Oct. 15, 1963 J. G. KNAPP 3,106,736

COMPRESSION SPONGE MOP

Filed Oct. 28, 1955

Fig. 1

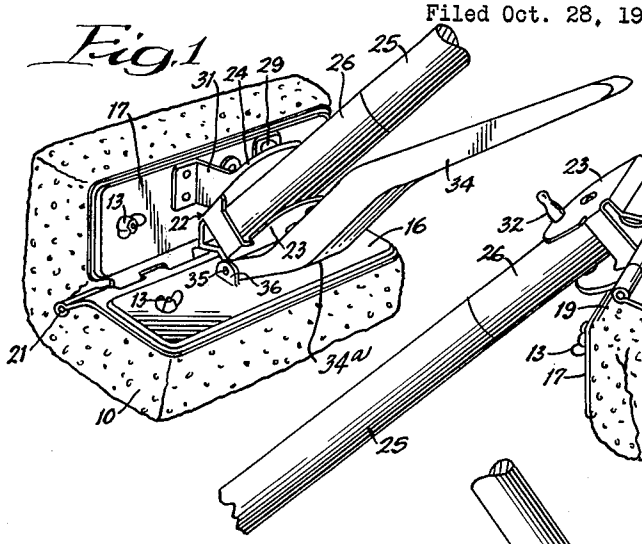


Fig. 2

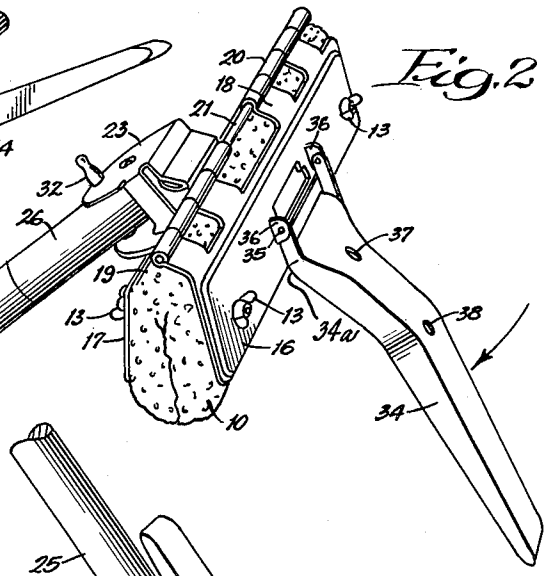


Fig. 3

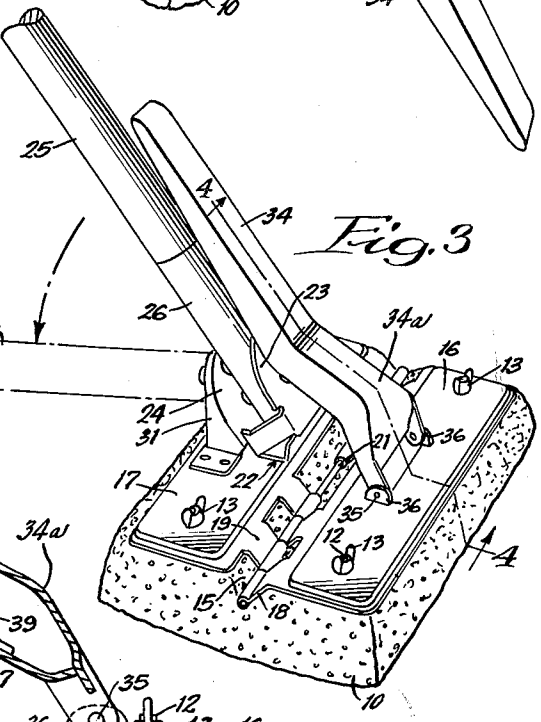
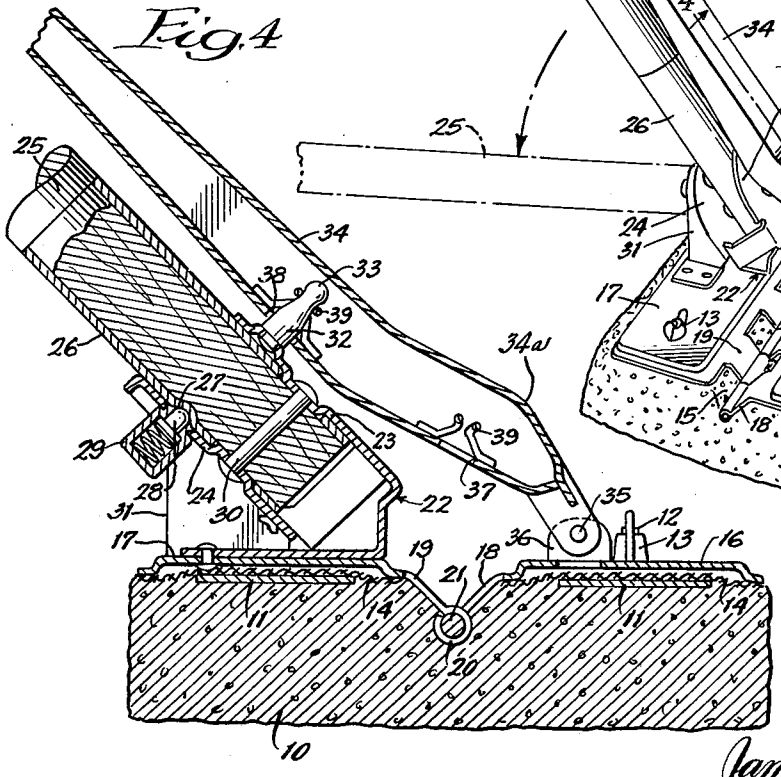


Fig. 4



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COMPRESSION SPONGE MOP

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This invention relates to a compression sponge mop, and more particularly to a sponge mop of the wringer type.

An object of the present invention is to provide a sponge mop having relatively wide sponge surfaces and means for supporting the sponge in a plurality of angular positions, while at the same time enabling the sponge to be effectively compressed for removing moisture. A further object is to provide a sponge mop normally lying in a horizontal plane which may be folded back upon itself to provide angularly-related working surfaces or faces. A still further object is to provide a compression sponge mop equipped with a wringer handle which may be moved to a plurality of positions to lock the sponge body in folded and unfolded positions. Yet another object is to provide a sponge mop body equipped with plates anchored to the body connected to parts for manipulating the sponge to squeeze the same. A further object is to provide a compression sponge mop equipped with a handle and means for supporting the sponge body in folded-back or substantially horizontal positions. A still further object is to provide, in combination with a relatively flat sponge body equipped with spaced plates, means connected with said plates for moving said plates toward each other to squeeze said sponge, said means including a pivotally-connected wringer handle. A further object is to provide, in connection with said pivoted wringer handle, means for moving said handle to different locking positions with respect to the mop handle for holding the sponge body in different angular positions. Other specific objects and advantages will appear as the specification proceeds.

The invention is shown, in an illustrative embodiment, by the accompanying drawing, in which—

FIGURE 1 is a perspective view of a compression sponge mop embodying my invention, the sponge mop body being shown in folded-back position; FIG. 2, a perspective view showing the mop structure of FIG. 1 in compressed condition; FIG. 3, a perspective view of the sponge mop structure shown in a different position from that shown in FIG. 1 and in which the sponge extends generally in a horizontal plane; and FIG. 4, an enlarged sectional detail view, the section being taken as indicated at line 4—4 of FIG. 3.

In the illustration given in FIGS. 1 to 4, inclusive, **10** designates a sponge block which normally lies in a horizontal or flat position, as illustrated in FIGS. 3 and 4. The sponge may be a cellulose sponge, cellular rubber or composition sponge, or any other suitable form of sponge useful in the cleaning of surfaces.

The sponge body **10** is preferably provided at its top with a pair of spaced metal plates **11** equipped with threaded studs **12** extending upwardly therefrom and adapted to be engaged by wing-nuts **13**. The plates **11** are preferably secured to the top of the sponge body **10** by adhesive or any other suitable means, and over the plates are secured canvas or fabric strips **14** which have overlapping edge portions secured to the top of the sponge body also by adhesive.

Centrally of the sponge body **10** I provide a groove or depression **15** which is preferably in the shape of a V-notch.

Mounted upon the top of the sponge and the plates

11 are the compression plates **16** and **17**, which are provided at their inner sides with depending inclined hinge plates **18** and **19** ending in spaced hinge fingers **20** receiving the hinge pin **21**. The drop hinge thus provided by the numbers **18**, **19**, **20** and **21** is received within the V-notch **15** formed within the sponge **10**. By cutting away the sponge body at **15** to provide the notch, I provide less sponge body in the central portion of the mop which must be compressed in the final sponge compression operation, while at the same time the positioning of the drop hinge deep within the body of the sponge provides highly effective and uniform wringing of the sponge body. The notch also facilitates positioning the mop in the V-shaped position shown in FIG. 1 to adapt it for cleaning corners and providing two working surfaces that may be used alternatively in the mopping operation.

To the compression plate **17** is secured a mop handle socket **22**, as shown best in FIG. 4, and the socket consists preferably of an upper plate **23** and a lower or inner plate **24**, the plates being left open at their sides to permit the lateral swinging of a mop handle **25**. The handle **25** is preferably provided at its lower end with a metal tube member **26** indented at **27** to receive a spring-urged locking pin **28** housed within the casing **29**. The handle **25** and tube **26** are preferably rotatably mounted within the socket **22** by the pivot pin or rivet **30**. With this structure, the mop handle may be swung to the right or to the left, and when swung to the position shown in FIG. 4, is releasably locked in position by the engagement of the detent or pin **28** with the recess or locking indentation **27**. The mop handle is restrained, however, against all movement with respect to compression plate **17** except such movement to the right or left, which is in a plane parallel to the hinge connecting plates **16** and **17**. In other words, the mop handle is restrained against all motion with respect to plate **17** having any component in a plane perpendicular to said hinge. To support the socket plate **24**, I prefer to weld, rivet, or otherwise secure to the plate **17** a supporting bracket **31** which supports or braces the plate member **24**.

The plate **23** of the socket **22** is provided near its upper end with a wringer locking pin **32**. In the illustration given, this pin is in the form of a rivet which is secured to the plate **23** and is provided at its outer end with an enlarged head forming a latch portion **33**.

A hollow wringer handle **34**, formed of metal or other suitable material, is pivotally connected by pivot pin means **35** to upwardly-struck ears **36** carried by the plate **16**. As is best seen in FIG. 4, the pivotal attachment of wringer handle **34** to the upper surface of plate **16** is located outwardly of the longitudinal center line of sponge block **10**, which center line lies in substantially the same vertical plane as do hinge members **20** and **21**.

The handle **34** is provided with two openings **37** and **38** adapted to selectively receive the latch pin **32**. In order to cause the handle **34** to grip the latch pin effectively, I weld to the handle on the interior thereof spring retainers **39**, which have a spring loop portion receiving the latch **33** of the pin **32**. It will be understood that any suitable spring latch may be provided for gripping or retaining the latch pin in one of the selected positions shown.

Operation

In the operation of the structure, the sponge body **10** is equipped with the plates **11** by cementing the same to the top of the sponge body, and these are anchored firmly to the top of the mop body by cementing the canvas strips **14** in the position shown, leaving the threaded studs **12** extending upwardly therethrough. The studs extend through openings in the plates **16** and **17** and are anchored thereto by the use of the wing-nuts **13**. With

the wringer handle 34 in the position shown in FIG. 4, the relatively wide sponge body 10 is held in a flat or horizontal position and engages a relatively wide area of the floor in the mopping operation. For squeezing the mop, the handle 34 is swung laterally to the position shown in FIG. 2. In this operation, the flat hinges 18 and 19 exert a compressive pressure immediately upon the central portion of the sponge so as to press the water from this portion laterally. As the compression increases, greater pressure is exerted upon the outer portions of the sponge and the sponge body is effectively wrung throughout its width. There is no bunching of the mop structure within the center of the sponge which prevents the effective squeezing of the outer portion of the sponge body, because of the cut-away channel or groove porion 15 in the central portion of the mop and because further the drop hinge 21 swings to an outer arched position, as shown in FIG. 2, in the final movements of the squeezing operation so that the central portion of the mop is relieved and permits the pressure to be concentrated on the outer wing portions of the folded mop body.

As seen in FIG. 2, the inner portion of handle 34 adjacent pivot 35 lies against compression plate 16 when the wringer handle is in the wringing position. However, bend 34*a* in handle 34 offsets the outer portion of the handle, which is the part gripped by the user of the mop, to elevate that portion of the handle above the plane of plate 16, so as to be out of the way of liquid falling from sponge body 10 as it is squeezed.

When it is desired to provide angularly-related working sponge surfaces, the wringer handle 34 is moved upwardly to bring the opening 37 of the handle into engagement with the locking pin 32, as illustrated best in FIG. 1. In this position, the wide sponge body assumes a generally V-shaped position, providing a bottom flat portion and a forward upwardly-folded portion and enabling the user to employ alternatively one of the two working surfaces in the mopping operation. In other words, the mopping may be carried on first with the lower flat portion of the mop as shown in FIG. 1, and then the mop may be turned over to bring the other clean flat surface into engagement with the floor. Also, the folded-back mop structure shown in FIG. 1 can be effectively used for cleaning corners or borders of the room and for many other purposes. Further, in the ordinary use of the mop in the position shown in FIG. 1, the forward sponge portion serves as a buffer and protects the furniture from contact with metal parts of the mop.

In the squeezing operation illustrated in FIG. 2, it will be observed that the pivoted handle 34, by reason of the pivot connection, is swung to a position where best leverage is obtained in the final squeezing operation.

From the foregoing, it will be observed that the deep sponge body 10 may be utilized in a plurality of positions to meet different use demands, the change from the horizontal to a folded-back position being accomplished in a minimum of time and without interfering with the squeezing of the mop. Further, while I have shown for the purpose of illustration two positions in which the sponge body may be utilized, it will be obvious that other openings in the wringer handle may be provided for increasing the number of positions. Also, the pin and socket connections may be reversed in position with respect to the handles, and such releasable connections may be formed in a variety of ways.

While I prefer to employ a pivotally-mounted presser handle 34 for the advantages described, it will be understood that handle 34 may in certain embodiments of my invention be fixed to the plate 16.

While, in the foregoing specification, I have set forth a specific structure in considerable detail for the purpose of illustrating an embodiment of the invention, it will be understood that such details of structure may be varied widely by those skilled in the art without departing from the spirit of my invention.

I claim:

1. A sponge mop which comprises: a mop head, including two plates and a socket, said plates being joined by a hinge and being adapted in one operating position to lie in a single plane and in another operating position to lie in two planes at an angle to each other, and said socket being secured to the upper surface of one of said plates and adapted to receive a handle, said socket restraining said handle against substantially all motion with respect to said one plate having any component in a plane perpendicular to said plate hinge, the bottom surfaces of said plates forming a mop block attaching surface; a mop handle seated in said socket; a resilient absorbent mop block; means for attaching said mop block to said mop block attaching surface; a wringing lever pivotally secured to the upper surface of the other of said plates on an axis parallel to said hinge for folding the hinged plates together with said mop block therebetween for wringing the mop block; and means carried by said mop head for selectively maintaining said other plate in one of said two operating positions, with both said plates being fixed with respect to said mop handle, to provide a plurality of angularly related sponge working surfaces.

2. A sponge mop which comprises: a mop head, including two plates and a socket, said plates being joined by a hinge and said socket being secured to the upper surface of one of said plates and adapted to receive a handle, said socket restraining said handle against substantially all motion with respect to said one plate having any component in a plane perpendicular to said plate hinge, the bottom surfaces of said plates forming a mop block attaching surface; a mop handle seated in said socket; a resilient, absorbent mop block; means for attaching said mop block to said mop block attaching surface; a wringing lever pivotally secured to the upper surface of the other of said plates on an axis parallel to said hinge for folding the hinged plates together with said mop block therebetween for wringing the mop block; and means for releasably securing said lever and mop head for holding said two plates in a plurality of selective operating positions, said positions being fixed with respect to said mop handle.

3. A sponge mop which comprises: a mop head, including two plates and a socket, said plates being joined by a hinge and said socket being secured to the upper surface of one of said plates and adapted to receive a handle, said socket restraining said handle against all motion with respect to said one plate having any component in a plane perpendicular to said plate hinge, the bottom surfaces of said plates forming a mop block attaching surface; a mop handle seated in said socket; a resilient, absorbent mop block; means for attaching said mop block to said mop block attaching surface; a wringing lever pivotally mounted on the upper surface of the other of said plates, said other plate having an edge opposite said hinge, said wringing lever being pivotally mounted on an axis parallel to said hinge and disposed between said hinge and said opposite edge, said lever being swingable about its pivot for folding the hinged plates together with said mop block therebetween for wringing the mop block; and means for releasably securing said mop head and selective portions of said lever spaced from said axis for holding said two plates in a plurality of selective positions.

4. A sponge mop which comprises: a mop head, including two plates and a socket, said plates being joined by a hinge and said socket being secured to the upper surface of one of said plates and adapted to receive a handle, said socket restraining said handle against all motion with respect to said one plate having any component in a plane perpendicular to said plate hinge; a mop handle

seated in said socket; a flexible, absorbent mop block; means for attaching said mop block to the lower surface of said plates; a wringing lever pivotally mounted on the upper surface of the other of said plates, said other plate having an edge opposite said hinge, said wringing lever being pivotally mounted on an axis parallel to said hinge and disposed between said hinge and said opposite edge, said lever being swingable about its pivot for folding together the hinged plates and the flexible mop block for wringing the latter; and means for releasably securing said mop head and selective portions of said lever spaced from said axis for holding said two plates in a plurality of selective positions, portions of the mop block being maintained with their working surfaces at an angle of substantially 90° to each other in one of said positions.

5. A sponge mop which comprises: a mop head, including two plates and a socket, said plates being joined by a hinge and said socket being secured to the upper surface of one of said plates and adapted to receive a handle, said socket restraining said handle against all motion with respect to said one plate having any component in a plane perpendicular to said plate hinge; a mop handle seated in said socket; a relatively wide, flexible, absorbent mop block; means for attaching said mop block to the lower surface of said plates with the longitudinal axis of the block aligned with said hinge; a wringing lever pivotally mounted on the upper surface of the other of said plates, said other plate having an edge opposite said hinge, said wringing lever being pivotally mounted on an axis parallel to said hinge and disposed between said hinge and said opposite edge, said lever being swingable about its pivot for folding together the hinged plates and the flexible mop block for wringing the latter; and means for releasably securing said handle socket and selective portions of said lever spaced from said axis for holding said two plates in a plurality of selective positions.

6. A sponge mop which comprises: a mop head, including two plates and a socket, said plates being positioned one behind the other and joined by a hinge, said socket being adapted to receive a handle and being secured to the upper surface of the rear one of said plates and restraining said handle against all motion with respect to said rear plate having any component in a plane perpendicular to said plate hinge; a mop handle seated in said socket; a relatively wide, flexible, absorbent mop block; means for attaching said mop block to the lower surface of said plates with the longitudinal axis of the block aligned with said hinge; a wringing lever pivotally mounted on the upper surface of the forward one of said plates, said forward plate having an edge opposite said hinge, said wringing lever being pivotally mounted on an axis parallel to said hinge and disposed between said hinge and said opposite edge, said lever being swingable about its pivot for folding together the hinged plates and the flexible mop block for wringing the latter; and means for releasably securing said handle socket and selective portions of said lever spaced from said axis for holding said two plates in a plurality of selective positions.

7. A sponge mop which comprises: a mop head, including two plates and a socket, said plates being positioned one behind the other and joined by a hinge, said socket being adapted to receive a handle and being secured to the upper surface of the rear one of said plates with its axis in a plane at 45° to said rear plate; said socket restraining said handle against all motion with respect to said rear plate having any component in a plane perpendicular to said plate hinge; a mop handle seated in said socket; a relatively wide, flexible, absorbent mop block; means for attaching said mop block to the lower surface of said plates with the longitudinal axis of the block aligned with said hinge; a wringing lever pivotally mounted on the upper surface of the forward one of said plates, said forward plate having an edge opposite said hinge, said wringing lever being pivotally mounted on an axis parallel to said hinge and disposed between said hinge and said opposite edge, said lever being swingable about its pivot for folding together the hinged plates and the flexible mop block for wringing the latter; and means for releasably securing said handle socket and selective portions of said lever spaced from said axis for holding said two plates in a plurality of selective positions.

8. A sponge mop which comprises: a mop head, including two plates and a socket, said plates being joined by a hinge and said socket being adapted to receive a handle and being secured to the upper surface of one of said plates, and adapted to receive a handle, said socket restraining said handle against all motion with respect to said one plate having any component in a plane perpendicular to said plate hinge; a mop handle seated in said socket; a relatively wide, flexible, absorbent mop block; means for attaching said mop block to the lower surface of said plates with the longitudinal axis of the block aligned with said hinge; a wringing lever pivotally mounted on the upper surface of the other of said plates, said other plate having an edge opposite said hinge, said wringing lever being pivotally mounted on an axis parallel to said hinge and disposed between said hinge and said opposite edge, said lever being swingable about its pivot for folding together the hinged plates and the flexible mop block for wringing the latter, said lever being bent to offset the outer portion thereof above the plane of said other plate during wringing; and means for releasably securing said handle socket and selective portions of said lever spaced from said axis for holding said two plates in a plurality of selective positions.

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