, said plate being provided near its edges with flanges disposed at approximately a right angle to the surface of the plate and inserted within the grooves, said plate and flanges having their faces next to the cleaning element secured to the walls of the recess and grooves by an adhesive, and a sheet extending over the plate and marginal edge faces and secured to the plate and marginal edge faces by an adhesive.

2. A cleaning device, comprising an absorbent and compressible sponge cleaning element having an attaching face, said attaching face being cut away to provide a permanent recess extending throughout the major portion of the area of the attaching face and terminating short of the edges of the attaching face to provide marginal edge faces, said attaching face being also cut away for providing permanent grooves, a plate arranged within the recess and having a thickness substantially equal to the depth of the recess so that the outer face of the plate is substantially flush with the marginal edge faces, said plate being spaced from the edges of the sponge cleaning element, said plate being provided with flanges disposed at approximately a right angle to the surface of the plate and inserted within the grooves, said plate having its face next to the cleaning element secured to the wall of the recess by an adhesive, a sheet extending over the plate and marginal edge faces and secured to the marginal edge faces by an adhesive, and handle attaching means arranged exteriorly of the sheet and secured to the plate.

3. A cleaning device comprising an absorbent and compressible sponge cleaning element having an attaching face, said attaching face being cut away to provide a permanent recess extending throughout the major portion of the area of the attaching face and terminating short of the edges of the attaching face to provide marginal edge faces, said attaching face being also cut away to provide a permanent groove, a plate arranged within the recess and having substantially the same dimensions as the recess and having a thickness substantially equal to the depth of the recess so that the outer face of the place is substantially flush with the marginal edge faces, said plate being spaced from the edges of the sponge cleaning element, said plate being provided with a flange disposed at approximately a right angle to the surface of the plate and inserted within the groove, said plate having its face next to the cleaning element secured to the wall of the recess by an adhesive, a sheet extending over the plate and marginal edge faces and secured to the plate and marginal edge faces by an adhesive, attaching elements passing through the plate and sheet and permanently secured to the plate, and handle attaching means carried by the attaching elements.

4. A cleaning device, comprising an absorbent and compressible sponge cleaning element having an attaching face, said attaching face being cut away to provide a permanent recess extending throughout the major portion of the area of the attaching face and terminating short of the edges of the attaching face to provide marginal edge faces, a plate arranged within the recess and having substantially the same dimensions as the recess and having a thickness substantially equal to the depth of the recess so that the outer face of the plate is substantially flush with the marginal edge faces, said plate being spaced from the edges of the sponge cleaning element, said plate having its face next to the cleaning element secured to the wall of the recess by an adhesive, a sheet extending over the plate and marginal edge faces and secured to the plate and marginal edge faces by an adhesive, handle attaching means arranged outwardly of the plate and secured to the plate, said plate and sheet being provided with water circulating openings disposed exteriorly of the handle attaching means to be arranged so that they are permanently open and uncovered by the handle attaching means, the water circulating openings leaving the major portion of the plate imperforate.

5. A cleaning device, comprising a sponge block having an attaching face, said attaching face having longitudinal permanent grooves cut therein, said grooves being arranged at substantially a right angle to the attaching face and extending throughout the major portion of the length of the attaching face, said grooves being spaced from the longitudinal edges of the sponge block for forming marginal attaching face portions, an elongated plate which is narrower than the sponge block and provided at its longitudinal edges with downwardly extending flanges disposed at substantially a right angle to the elongated plate, said flanges being arranged to enter the grooves and disposed inwardly of the marginal attaching face portions, the plate being secured to the attaching face by an adhesive and the flanges being secured to the walls of the grooves by an adhesive, the flanges and plate forming a stiff unit, said plate being provided with opening means for receiving handle attaching means, and a flexible sheet covering the upper face of said plate remote from the sponge block and extending laterally beyond the longitudinal edges of the plate and secured to the plate by an adhesive and secured to the uncovered marginal attaching face portions of the sponge block by an adhesive.

6. A cleaning device, comprising a sponge block

having an attaching face, said attaching face having longitudinal grooves permanently cut therein and extending throughout the major portion of the length of the attaching face, said grooves being spaced from the longitudinal edges of the sponge block, the spaces between the longitudinal top edges of said block and grooves forming marginal attaching face portions, an elongated plate which is narrower than the sponge block and provided adjacent to its longitudinal edges with downwardly extending flanges arranged to enter the grooves, the plate leaving the marginal attaching face portions uncovered, the plate being secured to the attaching face by an adhesive and the flanges being secured to the walls of the grooves by an adhesive, the flanges and plate forming a stiff unit, handle attaching bolt means secured to said plate, and a flexible sheet covering the upper face of said plate remote from the sponge block and extending laterally beyond the longitudinal edges of said plate and extending substantially to the longitudinal edges of the sponge block, said flexible sheet being secured to the uncovered marginal attaching face portions of the sponge block by an adhesive.

7. A cleaning device, comprising an elongated absorbent and compressible sponge element having an attaching face, said attaching face being cut away to provide an elongated permanent recess extending throughout the major portion of the area of the attaching face and having its sides terminating short of the sides of the attaching face and its ends terminating short of the ends of the attaching face to provide marginal edge faces, said attaching face being also cut away substantially at the longitudinal sides of the recess for providing permanent grooves disposed substantially at a right angle to the attaching face, an elongated plate arranged within the recess and having substantially the same dimension as the recess, said plate having its longitudinal edges spaced from the sides of the sponge element and its ends spaced from the ends of the sponge element, said plate having its longitudinal edges bent to provide longitudinal downwardly extending flanges disposed at substantially a right angle to the face of the plate and inserted within the permanent grooves, said flanges being continuous and extending throughout substantially the entire length of said plate, said plate and flanges forming a rigid unit, said plate and flanges having their faces next to the sponge element secured to the walls of the recess and grooves by an adhesive, a flexible sheet extending over the plate and marginal edge faces and secured to the plate and marginal edge faces by an adhesive, and a handle attaching device mounted upon the flexible sheet and secured to the plate and spaced from the marginal edges of the sponge element.

8. A cleaning device, comprising an absorbent and compressible sponge cleaning element having an attaching face, said attaching face being cut away to provide a permanent recess extending throughout the major portion of the length of the attaching face and terminating short of the edges of the attaching face to provide marginal edge faces, said attaching face having permanent grooves cut therein and leading into the recess and extending throughout the major portion of the length of the attaching face, a plate arranged within the recess and having a thickness substantially equal to the depth of the recess so that the upper face of the plate is substantially flush with the marginal edge faces, said plate being spaced from the edges of the sponge cleaning element, said plate having continuous flanges formed thereon which extend throughout the major portion of the length of the plate, said flanges being inserted within said grooves, said plate being secured to the wall of the recess by an adhesive and said flanges being secured to the walls of the grooves by an adhesive, a flexible sheet extending over the plate and marginal edge faces and secured to the marginal edge faces by an adhesive, attaching means secured to the plate, and handle attaching means secured to the first-named attaching means.

9. A cleaning device, comprising an absorbent and compressible sponge cleaning element having an attaching face, said attaching face having permanent grooves cut therein and extending longitudinally of the attaching face, said grooves being spaced inwardly from the edges of the sponge cleaning element for providing marginal edge faces, a plate provided near its longitudinal edges with downwardly extending continuous flanges extending throughout the major portion of the length of the attaching face and inserted within said grooves, said plate being secured to the attaching face by an adhesive, a flexible sheet extending over said plate and secured to the marginal edge faces by an adhesive, and handle attaching means secured to said plate.

10. A mop device comprising, a sponge mop element having an attaching face provided with permanent cut grooves spaced inwardly from the edges of the sponge mop element for forming marginal attaching face portions, plate means arranged upon the attaching face and extending throughout the major portion of the length of the sponge mop element, said plate means being provided with downwardly extending flanges extending throughout the major portion of the length of the plate means, each flange being continuous throughout substantially its length, said plate means being secured to the attaching face by an adhesive and the flanges being arranged within the grooves and secured to the walls of the grooves by an adhesive, a flexible sheet covering said plate means and secured to the marginal attaching face portions by an adhesive, and handle attaching means connected with the plate means.

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