Aug. 18, 1959 S. P. VAUGHN 2,899,698

SPONGE CLEANING ELEMENTS FOR MOPS

Filed July 9, 1956

Fig-1

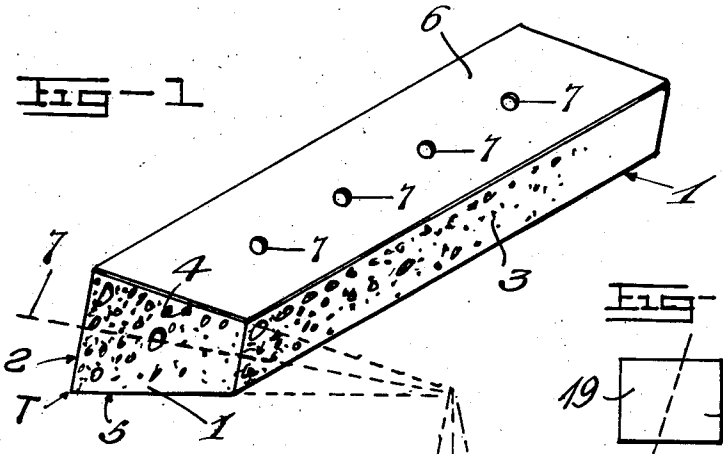


Fig-6

Fig-2

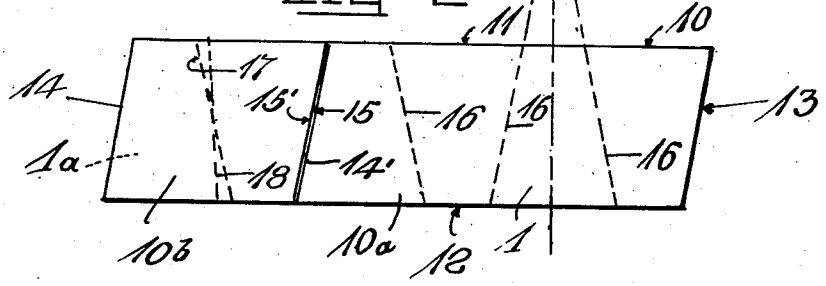


Fig-4

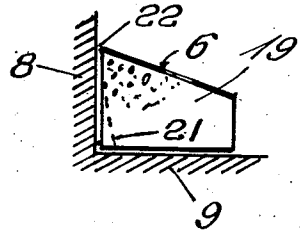


Fig-3

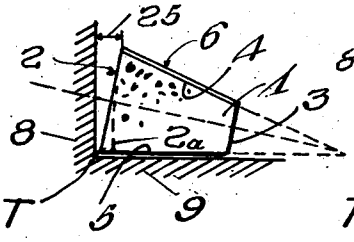
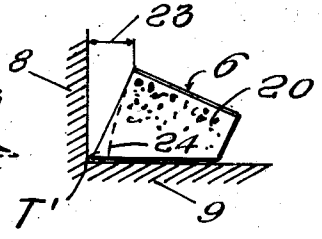


Fig-5



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SPONGE CLEANING ELEMENTS FOR MOPS

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2 Claims. (Cl. 15—244)

My invention relates to improved sponge cleaning elements for mops.

Important objects of the invention are to provide sponge cleaning elements which are particularly adapted for use with self-wringing type mops having either a front or back presser for squeezing the water out of the sponge cleaning element; to provide a sponge cleaning element having such a shape in cross section that the forward edge or toe of the same will readily reach into corners during the mopping operation, regardless of the particular type of mop to which the sponge cleaning element is applied; to standardize the shape of the sponge cleaning element so that it may be readily used in connection with most types of self-wringing mops now on the market, thus eliminating the necessity of the retailer carrying in stock several different types or shapes of sponge cleaning elements to meet customer demands; to provide a sponge cleaning element for mops which may be readily cut from a block of sponge, with the minimum loss of material.

In United States Patent 2,358,673 is shown and described a sponge cleaning element so shaped that it is especially adapted for use with front presser mops. In United States patent to N. B. Greenleaf et al., 2,594,553, a sponge mop element is shown and described which is especially adapted for use with back presser mops. Front and back presser mops are in common use today. The shape of my sponge cleaning element which is the subject of the present invention is such that such sponge cleaning element may be advantageously used with either front or back presser mops.

In my Patent 2,358,673, there is shown and described a sponge cleaning element having a shape which renders it particularly well adapted for use in mops with a front presser. These front pressers are shown in Patents 2,153,601 and 2,165,319. The sponge cleaning element of Patent 2,358,673 is also adapted for use without the presser. The sponge cleaning element of Patent 2,358,673 has a toe which readily enters into corners occurring between a wall and floor. The shape of sponge cleaning element shown in Patent 2,358,673 is not suitable for use in connection with a back presser mop because in the squeezing operation the toe of the sponge cleaning element would be forced too far forwardly beyond the backing element of the sponge cleaning element and hence the forward portion of the sponge cleaning element would not be properly compressed. In this shape of sponge cleaning element, the scrubbing face is greater than the attaching face.

In United States patents to N. B. Greenleaf et al., 2,594,553 and 2,515,403, are shown and described a sponge cleaning element having a shape which renders it particularly well adapted for use in mops of the back presser type, as shown in Patent 2,515,403. However, the shape of the sponge cleaning element is such that the scrubbing face is less than the attaching face. Further, in the forward scrubbing operations, the toe of the sponge cleaning element is drawn back under the front edge of the backing member, and such toe will not readily reach into corners formed by intersection of the floor and wall. Further, this shape of sponge cleaning element is not particularly suitable for mops having a front presser, particularly in mops having a front presser having a single hinge action, since the barrel of the hinge will extend well forwardly of the toe of the sponge cleaning element.

The sponge cleaning element embodying the present invention is of such a shape that it may be effectively used in most mops now on the market, which mops have either a front or back presser, and may also be used upon mops which have neither a front or back presser. My improved sponge cleaning element has the forward toe which will advantageously enter corners during the forward stroke of the mop.

In the accompanying drawings forming a part of this application and in which like numerals are employed to designate like parts throughout same,

Figure 1 is a perspective view of a sponge cleaning element embodying my invention,

Figure 2 is an edge elevation of a slab of hygroscopic sponge, and dotted lines illustrating the method of cutting the sponge cleaning elements in the proper shape,

Figure 3 is an end elevation of the sponge cleaning element embodying my invention, showing the same with its toe entering the corner between the wall and floor, and also showing the lines indicating the angles upon which the top and bottom faces are cut,

Figure 4 is an end elevation of a sponge cleaning element having the shape as shown and described in United States patents to N. B. Greenleaf et al., 2,515,403. and 2,594,553.

Figure 5 is an end elevation of the sponge cleaning element having the shape as shown and described in United States Patents 2,163,638; 2,153,601 and 2,165,319, the toe of the sponge cleaning element being moved into the corner formed by the wall and floor,

Figure 6 is an end elevation of a block of hygroscopic sponge, and a line, illustrating the method of cutting the sponge cleaning elements shown in Figures 4 and 5.

Referring first to Figures 1 to 3 inclusive in which the sponge cleaning element embodying my present invention is shown, the numeral **1** designates the sponge cleaning element which embodies the present invention and having the desired shape in cross section. This sponge cleaning element is preferably formed of hygroscopic sponge. The sponge cleaning element **1** is preferably elongated and has the shape in cross section of a frustrum or truncated wedge. For convenience of terminology, the particular cross-sectional shape will be termed in the specification and the appended claims an isosceles trapezoid in that it is characterized by being a four-sided figure having two opposite sides thereof parallel with the other two sides being of equal length and non-parallel. In other words, it is truncated isosceles triangle in which the truncating plane is parallel to the base of the triangle. The element **1** has a front face **2** and a rear face **3**, which are parallel, and the front face **2** is vertically longer than the rear face **3**. The element **1** has an upper face **4** and a lower or bottom face **5**, which form an acute angle with each other. The forward face **2** forms an acute angle with the top face **4** and the bottom face **5**. The acute angles that the upper face **4** and the lower face **5** forms with the front face **2** are relatively large so that the front edge of the bottom face **5** extends forwardly beyond the front edge of the top face **4** for a short distance, forming the toe T. This distance is indicated at **25**. The rear face **3** forms an obtuse angle with the top face **4** and the bottom face **5**. A relatively stiff or rigid attaching or backing plate or element **6** is secured to the top face **4** by an adhesive.

This backing element 6 may be made of metal, wood, reinforced cloth, or any other suitable material, such as plastic, and may be formed to meet the specific requirements of the mop head or holder to which it is to be attached. One method of attachment is to form a plurality of holes or openings 7 in the backing element, which openings will register with screw-threaded openings formed in the conventional mop head or holder. The openings 7 are adapted to receive self-cutting sheet metal screws of the conventional type, which are carried by the mop head or holder, and which will secure the backing element 6 to the mop head or holder. Any other suitable means may be employed to attach the backing element 6 to the head or holder.

As shown in Figure 3, the sponge cleaning element 1 has a toe T which is adapted to enter the corner formed by the wall 8 and floor 9.

In Figures 1 and 2, the method of cutting the sponge cleaning elements 1 in the desired shape is shown. These elements are cut from a slab 10 of hygroscopic sponge, having a width corresponding to the length of the elements 1. The slab 10 has upper and lower parallel faces 11 and 12, and edge faces 13 and 14. The edge faces 13 and 14 are parallel with each other. The edge face 13 is at an acute angle to the top face 11 and at an obtuse angle to the bottom face 12. The edge face 14 is at an obtuse angle to the top face 11 and at an acute angle to the bottom face 12. The slab 10 is shown as cut transversely at 15, forming a face 14′ corresponding to the face 14 and a face 15′, corresponding to the face 13. This forms the slab 10 into two separate slab sections 10*a* and 10*b*.

The slab section 10*a* is cut longitudinally upon lines 16 which provide the several elements 1 of the desired shape in cross section.

The slab section 10*b* may also be cut upon a line 17, forming sponge cleaning elements 1*a*, identical with the elements 1, or the angle of severing may be slightly varied, as indicated by the line 18.

Figure 6 shows a block of hygroscopic sponge which is rectangular in cross section, and this block may be severed upon line 20′ to form sponge cleaning elements 19 and 20, shown in Figures 4 and 5 of the drawings.

Figure 4 shows an end elevation of a sponge cleaning element similar to that illustrated in the N. B. Greenleaf et al. patents, 2,594,553 and 2,515,403. In this figure, the sponge cleaning element 19 has a vertical forward face and a vertical rear face and these faces are parallel. The same backing element 6 is employed. Since the forward face is vertical, there is no toe projecting forwardly beyond the edge of the backing element 6. Upon the forward mopping movement of the sponge cleaning element 19, the forward face is drawn rearwardly as indicated by the line 21 and there is obviously no toe to enter the corner produced by the wall 8 and floor 9. The sponge cleaning element 19, Figure 4, is well adapted for use in connection with a back presser mop having a single acting hinge. When the sponge cleaning element is squeezed by the back presser, the lower forward corner of the element 19 will not extend forwardly beyond the forward edge of the backing element 6 for more than a slight distance, as indicated at 22. The form of sponge cleaning element 19 may also be used in connection with a front presser mop. As stated, the element 19 has no toe projecting forwardly beyond the forward edge of the backing element 6, and when the element 19 is moved forwardly upon the mopping stroke, its forward face is drawn beneath the backing element 6, as indicated by the line 21, and there is obviously no toe to enter the corner produced by the wall 8 and floor 9.

In Figure 5 is shown an end elevation of a sponge cleaning element shown in United States Patents 2,358,673, 2,153,601 and 2,165,319. The sponge cleaning element is designated by the numeral 20 and has a toe T′ which extends for a considerable distance forwardly beyond the forward edge of the backing element 6. The toe T′ will readily reach into the corner produced by the wall 8 and floor 9, and this is true when the toe T′ is moved rearwardly to the line 24, which occurs upon the forward mopping stroke of the element 20. The sponge cleaning element 20, Figure 5, is well adapted for use in connection with a front presser mop. The element 20 is secured to the backing element 6 and is not suitable for use in connection with a back presser mop having a single acting hinge. When the element 20 is squeezed by a back presser mop having a single acting hinge, the toe T′ of the element 20 will extend for a considerable distance forwardly of the forward edge of the backing element 6, and this distance will be more than the distance between the front edge of the backing element 6 and the wall 8, which latter distance is indicated by the line 23. As a result, the forward portion of the element 20, which will be a considerable part of the same, will not be properly squeezed to remove the surplus water.

The sponge cleaning element 1 embodying my invention is shown in Figures 1 and 3. The sponge cleaning element 1 has a toe T, adapted to move into the corner formed by the wall 8 and floor 9. When the sponge cleaning element 1 is moved forwardly upon the mopping stroke, its front face 2 is forced rearwardly to the line 2*a*, and the toe T will still project forwardly beyond the element 6 so that such toe will enter the corner. The sponge cleaning element 1, Figure 3, is well adapted for use in connection with a front presser mop and also a back presser mop. When the element 1, Figures 1 and 3, is squeezed by a back presser mop, the toe T of the element 1 will be forced forwardly of the forward edge of the backing element 6 for a short distance, which may be illustrated by the line 25. This projecting portion is relatively small and is not sufficient to prevent a proper squeezing of the element 1 so that the little amount of the water left in the element 1 is not sufficient to prevent efficient use of the element 1. When a front presser mop is used in connection with my element 1, Figure 3, and the presser has a double hinge action such as shown in my Patent 2,165,319, the squeezing action will cause very little of the element 1 to be forced back beyond the rear edge of the backing element 6, and the amount of water not squeezed out will not prevent the efficient operation of the element 1. The same result will be obtained when a single acting hinge presser is used.

As previously stated, the sponge element shown in Fig. 5 is the one disclosed in my U.S. Patent No. 2,153,601, and in that patent it is shown that the top face of the element makes an angle of 20° with the bottom face or its extension. This means that the toe angle is 70° since the third angle is a right angle. When this shape is modified to form an isosceles trapezoid, as shown in Fig. 3, retaining, of course, the same angle between the top face of the element and the floor, as shown in the drawings, for attachment to like mop handles, it follows from simple geometry that the toe angle becomes 80° since the apex angle of the truncated isosceles triangle is 20°.

The experiments and tests which I have made indicate that the shape of the sponge cleaning element 1, Figures 1 and 3 of my drawings, is the best for general use in all types of front and back presser mops. I have therefore provided a sponge cleaning element 1 which will serve as a refill for the mops indicated, thereby eliminating the necessity of the retailer carrying in stock different shapes of refills, to meet the demand. I have therefore provided a refill which renders it possible to use my refill as an interchangeable refill for most types of front and back presser mops now in use, in which the sponge cleaning element is formed of cellulose sponge.

It is to be understood that the form of my invention herewith shown and described is to be taken as a preferred example of the same and that various changes in the shape, size and arrangement of parts may be resorted to,

without departing from the spirit of my invention or the scope of the subjoined claims.

Having thus described my invention, I claim:

1. A sponge element of substantially universal application to spong mops and capable of use with back and front presser mops or mops without pressers and comprising a sponge element, the cross-sectional shape of which is substantially in the form of an isosceles trapezoid with the longer parallel side thereof constituting the front face of the element and the shorter parallel side constituting the rear face thereof, and with said front face intersecting the adjacent top and bottom faces at an angle of about 80°, a relatively rigid backing secured to the top face of the element, said element when in operative position with its lower face in engagement with the floor presenting a forwardly projecting toe portion enabling the element to reach into corner intersections of the floor with the wall, said sponge element being formed, among other ways, by being capable of being cut from a sponge blank of parallelogram cross-sectional form without wastage, in which the length of the blank is equal to the length of the sponge element, the height of the blank is equal to the height of said trapezoid, and one of the inclined sides of the parallelogram makes an angle with one of the parallel sides thereof of about 80°.

2. A sponge element as set forth in claim 1 in which said rigid backing is provided with means adapted to interconnect the sponge element to the mop handle with which it is to be associated.

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