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FLEXIBLE SPONGE MOP HEAD

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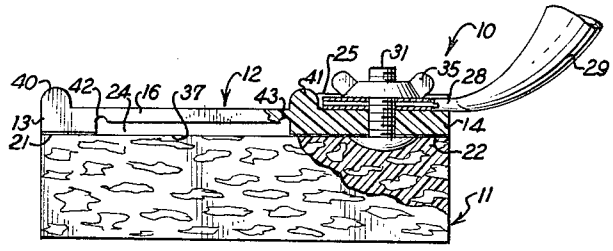


FIG. 1

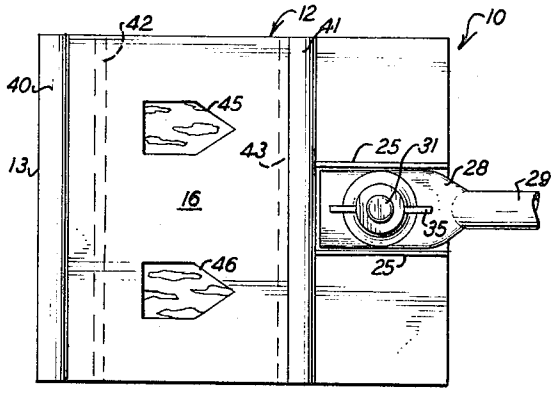


FIG. 2

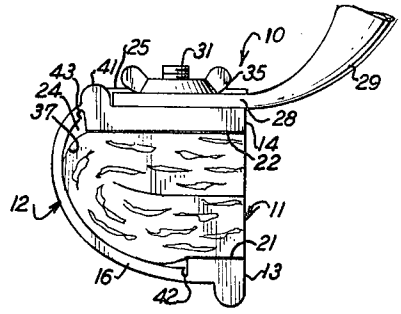


FIG. 3

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FLEXIBLE SPONGE MOP HEAD

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The present invention relates to a mop head having a cleaning element fabricated from a natural or synthetic sponge material or other pliable material capable of absorbing liquid and more particularly to a cleaning element and backing which permits easy and effective removal of the absorbed liquid.

Many attempts have been made at designing effective and commercially feasible mop heads, only some of which have reached the market. Mop head constructions which utilize spongle-like materials which can absorb water and be squeezed out generally have facilities for bending and compressing the sponge-like materials in order to expel liquids therefrom. A sponge material per se can be used as a mop but in order to attach a handle and/or to expel absorbed liquid without exposing the hands to the liquid, a waterproof backing is provided for most mops. The simpler and more economical mops are manually squeezed by bending same about a centrally located longitudinal axis. However, the sponge material along the axis piles up, creating a resistance to the distal ends being pivoted through 180° and thus preventing complete removal of all the absorbed liquid.

One approach to circumventing piling up of the sponge proximal to the bending axis has been to provide a multi unit backing. This multi unit backing separates upon bending thereby providing excess room about the bending axis for the piled sponge to enter. This solution is expensive and impractical since the backing or supporting member for the sponge comprises a plurality of parts requiring accurate mating of various surfaces of the parts and extra elements (e.g., tapes) to hold the multiple units together. Also, the multi part construction renders the backing surface liable to quicker deterioration and failure from continued use.

In view of the above innumerated difficulties with prior mop heads, it is desirable that a mop head be provided which both eliminates bunching up around the bending axis and has a simply constructed backing or supporting surface for the cleaning element.

It is an object of the present invention to provide a new and improved mop head.

It is another object of the present invention to provide a mop head having a sponge-like cleaning element with a supporting member that circumvents piling of the sponge-like material about the axis of bending.

It is a further object of the present invention to provide a mop head having a sponge-like cleaning element with a simple moldable one-piece backing unit that may simply and quickly be attached thereto.

With these and other objects in view, the nature of which will be more apparent, the invention will be more fully understood by reference to the detailed description, the appended claims and the accompanying drawing.

I have found that an economical, simple and effective mop head can be produced by taking a rectangular block of sponge and a single backing unit to cover one surface thereof where the backing unit is stiff along its leading and trailing edges and flexible intermediate these stiff areas, the unit being adhesively secured to the sponge at the stiff areas but free and spaced from the sponge at the intermediate flexible areas.

In the drawings:

FIG. 1 is a central vertical sectional view of a mop head constructed in accordance with the present invention;

FIG. 2 is a top plan view of the mop head shown in FIG. 1 particularly illustrating a backing sheet; and

FIG. 3 is a side view of the mop head in squeezed position.

Referring first to FIG. 1, a mop head generally designated as **10** includes a cleaning element **11** and a backing sheet generally designated as **12** which includes a leading thickened stiff portion **13** and a trailing thickened stiff portion **14** connected by a relatively thin flexible section **16**. Any rubber-like or plastic materials will suffice so long as relatively thin sections are flexible and relatively thick sections are rigid.

Backing sheet **12** is firmly secured to the cleaning element **11**, for example, by cementing the undersides **21** and **22** of the thick portions **13** and **14**, respectively, to the cleaning element. As can readily be seen in FIG. 1, a space or recess **24**, e.g. 3/16" (range from 1/8" to 1/2") is formed in the vicinity of the centrally located longitudinal axis of the cleaning element **11**. Backing sheet **12** includes two transverse ridges **25** extending upward from the upper surface of thick portion **14**. A flattened portion **28** of a tubular mop handle **29** is inserted intermediate ridges **25** and a screw **31** extends through portion **14** and an aperture in the mop handle. The mop handle is then firmly secured to the backing sheet by a wing nut **35**. Various other means of attaching a handle will be obvious.

In practice, mop head **10** may be utilized as a hand cleaning device or may be secured on the end of a mop handle. After cleaning in a normal manner wherein cleaning element **11** absorbs liquid, for example dirty water, cleaning element **11** must be squeezed. As shown in FIG. 3, portion **13** is bent downward and around to a position beneath portion **14** and then forced toward portion **14** in order to compress and squeeze cleaning element **11** to expel the liquid. Porton **37** of cleaning element **11** adjacent to the central longitudinal axis of the cleaning element fills the recess **24**, thereby eliminating piling up of the cleaning element. Accordingly, the distal sponge ends pivot 180° and practically all of the liquid is expelled.

Backing sheet **12** is preferably made out of a one-piece construction such as by molding or casting, thereby greatly simplifying the fabrication of the mop head and enhancing the useful life of same. In order to facilitate hand manipulation of the mop head for purposes of squeezing, upstanding ridges **40** and **41** may be formed on portions **13** and **14** to provide gripping areas. Also, score lines or grooves **42** and **43** (e.g. 1/32" radius) may be formed in the under surface of the backing sheet **12** at the opposite ends of the thin section **16**. These grooves cause the backing to break, i.e. bend first at the grooves, thereby both regulating the point at which the cleaning element will first bend and also enhancing the life of the backing sheet. Further, apertures **45** and **46** may be formed in the thin section **16** of the backing sheet to provide an opening through which liquid can escape and also to give added flexibility to section **16**.

The stiff and flexible portions of the backing may be caused or effected by relative thickness of material, lamination, adhering to the sponge, heat treatment, hardening and softening agents, etc., all of which are included within the scope of this invention. It is obvious, of course, that various pliable materials can be used such as plastics, rubber compositions, etc. and polypropylene has been found particularly desirable.

Such a backing would be useful (but less so) without the spacing from the sponge through the intermediate portion. Similarly, the spacing would be useful to a certain extent with any flexible back member.

Numerous other modifications of the specific embodi-

ment of the present invention which is shown may be made by those skilled in the art, which modifications fall within the scope and spirit of this invention.

I claim:

1. A mop head comprising an elongated block of pliable sponge material having a lower washing surface and an upper surface, a one-piece elongated backing unit having a relatively thin and flexible elongated central portion, thicker rigid elongated leading and trailing portions integral with and parallel to said central portion and adjacent said upper surface of said pliable sponge material, said leading and trailing portions being thickened in the direction of the sponge, means adhesively securing said thickened rigid leading and trailing portions to the upper surface of said pliable sponge material, said central portion being free of the sponge, an elongated recess between said pliable sponge material and said flexible central portion of said backing unit, and an elongated longitudinal gripping ridge on the upper surface of each of said leading and trailing portions of said backing unit extending the length thereof and a pair of elongated recesses in the undersurface of the backing unit defining said flexible central portion whereby the unit breaks at said recesses.

2. The mop head of claim 1 wherein said flexible central portion of said backing unit includes at least one aperture therein for facilitating the squeezing of liquid from said pliable material.

3. The mop head of claim 1 wherein said backing unit and said pliable material are substantially rectangular and of substantially the same planar dimension.

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