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SELF-WRINGING MOP

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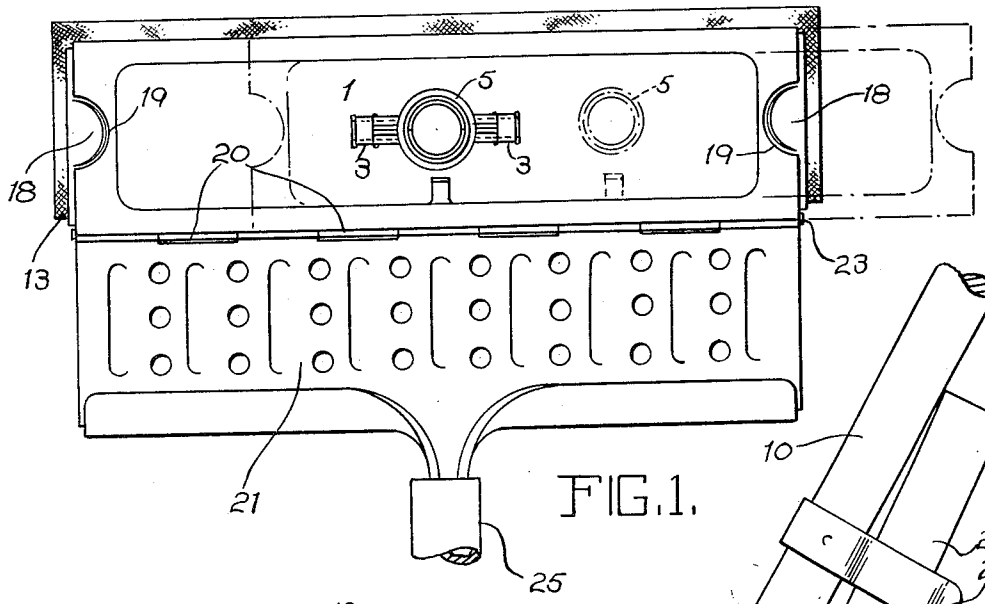


FIG. 1.

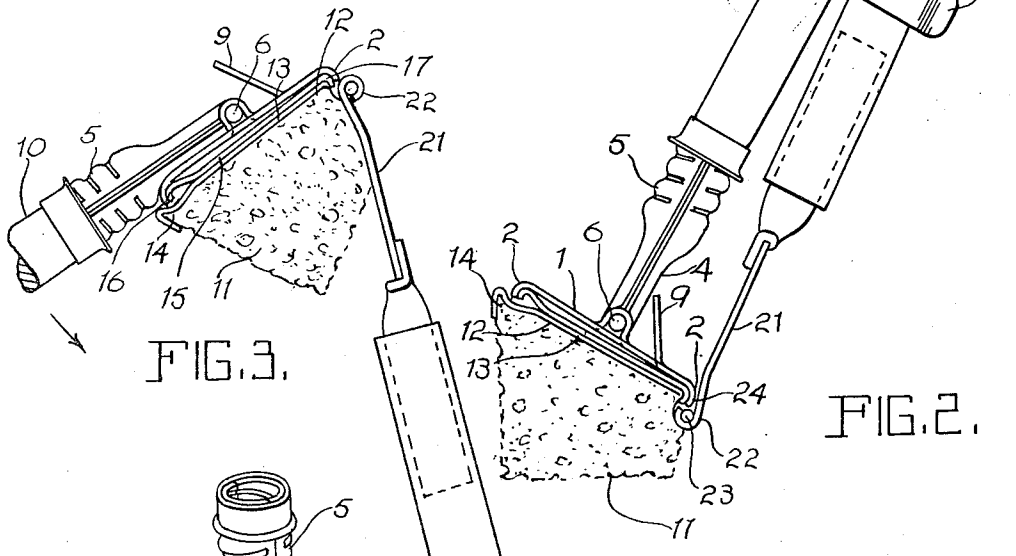


FIG. 2.

FIG. 3.

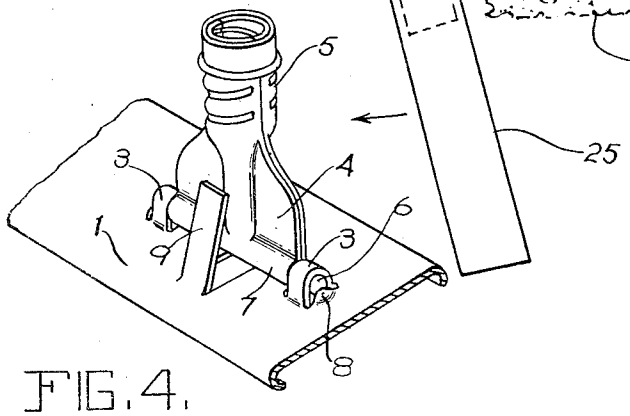


FIG. 4.

Inventors
Nathaniel B. Greenleaf
Leonard C. Webster
by Douglas S. Johnson
agent.

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SELF-WRINGING MOP

Nathaniel Bryant Greenleaf and Leonard C. Webster, Toronto, Ontario, Canada, assignors, by direct and mesne assignments, to Sponge Products Corporation, Chicago, Ill.

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4 Claims. (Cl. 15—119)

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This invention relates to improvements in mops of the self-wringing type and the principal object of the invention is to provide a simple and inexpensive form of mop in which an improved wringing action is provided and maximum leverage will be afforded to effect the positive wringing of the mop.

A further important object is to provide a self-wringing mop in which the mopping element can be thoroughly wrung with a minimum of effort yet in which excessive movement and deformation of the wringing members and destruction of the mopping element will be precluded even under the severest handling when wringing.

A further object of importance is to provide an inexpensive self-wringing mop of a simplified construction in which the wringing element will require but a single hinge connection.

One feature of the invention resides in pivotally mounting the handle on the mop head to swing between an upright position and a wringing position parallel to and against the mop head and hinging a wringer element to one longitudinal edge of the mop head in a manner whereby swinging of the handle and wringer element in opposite directions brings the wringer element into engagement with the underside of the mopping element carried by the mop head with the wringer and mop handles defining a small angle therebetween to apply maximum leverage in the wringing of the mopping element.

Another feature of the invention resides in the hinging of the wringer element at the rear of the mop head to compress the entire mopping or sponge element from the rear to the front to flush dirt back out through the front and forming the wringer element as a broad flat rigid plate to bodily reposition the entire sponge element upon displacement under the mopping action.

Also in previous mop constructions where a separate wringer plate has been provided the wringer has been hinged to the front edge of the mop head and as explained in connection with our United States Patent No. 2,515,403, these front presser mops force dirt accumulating at the front edge of the sponge, as occurs under all normal mopping action, into and through the sponge. In addition the normal action in cleaning is to displace the sponge or mopping element rearwardly and with the front wringing action this displacement is increased.

With our so-called "back presser" mop as described herein we eliminate the above difficulties by hinging the wringer element at the rear of the mop head and flush the sponge in wringing from rear to front forcing the dirt back out the front and reposition the sponge after its displacement under mopping action. By forming the wringer plate as a relatively flat rigid surface the body of the sponge is ensured movement forwardly in its entirety. The result is a very much extended sponge life.

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With the back presser mop, leverage on the sponge may be desired to be increased and we have provided a greatly increased leverage effect in the present invention by swivelly mounting the handle on the mop head to swing into acute angular relation with the wringer element.

Mops have been hinged in the centre and folded together to provide a wringing action with the one sponge section folding on the other. In such cases at least one of the sections is wrung from front to rear and is displaced out of position towards the rear. Further of course the meeting sponge surfaces both yield and the wringing action is less than half that provided with the rigid non-absorbent wringing plate.

A further important feature consists in arranging the pivotal mop handle and wringer element handle to swing into mutual engagement upon compressing the mopping element to a desired maximum extent whereby further pressure exerted on the handles will be dissipated without deforming the wringer element or its hinge.

A further feature of importance consists in providing an arrangement whereby the mop handle and wringer element when swung through their limits to a normal mopping position releasably interlock to locate the mop handle at a fixed angle relative to the mop head.

Another feature consists in providing a broad pivotal connection between the mop handle and head whereby the pressure exerted by the handle when swung to the wringing position against the mop head is distributed over a substantial portion of the mop head surface and over a broad surface of the handle pivot to effectively distribute the squeezing pressure and eliminate undue strain at the pivot.

Referring to the accompanying drawings,

Figure 1 is a plan view of the mop head with the wringer element in an intermediate position between the inoperative and squeezing position and the mopping element shown in solid line in assembled position with the mop head and in dotted line partially removed therefrom.

Figure 2 is an elevational view of the mop of Figure 1 with the wringer element in the retracted inoperative position and the handle of the mop fragmented.

Figure 3 is a side elevational view of the mop of Figures 1 and 2 with the mop handle swung

to its normal wringing position and the wringer element swung to initiate the squeezing of the mopping element.

Figure 4 is a fragmentary part perspective, part sectional view of the mop head and illustrating the pivotal mounting of the handle socket thereto.

Various types of self-wringing mops have been proposed and heretofore such mops have required a double-hinge arrangement for the wringer element to bring the wringer into co-operative relation for properly squeezing the mopping element and to bring the handle of the wringer into a position relative the handle of the mop so that sufficient leverage can be applied in the squeezing action.

This invention completely overcomes the requirement for double hinge arrangement of the wringer element and its inherent difficulties of cost in manufacture, yet provides a relationship between the mop handle and wringer element handle when the latter is swung to the wringing position whereby the full effort of the squeezing pressure exerted is transferred in the compression of the mopping element.

Further, with previous types of self-wringing mops it has frequently occurred that upon exerting an excessive amount of pressure on the wringer element this element is deformed or its hinge is rendered inoperative. This invention completely precludes this possibility as the handles of the mop and the wringer element are brought into engagement upon compressing the sponge material of the mopping element to a maximum extent so that further movement and deformation of the wringer element is impossible.

With reference to the drawings wherein other advantages will be appreciated, the mop head 1 is in the form of a flat plate and the longitudinal edges are shown as rolled to form the channels 2. Either side of the transverse centre of the plate and in longitudinal alignment are the metal loops or lugs 3 stamped up from the metal of the plate and engaging between these lugs, as shown particularly in Figure 4, is the broad, flat head 4 of the handle socket 5 shown of the screw thread type.

A pivot pin 6 extending through the looped end 7 of the socket head 4 and engaging under the lugs 3 serves to pivotally connect the socket to the mop head for pivotal movement about an axis coinciding with the longitudinal axis of the mop head. The metal of the plate may be suitably deformed at 8 to lock the pivot pin against displacement.

Formed from the metal of the plate 1 is an upstanding stop 9 which limited pivotal movement of the handle socket 5 in the rearward direction to maintain the handle 10 in the normal desired inclined position of Figure 2, the handle being limited against forward movement during normal mopping operation, as will hereinafter be described.

The mopping element 11 is of a suitable absorbent sponge material, preferably cellulose sponge, and is of a form of a quadrangular block bevelled rearwardly whereby the thickness of the mopping element is considerably greater at the forward edge than at the rearward edge.

Secured to the upper inclined face 12 of the mopping element is a relatively stiff fabric 13 which is adhered to the sponge material by a suitable high temperature resistant adhesive, such as cellulose acetate or the like, and as shown, particularly in Figures 2 and 3, this fabric extends beyond the forward upper edge of the mopping element, being folded thereover and enclosing a fold of the mopping element therebetween as at 14.

Adhered to the fabric backing 13 is a metal backing plate 15, the rearward longitudinal edge of which is rolled as at 17 and extends over the rearward upper edge of the mopping element, while the forward edge is elevated above the fabric 13 and is rolled to provide the guide edge 16 which is rearwardly of the forward reinforced edge 14 of the mopping element.

The guide edges 16 and 17 of the backing plate 15 of the mopping element engage under and interlock with the channels 2 of the mophead 1 to provide a sliding interlock between the mopping element and mop head.

To normally lock the mopping element in assembled position the metal of the backing plate 15 is formed with stamped out resilient tongues 18, as shown in Figure 1, and these tongues are displaced above the plane of the backing plate and engage in the indentures 19 of the mop head to prevent longitudinal displacement therebetween, as will be seen in Figure 1.

The spring tongues 18 resiliently engage in the indentures to automatically effect the locking action as the mopping element is slid into assembled relation but one or other of these tongues may be readily depressed to permit the mopping element to be withdrawn and replaced.

Portions of the longitudinal rearward edge 2 of the mop head are extended downwardly and rolled into the hinge barrels 20 while the presser or squeezer plate 21 forming the wringing element is formed with interleaving hinge barrels 22 to permit the wringer element to be hingedly connected to the mop head by the hinge pintle 23. This arrangement of the hinge of the presser plate below the edge of the mop head forms the longitudinal rearward mop head surface 24 into a stop to limit the swinging movement of the wringer element upwardly and forwardly.

The presser plate is shown as a flat metal sheet which may be slotted or perforated and to which is secured the handle 25. It will be seen that this presser plate in swinging to the wringing position swings to compress the sponge element from rear to front and this action flushes dirt accumulation from the forward edge of the mop where it has been found that the dirt collects. In addition the broad flat surface of the presser plate forces the sponge bodily forwardly in its entirety as shown in Figure 3 to reposition same from displacement under mopping action.

Carried on the handle of the mop is a spring clip 26 which resiliently engages the handle 25 of the wringer element and when the handles 10 and 25 are thus engaged the stop 24 of the mop head prevent forward motion of the mop handle, and the stop 9 engaging handle socket 5 prevent rearward movement of the handle 10 to locate same in the desired angle relative the flooring, the angle being determined by the location of the stops and the bevel of the mopping element 11.

In the wringing operation the mop and wringer element handles may be readily separated with the spring clip 26 releasing under sufficient pressure, and the handles then swung in opposite directions and in the directions of the arrows of Figure 3 until the socket 5 of the mop handle abuts the mop head over the broad surface of its broad, flat head 4. Continued further pressure on the mop handle forces the mop head around and towards the wringer element which is being moved in the opposite direction.

One of the important parts to note in the wringing operation is the fact that with the mopping element bevelled as shown it is inclined rearwardly on its backing plate and rearwardly of the mop head and inwardly towards the wringer element.

Further, with the hinge displaced below the mop head a flat wringer element can be utilized and its action is first to merely bend the bottom rearward edge of the mopping element inwardly, as shown in Figure 3, and thereafter further inward motion of the two handles will be exerting a substantially straight compressive force on the sponge material of the mopping element.

With the hinge arrangement and the inclined arrangement of the mopping element it will be seen that even the straight wringer plate will exert no displacement of the upper rearward edge of the mopping element relative its backing fabric 13, and therefore no tearing of the mopping element along this critical edge adjacent the hinge of the wringer element and no separation of the mopping element from its fabric will occur.

Because even at the initial wringing position of the handles 10 and 25 the angle defined therebetween is a relatively small acute angle a maximum leverage is afforded shortly after the initial squeezing occurs as the handles will move into parallelism and all the effort on the handles will be transferred as a pure compressive force. Thus a maximum leverage arrangement is obtained.

However should the force on the handles be increased beyond that desired or required to fully compress and wring the sponge material of the mopping element it will be appreciated that the handles 10 and 25 will abut and further movement either to the detriment of the wringer or its hinge or the mop handle will be precluded.

When the squeezing is completed the handles are very readily swung in the opposite directions until they again interlock in the position of Figure 2 and the mop will immediately be in position for normal mopping operation.

The relative movements of the handles provides an entirely new and more efficient wringing action in the self-wringing type mops yet leads to an extremely simple and economical construction and is therefore advantageous to both the manufacturer and the user.

Further to the improved wringing action and facility of operation is the novel interlocked arrangement between the mop head and mopping element which permits its ready removal and replacement.

While the particular pivotal arrangement of the mop handle is of a desirable economic form, variations in this construction and other details of construction may be made within the spirit of our invention.

What we claim as our invention is:

1. In a back presser mop, a mop head having a front and rear in respect to direction of mop advance under normal mopping action, a compressible mopping element carried by said mop head, and tapered from the front to the rear of said head to present a wedge-shaped cross section, a wringer element hinged at the rear of said head to swing about a fixed axis at right angles to the direction of mop advance and swingable from an upright mopping position rearwardly, downwardly and forwardly to compress said mopping element, a handle pivoted to said mop head about a fixed axis spaced from an parallel to the axis of said wringer element and swingable forwardly from an upright mopping position to a position against said mop head in opposing relation and inclined at an acute angle to said wringer element when swung to the wringing position with said wedge-shaped mopping element located therebetween and having its thinner portion presented inwardly towards the apex of the angle formed by said handle and wringer element when swung to wringing relation, stop means provided on said head to engage said wringer element and handle when swung in counter directions to said upright mopping positions to locate same in the mopping position, and releasable means securing said wringer element to said handle with same in the mopping positions.

2. In a mop, a mop head, a compressible mopping element carried by said mop head, a wringer element and a handle member pivoted to said mop head to swing about fixed parallel axes spaced one from the other and at right angles to the direction of mop advance, said wringer and handle being swingable in opposition in one manner into adjacent relation to assume a normal upright mopping position and swingable in opposition in an opposite manner into adjacent acute angular wringing relation to compress said mopping element between said wringer element and said head, said head having stop means between said axes to engage said wringer element and handle when swung in opposition to said upright mopping position to locate same in said mopping position, and resilient releasable means connecting said wringer element to said handle with same in the upright mopping position, whereby said wringer and handle mutually cooperate to maintain each other in engagement with said stop means.

3. A device as claimed in claim 2 in which said handle is pivoted to swing into engagement with said mop head, the lower end of said handle connecting to said mop head comprising a handle-receiving socket formed with a broad lower end portion to engage and distribute wringing stresses over a substantial area of said head.

4. A mop including a handle and a head secured to said handle to pivot about an axis at right angles to said handle and presenting a front portion forward of said handle in relation to direction of mop advance under normal mopping action and a rear portion at the opposite side of said handle, a sponge block releasably secured to said head at the underside thereof and having a front and rear in respect to said head and a bottom working face presenting at the rear an edge displaced below said head, said block having a maximum vertical dimension at the front and tapering towards the rear to present a wedge-shaped cross section, a presser plate having a pivotal connection at the rear of said head to swing about an axis fixed relative to said head and above said bottom working face and substantially at right angles to said handle and parallel to the pivot axis of said handle but spaced therefrom, stop means provided on said head to engage said handle and said presser plate when swung in counter directions about their pivots to a mopping position above said head to locate said handle and head in the mopping position, and releasable means resiliently connecting said presser plate and handle when in the mopping position to maintain same in the mopping position until released, the relative disposition of said pivotal connection and presser plate positioning said plate upon swinging movement from said mopping position to first engage only