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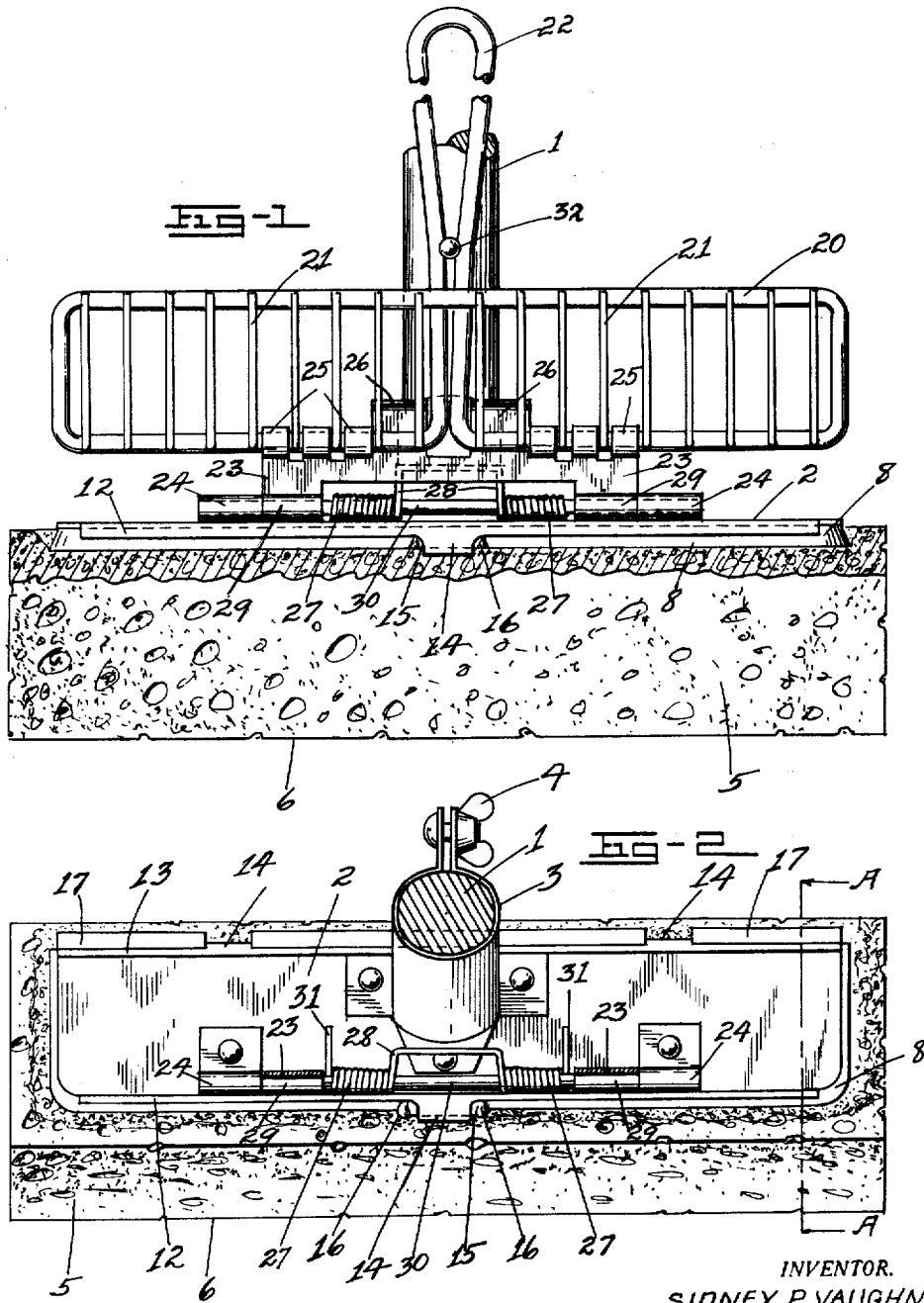
S. P. VAUGHN

2,165,319

MOP

Filed July 15, 1937

2 Sheets-Sheet 1



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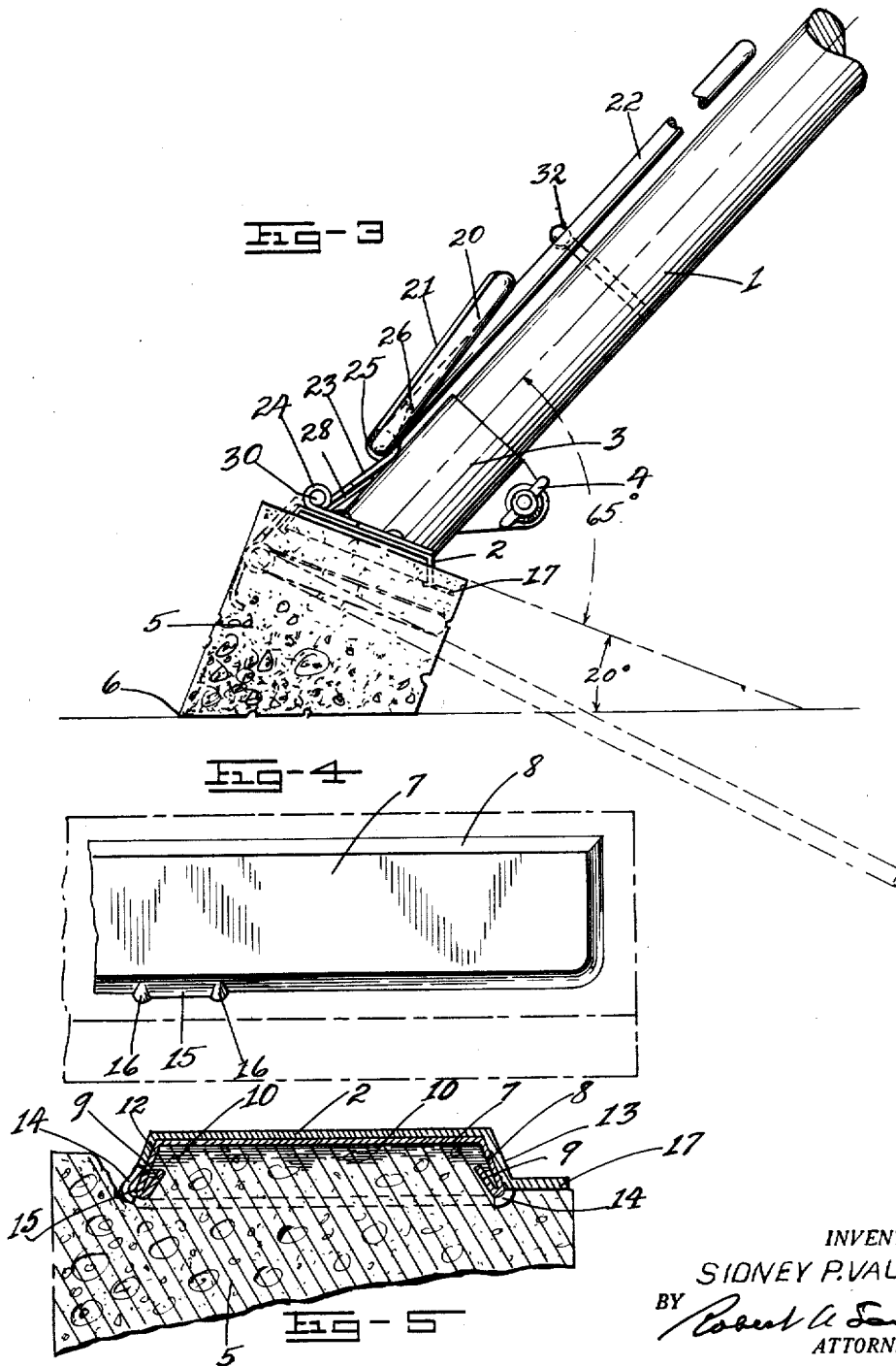
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MOP

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UNITED STATES PATENT OFFICE

2,165,319

MOP

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Application July 15, 1937, Serial No. 153,738

5 Claims. (Cl. 15-119)

(Granted under the act of March 3, 1883, as
amended April 30, 1928; 370 O. G. 757)

This invention relates to cleaning devices generally but more particularly to mops for cleaning floors, walls, etc., and has for one of its objects to provide such a device which is not only simple and inexpensive in construction but which also has an attractive and sanitary appearance.

A primary object of the invention consists in the provision of a simple, neat appearing, and efficient wringing element for a mop embodying a sponge, particularly cellulose sponge, as the cleaning element, the wringing element forming a permanent part of the mop and in conjunction therewith forming a self wringing mop.

A further object of this invention is to provide an easily removable and replaceable cleaning unit and a cooperating mop head holding the cleaning unit firmly during cleaning operations but permitting easy removal and replacement of the cleaning unit when desired.

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 elevational view of one form of mop and wringer with parts broken away.

Fig. 2 is a plan view of the mop with the handle and wringer broken away.

Fig. 3 is a side elevational view of the mop and wringer with a dotted line showing wringer in its normal operative position.

Fig. 4 is a sectional detail plan view of the stiff backing for the mop material which is shown in dotted outline.

Fig. 5 is a transverse sectional view of the mop head on line A-A Fig. 2, looking in the direction of the arrows, showing the method of locking the backing therein.

Referring to the drawings in more detail and especially to Figs. 1, 2 and 3, the numeral 1 indicates the mop handle to which is rigidly attached a mop head 2 by means of a shank or socket 3 and clamping nut 4. The socket and handle are arranged at an angle of about 65 degrees with the upper surface of the mop head for a purpose which will appear hereinafter.

The cleaning element, which is indicated by the numeral 5, is of spongy material, preferably cellulose sponge, and is in the form of a rectangular block having its under side or floor surface beveled off rearwardly at an angle of about 20 degrees. This angle in conjunction with the 65 degree angle between the mop head and handle is very important as it permits the handle to be held at an angle of about 45 de-

grees to the surface being cleaned and thereby provides the proper thrust against the sponge and prevents it from rolling on the floor or the like. This angular position between the handle and operative surface of the sponge also reduces the imposition of tearing stresses upon the sponge and the cement with which it is attached to the backing. Moreover, the beveled under surface of the sponge provides a toe 6 which facilitates the use of the mop in cleaning the corners of rooms without bringing the mop head into contact with the base boards, walls, etc.

The subject matter is claimed in copending application Serial No. 92,899.

A stiff backing for the block of sponge material is desirable whereby the same may be attached to the mop head 2, and for this purpose a member 7 of sheet metal is employed, although other material may be found suitable. This member is disclosed in detail in Figs. 4 and 5, and is shown as an elongated, substantially rectangular plate provided with downwardly and outwardly inclined flanges 8. By reason of the flared walls the sponge material may be adhesively secured to them as well as to the bottom of the backing; also the construction permits the sponge material to enter the corners of the backing and thereby prevent the formation of voids. Moreover this flaring of the side walls of the backing facilitates snapping the same into the mop head as will appear later. The extremities of the flanged walls 8 are bent inwardly and are spaced slightly from the inner surface of the flanges to provide anchoring means 9 for the cement used in securing the sponge block, as will now be described.

Mops are continually being subjected to hot water and frequently to boiling water to sterilize the sponge, and hence it is essential to employ some means for securing the mop material to its backing and which means will be resistant to boiling water and the like. The sponge material, in the present instance, is secured to the backing plate 7 by a cement such as cellulose acetate, liquid or plastic rubber, or the like, which will withstand boiling temperatures. The adhesive 10 is preferably placed in the inverted backing 7 and the block of sponge material then tightly compressed against the backing and adhesive until the adhesive has either set or air cured. The portion of the sponge material compressed against the edges of the flanges 8 seal the adhesive within the backing. Portions of the cement are forced into the pockets formed between the flanges 8 and their respective

tongues 9, as well as into the pores of the sponge. When the cement has set, or has become air cured in the case of rubber cements, it is securely locked in the backing together with the sponge 5 to which it is attached. The latter features are more particularly disclosed and claimed in copending applications Serial Nos. 103,058, 112,786, and 122,627.

The cleaning material and its backing, which is slightly flexible, is detachably connected to the mop head 2 which is provided with front and rear flanges 12 and 13 to form a shallow channel into which the backing fits snugly. These flanges are inclined downwardly and outwardly, and at their free edges are formed inturnd nibs or clips 14 adapted to engage the under edges of the backing when the latter is installed in the head. To secure the sponge backing into the head it is only necessary to bring it into registry with the mop head and snap the backing into the head, the side walls of the backing springing sufficiently to allow the backing to snap into position. In the specific form illustrated, one of the clips is provided on the front flange 12 and two on the rear flange 13. The front wall of the backing 7 has a portion 15 pressed outwardly to engage the front clip on the head which is also pressed outwardly beyond the normal edge of the head. This arrangement facilitates quick removal of the backing from the head. The rear edges of the backing engage the rear clips. The ends 16 of the outwardly flared front portion 15 project still further to the front to form stops on each side of the front clip 14. These stops prevent the backing from sliding endwise in the mop head in normal use of the mop but spring sufficiently to allow removal of the backing when it is moved in either direction the distance of the flared front portion 15. To remove the backing it is only necessary to move it longitudinally in either direction a sufficient distance to disengage the outwardly flared portion 15 from the front clip 14.

The mop head 2 is provided with a heel portion 17 shown as formed in three sections in Fig. 2 and between which the rear clips 14 are positioned. The heel 17 extends rearwardly from the lower edge of the rear flange 13 and serves as one means of wringing the mop. In this method of wringing the mop the handle is held at about 25 degrees from the vertical and pressed downwardly to compress the sponge material between the mop head and the floor or other surface. In this position the mop head is substantially parallel with the floor. No bending stresses are set up in the handle in this operation as all forces are parallel with the axis of the handle. In such operation a portion of the sponge material is flexed rearwardly beyond the mop head proper and the heel 16 serves to compress this part of the sponge.

This subject matter is claimed in copending application Serial No. 92,899.

For a more complete wringing action of the mop a lever actuated wringer plate is provided as indicated in Figs. 1, 2 and 3. In this construction the wringer plate takes the form of a rectangular frame member 20 provided with cross bars 21 welded thereto. This wringer plate or screen is of substantially the same length and width as the head of the mop and is provided with a handle 22 to obtain the necessary leverage for wringing operations. The wringer member 20 is pivoted to the top front surface or toe of the mop head 2 by means of a hinge link plate 23. The hinge plate has formed in its lower end eyes 24 which are pivotally mounted by a hinge pin 30 in eyes

24 secured to the top front surface of the head. The lower edge of the wringer plate is pivotally mounted in eyes 25 formed in the upper or free end of the hinge plate 23 on both sides of an upwardly extending portion 26 of the hinge plate. The upwardly extending portion of the hinge plate forms an abutment or stop which limits the backward rocking movement of the wringer plate on its pivot, and makes it possible to obtain a positive movement in wringing operations as will be more fully described hereinafter. The stop 26 may be carried by the wringer plate instead of being a part of the hinge plate and the same purpose accomplished. The hinge plate may also take the form of a wire hinge link.

A double spiral torsional spring 27 having U shaped connecting member 28 is mounted on the hinge pin 30. The U shaped connection member 28 engages the hinge plate 23 and the arms 31 of the spring engage the top of the mop head. The torsional tension is such that it tends to rock the hinge plate in a forward direction.

The distance between the eyes 24 and 25 of the hinge plate is that sufficient to bring the pivot point of the wringer plate forward of the toe of the mop head and slightly below the mop head when the hinge plate is rocked in a forward direction, as indicated by the dotted lines in Fig. 3.

In its normal inoperative position the wringer plate and its handle are held back against the mop handle 1 and substantially parallel therewith by a round headed pin 32 secured in the handle. The arms of the wringer plate handle are slightly flexible and are arranged to snap around the head of the pin 32 when pressed against it. In like manner the arms of the wringer plate will snap loose from the round headed pin when sufficient force is exerted to separate the handle of the wringer plate from the mop handle.

When it is desired to wring the mop the same is held in one hand by the handle 1 and the wringer plate handle 22 is disengaged with the other hand from the round head of pin 32 and allowed to rock forwardly by the action of the torsion spring 27 until the hinge plate 23 is seated on the toe of the mop head 2. The handle 22 is then brought forwardly downwardly, and to the rear (as indicated by the dotted lines in Fig. 3) into substantially parallel relation with the mop head and thereby compress the sponge between these two elements. It will thus be seen that the wringer plate passes through an arc of about 290 degrees. When the wringing operation is completed the wringer plate arm is rocked in the opposite direction and brought back to its normal inoperative position. When the wringer plate arm is snapped around the head of the pin 31 the wringer plate is held securely in a position which will not interfere with mopping operations.

In accordance with the patent statutes I have described what I now believe to be the preferred embodiments 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 scope of the appended claims.

The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

What is claimed is:

1. A mop including a handle and a head, a

block of sponge material secured to said head, a hinge link pivoted by one end to the toe of the head, a wringer element pivoted to the free end of the hinge link and adapted to squeeze the sponge material, a handle for operating said wringer element, means limiting the backward movement of the wringer element around its pivot but permitting free movement in a forward direction, spring means acting to urge the hinge link and wringer element toward operative position for squeezing the sponge material, and catch means for connecting the handle of the wringer element to the handle of the mop to hold the wringer element in an inoperative position.

2. A mop including a handle and a head, a block of sponge material secured to said head, a hinge link pivoted by one end to the toe of the head, a wringer element pivoted to the free end of the hinge link and adapted to squeeze the sponge material, a handle for operating the wringer element, means carried by the hinge link for limiting the backward movement of the wringer element around its pivot but permitting free movement in a forward direction, torsional spring means carried by the pivot pin of the hinge link and adapted to act in a direction tending to urge the wringer element toward operative position for squeezing the sponge material, and catch means for connecting the handle of the wringer element to the handle of the mop to hold the wringer element in an inoperative position.

3. A mop including a handle and an elongated head having downwardly flared walls on the front and rear edge thereof, inwardly directed clips on said walls, a cleaning unit including a backing having downwardly flared walls and

adapted to be received in said head and be held therein by said clips, an outwardly flared portion in one of said walls of said backing to engage one of said inwardly directed clips, and stops formed at the ends of said outwardly flared portion to prevent the endwise movement of said cleaning unit in said head under normal operating conditions but having sufficient flexibility to permit removal of the backing from said head when sufficient force is applied to slide the backing longitudinally of the head.

4. A mop including a head formed with flared front and rear flanges, inwardly directed clips on said flanges, a cleaning unit including a backing having flared walls adapted to be received in said head and be held therein by said clips, and an outwardly flared portion in one of the said flared backing walls adapted to engage and interlock with one of said inwardly directed clips to hold said backing securely in said head during cleaning operations but sufficiently flexible to permit removal of the backing from said head.

5. In a mop including a handle and a head, a block of sponge material secured to said head, a hinge link pivoted by one end to the toe of the head, a wringer element pivoted to the free end of the hinge link and adapted to squeeze the sponge material, stop means limiting the turning movement of the wringer element around its pivot when moved toward the mop handle but permitting movement in the opposite direction to squeeze the sponge material, said stop means being formed by an extension of the hinge link and adapted to engage the back of the wringer element a substantial distance from its pivot.

SIDNEY P. VAUGHN.

Patent No. 2,165,319

Granted July 11, 1939

SIDNEY P. VAUGHN

The above entitled patent was extended October 2, 1951, under the provisions of the Act of June 30, 1950, for 7 years and 174 days from the expiration of the original term thereof.

Commissioner of Patents.

block of sponge material secured to said head, a hinge link pivoted by one end to the toe of the head, a wringer element pivoted to the free end of the hinge link and adapted to squeeze the sponge material, a handle for operating said wringer element, means limiting the backward movement of the wringer element around its pivot but permitting free movement in a forward direction, spring means acting to urge the hinge link and wringer element toward operative position for squeezing the sponge material, and catch means for connecting the handle of the wringer element to the handle of the mop to hold the wringer element in an inoperative position.

2. A mop including a handle and a head, a block of sponge material secured to said head, a hinge link pivoted by one end to the toe of the head, a wringer element pivoted to the free end of the hinge link and adapted to squeeze the sponge material, a handle for operating the wringer element, means carried by the hinge link for limiting the backward movement of the wringer element around its pivot but permitting free movement in a forward direction, torsional spring means carried by the pivot pin of the hinge link and adapted to act in a direction tending to urge the wringer element toward operative position for squeezing the sponge material, and catch means for connecting the handle of the wringer element to the handle of the mop to hold the wringer element in an inoperative position.

3. A mop including a handle and an elongated head having downwardly flared walls on the front and rear edge thereof, inwardly directed clips on said walls, a cleaning unit including a backing having downwardly flared walls and

adapted to be received in said head and be held therein by said clips, an outwardly flared portion in one of said walls of said backing to engage one of said inwardly directed clips, and stops formed at the ends of said outwardly flared portion to prevent the endwise movement of said cleaning unit in said head under normal operating conditions but having sufficient flexibility to permit removal of the backing from said head when sufficient force is applied to slide the backing longitudinally of the head.

4. A mop including a head formed with flared front and rear flanges, inwardly directed clips on said flanges, a cleaning unit including a backing having flared walls adapted to be received in said head and be held therein by said clips, and an outwardly flared portion in one of the said flared backing walls adapted to engage and interlock with one of said inwardly directed clips to hold said backing securely in said head during cleaning operations but sufficiently flexible to permit removal of the backing from said head.

5. In a mop including a handle and a head, a block of sponge material secured to said head, a hinge link pivoted by one end to the toe of the head, a wringer element pivoted to the free end of the hinge link and adapted to squeeze the sponge material, stop means limiting the turning movement of the wringer element around its pivot when moved toward the mop handle but permitting movement in the opposite direction to squeeze the sponge material, said stop means being formed by an extension of the hinge link and adapted to engage the back of the wringer element a substantial distance from its pivot.

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