Jan. 20, 1959 V. K. COOPER 2,869,161

SELF-WRINGING MOP

Filed Jan. 25, 1954

Fig. 1

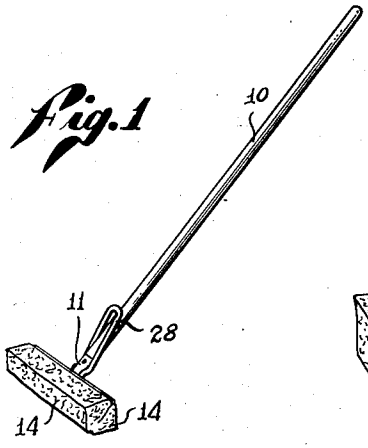


Fig. 2

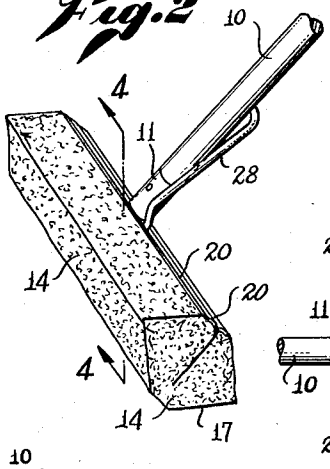


Fig. 3

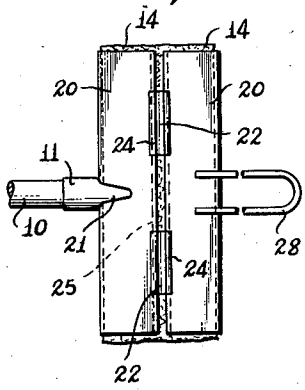


Fig. 4

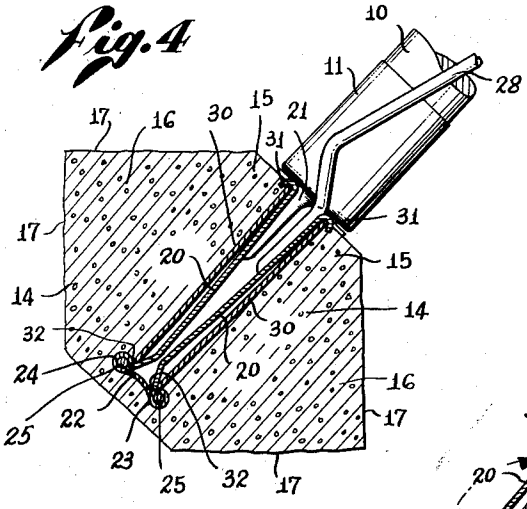


Fig. 5

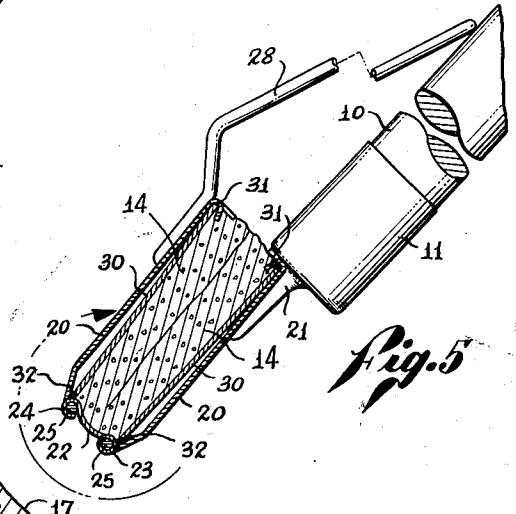
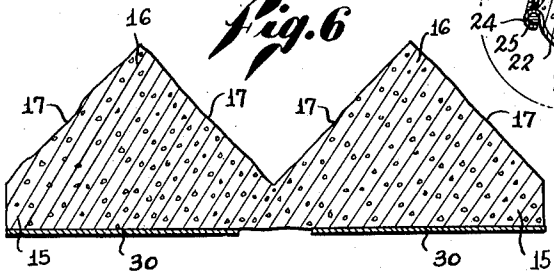


Fig. 6



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SELF-WRINGING MOP

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Application January 25, 1954, Serial No. 405,789

9 Claims. (Cl. 15—119)

My invention relates generally to mops and more particularly to an improved sponge mop of self-wringing type.

The cleaning pad of a so-called sponge mop is formed of soft and absorbent material such as a natural or synthetic sponge. In order to wring or press the water and dirt from the sponge, it is conventional to provide a rigid plate attached to the mop structure in such a manner that the sponge pad may be compressed against the plate for wringing, and moved free of it to an operating position for use.

While various arrangements of the sponge and wringing plate have been proposed, it is a common feature of all prior sponge mops to have portions of the wringing plate and the supporting structure exposed adjacent the sponge pad. These rigid metallic parts interfere with and restrict the proper use of the mop and often mar and scratch furniture, wall surfaces, and the like.

With the foregoing in mind, it is a major object of my invention to provide an improved sponge mop wherein the wringing plate and other rigid elements are enclosed within sponge pads when the mop is in operating position.

An equally important object of the invention is to provide a sponge mop having a pair of cooperating sponge pads to make the mop usable on both sides and double the effective mopping surface.

Another object of my invention is to provide a sponge mop having very efficient and simple wringing means.

It is also an object of the invention to provide a sponge mop having a pair of angularly cut sponge pads providing increased working surface and absorption capacity.

A further object of the invention is to provide a pair of mopping pads cooperatively mounted with supporting and pressing plates in such a way that the plates are disposed between the pads in operating position and bracket and compress the pads in wringing position.

It is still another object of the invention to provide supporting and pressing plates provided with link means, and an operating arm for simple movement between operating and wringing positions.

A still further object of the invention is to provide replaceable sponge pads which are easily attached and removed from the mop structure.

Yet another object of the invention is to provide a mop having a minimum number of simple working parts which may be economically produced.

These and other objects and advantages of the invention will become apparent from the following detailed description of a preferred form thereof, and from an inspection of the accompanying drawings in which:

Figure 1 is a perspective view of the complete mop;

Figure 2 is a perspective detail of the mop head;

Figure 3 is a plan view of the mop head in a partially open position;

Figure 4 is an enlarged cross-section taken along the line 4—4 of Figure 2 showing the mop head in operating position;

Figure 5 is a view similar to Figure 4 showing the mop head in wringing position; and

Figure 6 is a cross-section through the replaceable sponge element.

Referring now to the drawings, and particularly to Figure 1 thereof, the numeral 10 designates an elongated cylindrical handle which is typically formed of wood. As illustrated, the handle 10 is of such length as to provide a floor mop, but a short handle may also be used for using the device on counter tops, sinks, and the like.

At the lower end of handle 10 is a metal ferrule 11 which is fixedly secured to the handle and is used to support the structure of the mop head. The cleaning or mopping element comprises a pair of sponge-like pads 14 which are of elongated block shape and extend transversely to the longitudinal axis of handle 10. Pads 14 may be formed from natural sponges or of plastic sponge-like material which is soft, porous and water absorbent. Pads 14 are disposed in side-by-side relationship and are preferably joined integrally along a common edge. As is best seen in Figure 6, in cross-sectional shape the pads 14 have a rectangular base portion 15 surmounted by a front portion 16 of triangular shape having symmetrical converging faces 17 meeting at an apex angle of approximately 90°. Both pads 14 are of the same shape and size with the base portions 15 being joined integrally along the common side thereof. The particular angular shape of the pads 14 is highly desirable to obtain a proper wringing action as will hereinafter be described.

The backs of the base portion of the pads 14 are adapted to be mounted on the front of a pair of supporting plates 20 which are in turn connected to ferrule 11 and handle 10. Plates 20 are of elongated rectangular shape and are formed of rigid sheet metal. One of the plates 20 is secured rigidly to ferrule 11 by means of a short welded bracket 21 with the plates extending parallel to each other, as is best seen in Figure 3. Preferably, the length of plates 20 is slightly less than that of pads 14 so that the latter project or overhang. Bracket 21 holds one of the side edges of plate 20 centered against the bottom of ferrule 11 so that the plate extends perpendicular to the longitudinal axis of handle 10 in crosswise relationship.

Between the plates 20 are link means 22 which are pivotally connected to the adjacent side edges of both of the plates for free swinging motion. Link means 22 are preferably formed as a plurality of short links spaced apart and typically formed of sheet metal. The adjacent side edges of plates 20 are rolled at 23 to provide hinges which are pivotally interconnected with hinges 24 formed on links 22 by elongated hinge pins 25. The length of links 22 is somewhat less than the depth of the base portions 15 of pads 14, but at the same time is an appreciable distance.

As can be understood, the link means 22 permit plates 20 to be folded substantially flat against each other in either back-to-back or front-to-front relationship. The sponge pads 14 are attached one each to the front of plates 20 and thus may be moved from a position outside of the plates to a position between them upon pivotal folding of the plates.

Secured to the free edge of the plate 20 not directly connected to ferrule 11, is an operating arm 28 which extends outwardly in opposite direction to bracket 21 as seen in Figure 3. Arm 28 is used to move plates 20 between their two folded positions by grasping it with the hand and swinging it from one side to the other of handle 10. Preferably, arm 28 is formed as a U-shaped bifurcated spring wire member having a central opening just slightly smaller than the diametral width of ferrule 11. As may best be seen in Figure 4, the sides of arm 28 are also provided with an angular bend so that the

lower portions thereof ride over ferrule **11** as plates **20** are brought together in back-to-back relationship. This provides a frictional clamp for holding the plates **20** locked against pivotal movement. With plates **20** locked together in back-to-back relationship the mop is in operating position for use. Sponge pads **14** lie outside of the plates **20** completely covering them and projecting opposite to each other. Since plates **20** are shorter than sponges **14**, the end surfaces thereof are fully protected by cushion portions of the sponges to prevent marring and scratching of objects encountered. It will also be remembered that pads **14** are joined integrally together behind the partial front split. Thus a solid wall of sponge material is provided to cover over links **22** and the bottom edges of plates **20**.

With mop handle **10** held at a convenient mopping angle of approximately 45° to the ground, the leading triangular face **17** of one of pads **14** lies flat against the floor surface to be cleaned. As can be appreciated, by simply turning handle **10** over, the leading face **17** of the opposite pad **14** is similarly brought into wiping contact with the floor surface. Thus the mop has twice the effective cleaning face and absorption acapacity of a conventional single sponge mop. It should also be noted that plates **20** have a slight angular bend therein near their edge of connection to links **22**. This permits the bottom of plates **20** to lie very close together when in the position shown in Figure 4, while at the same time providing space at the top for bracket **21** and arm **28** to lie therebetween.

When it is desired to wring the mop, arm **28** is swung downwardly and up to the other side of handle **10**. This moves pads **14** and plates **20** from the operating position shown in Figure 4 to the wringing position shown in Figure 5. Plates **20** are now folded in front-to-front relationship, and the pads **14** are bracketed therebetween. Because of the similar triangular shape of the front portions **16**, they fit together upon the commencement of the wringing action. As the wringing action continues, the triangular front portions **16** are flattened downwardly upon themselves and the base portion **15**. When the final position shown in Figure 5 is reached, both pads **14** have been compressed sufficiently to wring all of the water and dirt therefrom. It should be noted that pivotal movement of plates **20** is limited by the engagement between the upper end of arm **28** and handle **10**. This limits the amount of compression of pads **14** and prevents the exertion of too much wringing force as would permanently deform or tear the material of the pads.

While it is feasible to permanently attach the pads **14** to the front of plates **20**, I prefer to form the pads as a removable element which can be replaced as necessary. To this end the pads **14** are each secured to a rigid backing strip **30**, as is best seen in Figure **6**. The side edges of plates **20** are flanged downwardly on their opposite sides to provide grooves **31** which are adapted to slidably receive one side of the backing strips **30**. As was previously discussed, the adjacent side edges of plates **20** are provided with the rolled hinges **23**, while the backs of the plates are bent angularly adjacent thereto. This construction is such as to provide in effect shallow grooves **32** which are adapted to slidably receive the other edges of backing strips **30**. Thus pads **14** are secured tightly to plates **20** but may be easily replaced without the use of any tools.

Having thus described in considerable detail a preferred embodiment of the invention, it is to be understood that modifications of design and construction will be apparent to those skilled in the art. Therefore, I do not wish to be restricted to the foregoing, except as defined in the appended claims.

I claim:

1. A self-wringing mop which includes: a mop element comprising a pair of elongated spongy pads joined together in side-by-side relationship, said pads having a base portion of rectangular cross-sectional shape and a front portion of triangular cross-sectional shape with converging faces meeting at an apex angle of approximately 90°; a pair of rectangular rigid supporting plates attached one each to the back of said pads and extending in spaced parallel relationship, said plates having angular flanges turned towards said pads along the adjacent side edges thereof; a short link interconnecting said plates and pivotally connected along the flanged edges of said plates for movement of said plates from an operating position in which said plates lie together between said pads, to a wringing position in whch said plates bracket said pads and said pads are compressed front-to-front; a handle; means rigidly attaching one of said plates to said handle with the free side edge thereof abutting the bottom of said handle and extending at right angles to the axis of said handle; and an arm attached to the other of said plates for moving said plates between operating and wringing positions, said arm being angularly bent to form an offset portion shaped to engage with said handle for holding said plates in operating position and having a surface thereon bearing against said handle when said plates are in wringing position to limit the compression of said pads.

2. A self-wringing mop which includes: a mop element comprising a pair of elongated spongy pads disposed in side-by-side relationship, said pads having a base portion of rectangular cross-sectional shape and a front portion of generally triangular cross-sectional shape; rigid backing strips of elongated rectangular shape mounted on the back of said pads; a pair of rigid rectangular supporting plates having angular side flanges adapted to slidably interlock with said backing strips; means connecting said supporting plates for relative pivotal movement about side edges thereof from an operating position in which said plates are adjacent to each other and between said pads, to a wringing position in which said pads are compressed between said plates; a handle; means rigidly attaching one of said plates to said handle with the free side edge thereof abutting the bottom of said handle and extending at right angles to the axis of said handle; and an arm attached to the other of said plates for moving said plates between operating and wringing positions, said arm being angularly bent from an offset portion shaped to engage with said handle for handling said plates in operating position and having a surface thereon bearing against said handle when said plates are in wringing position to limit the compression of said pads.

3. A self-wringing mop which includes: a mop element comprising a pair of elongated spongy pads joined together in side-by-side relationship, said pads having a base portion of rectangular cross-sectional shape and a front portion of triangular cross-sectional shape with converging faces meeting at an apex angle of approximately 90°; rigid backing strips of elongated rectangular shape mounted on the back of said pads; a pair of rigid rectangular supporting plates having angular side flanges adapted to slidably interlock with said backing strips; a short link interconnecting said plates and pivotally connected along adjacent side edges of said plates for movement of said plates from an operating position in which said plates lie together between said pads, to a wringing position in which said plates bracket said pads and said pads are compressed front-to-front; a handle; means rigidly attaching one of said plates to said handle with the free side edge thereof abutting the bottom of said handle and extending at right angles to the axis of said handle; and an arm attached to the other of said plates for moving said plates between operating and wringing positions, said arm being angularly bent to form an offset portion shaped to engage with said handle for holding said plates in operating position and having a surface thereon bearing against said handle when said plates are in wringing position to limit the compression of said pads.

4. A self-wringing mop which includes: a mop element comprising a pair of elongated spongy pads disposed in side-by-side relationship and having front portions of similar triangular cross-sectional shape and a common edge portion of substantial thickness; a supporting plate attached to the back of each of said pads and spaced away from said common edge portion; means mounting said supporting plates for relative pivotal movement from an operating position in which said plates are adjacent each other and the lower and end edges are completely covered between said pads, to a wringing position in which said pads are compressed between said plates; a mop handle; means rigidly attaching one of said plates to said handle with an edge thereof abutting the bottom of said handle and extending at right angles to the axis of said handle; and an arm attached to the other of said plates for moving said plates between operating and wringing positions, said arm having latching means thereon adapted to latchingly engage with said handle when said plates are in operating position and having a surface thereon engaging the opposite side of said handle when said plates are in wringing position to limit the compression of said pads.

5. A self-wringing mop which includes: a mop element comprising a pair of elongated spongy pads disposed in side-by-side relationship and having front portions of similar triangular cross-sectional shape and a common edge portion of substantial thickness; a pair of rectangular supporting plates attached one each to the back of said pads and having the end and adjacent edges thereof spaced inwardly from the edges of said pads; means connecting said supporting plates for relative pivotal movement about the side edges thereof nearest the common edge portion from an operating position in which said plates are adjacent to each other and between said pads, to a wringing position in which said pads are compressed between said plates; a handle; means rigidly attaching one of said plates to said handle with the free side edge thereof abutting the bottom of said handle and extending at right angles to the axis of said handle; and an arm attached to the other of said plates for moving said plates between operating and wringing positions, said arm having latching means thereon adapted to engage with said handle for holding said plates in operating position.

6. A self-wringing mop which includes: a mop element comprising a pair of elongated spongy pads disposed in side-by-side relationship, said pads having a base portion of rectangular cross-sectional shape and a front portion of generally triangular cross-sectional shape; a pair of rectangular rigid supporting plates attached one each to the back of said pads and extending in spaced parallel relationship with the end and adjacent edges of said plates being spaced inwardly from the edges of said pads; link means interconnecting said supporting plates and pivotally connected to adjacent side edges of said plates for movement of said plates from an operating position in which said plates lie together completely covered between said pads, to a wringing position in which said plates bracket said pads and said pads are compressed together; a handle; means rigidly attaching one of said plates to said handle with the free side edge thereof abutting the bottom of said handle and extending at right angles to the axis of said handle; and an arm attached to the other of said plates for moving said plates between operating and wringing positions, said arm having latching means thereon to engage with said handle for holding said plates in operating position and having a surface thereon bearing against said handle when said plates are in wringing position to limit the compression of said pads.

7. A self-wringing mop which includes: a mop element comprising a pair of spongy pads disposed in side-by-side relationship and having front portions of triangular cross-sectional shape and a common edge portion of substantial thickness; a supporting plate attached to the back of each of said pads and spaced away from said common edge portion; means mounting said supporting plates for relative pivotal movement from an operating position in which said plates are adjacent each other and between said pads, to a wringing position in whch said pads are compressed between said plates; a mop handle; means rigidly attaching one of said plates transversely across the bottom of said handle; and an arm attached to the other of said plates for moving said plates between operating and wringing positions.

8. A self-wringing mop which includes: a mop element comprising a pair of spongy pads disposed in side-by-side relationship and having front portions which are outwardly tapered away from a common edge portion, a supporting plate attached to the back of each of said pads and spaced away from said common edge portion; means mounting said supporting plates for relative pivotal movement from an operating position in which said plates are adjacent each other and between said pads, to a wringing position in which said pads are compressed between said plates; a mop handle; means rigidly attaching one of said plates transversely across the bottom of said handle; and an arm attached to the other of said plates for moving said plates between operating and wringing positions, said arm having latching means thereon adapted to engage with said handle when said plates are in operating position, and having a surface thereon engaging the opposite side of said handle when said plates are in wringing position to limit the compression of said pads.

9. A self-wringing mop which includes: a mop element comprising a pair of spongy pads disposed in side-by-side relationship and having front portions which are outwardly tapered away from a common edge portion, a supporting plate attached to the back of each of said pads and spaced away from said common edge portion; means mounting said supporting plates for relative pivotal movement from an operating position in which said plates are adjacent each other and between said pads, to a wringing position in which said pads are compressed between said plates; a mop handle; means rigidly attaching one of said plates transversely across the bottom of said handle; and an arm attached to the other of said plates for moving said plates between operating and wringing positions.

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