March 14, 1939. A. GRIFFITHS 2,150,602

MEANS FOR WASHING OR CLEANING TUMBLERS AND LIKE ARTICLES

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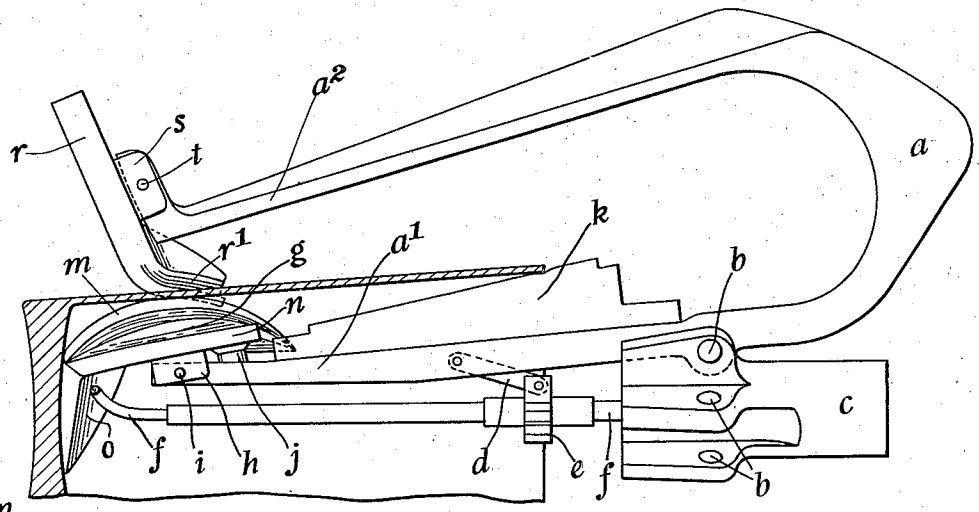


Fig.1

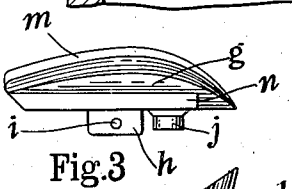


Fig.3

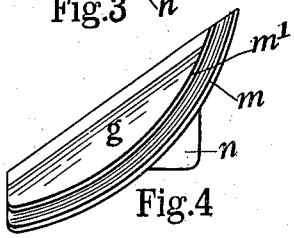


Fig.4

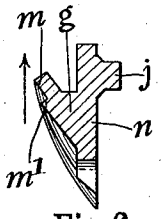


Fig.6

Fig.2

Fig.9

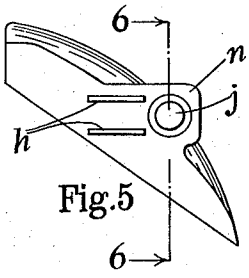


Fig.5

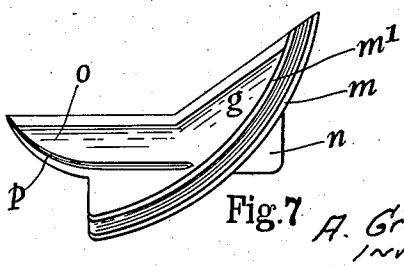


Fig.7

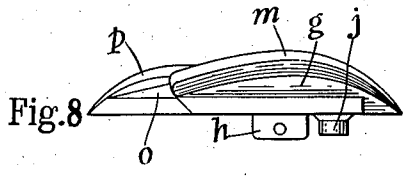


Fig.8

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MEANS FOR WASHING OR CLEANING TUMBLERS AND LIKE ARTICLES

Alfred Griffiths, Liverpool, England

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3 Claims. (Cl. 15—128)

This invention relates to machines for washing, drying and polishing drinking glasses, including wineglasses, cups and like hollow ware and has for its object to provide an improved element for acting upon the internal surface of the glass or the like, which will effectively clean and polish and will not streak or mark the same. The invention is particularly concerned with machines having rubber squeegee elements as described more particularly in my Patent No. 2,032,013, granted February 25, 1936, such elements being of the type described and claimed in my Patent No. 1,693,780, granted December 4, 1928.

The mechanical devices carrying the squeegee elements are similar to those described in my prior Patent No. 2,032,013, each device being of substantially U shape with a squeegee element on each branch of the U and the several U devices being pivotally connected to a central member or head which is rotated and being also coupled by links to a movable stem through which water is delivered into the glass being cleaned, the coupling stem causing the U devices to turn about their pivot points in unison.

Usually the axis of revolution of the machine or device when in service is vertical, with the open ends of the U-shaped elements at the top, and references hereinafter to "downwards" or "upwards" or like definitions assume the machine or device mounted in this position.

The invention comprises the pivotal mounting of the inner squeegees, each upon one arm of a U member pivoted to a revolving stem, the said inner squeegees each having a flexible abutment below the pivot point which engages the arm of the U member when a glass is put into the machine for cleaning. The pivotal mounting of the inner squeegees facilitates the insertion of glasses into the machine and their movements to conform to the internal contour of the glass and the flexible abutments assist in causing the squeegees to turn about their pivots to cleanse the interior of the glass right to its open mouth as it is withdrawn from the machine.

The invention further comprises the provision of a rubber pad upon the inner arm of each U member to act as a guide and steady the mouth of the glass as it is being inserted into the machine.

The invention further comprises the provision upon one inner squeegee of an upwardly extending curved projection which when a glass is put into the machine is bent over by the pressure of the end of the glass thereon so that it extends across and cleans the bottom of the glass. By employing an upwardly extending curved projecting squeegee, I ensure that flat, curved and varied shapes of glass bottoms are successfully cleaned with the one set of squeegees.

The invention further comprises outer squeegees which are pivoted to the outer arms of the U members and given a limited amount of free pivotal movement, the squeegee flexing downwards as the glass is put into the machine and flexing upwards to grip and cleanse the outer surface of the glass as it is being withdrawn from the machine.

Referring to the accompanying sheet of explanatory drawings:—

Figure 1 is a view showing one U member of a glass cleaning machine with inner and outer squeegees and guide arranged in accordance with this invention.

Figure 2 is an end view of Figure 1, showing the disposition of the three U members constituting a complete machine.

Figure 3 is a side view, Figure 4 a front view, Figure 5 a rear view and Figure 6 a sectional view on the line **6—6** of Figure 5 showing an inner squeegee.

Figure 7 is a front view and Figure 8 a side view of the inner squeegee with the projection for cleaning the bottom of a glass.

Figure 9 is a rear view of an outer squeegee.

Each U element *a* is pivotally attached at *b* to a tubular base piece *c* which screws on to a revolving spindle (not shown). Each element is also connected by a link *d* with a collar *e* upon a water tube *f* which can slide in and out of the base piece *c*. Water is delivered through the open end of the tube *f* into the end of the glass being cleaned.

The inner squeegee element *g* has a metal insertion *h* which is pivoted at *i* to the end of the arm a^1 of the element *a*. A rubber buffer *j* is formed upon the rear side of the squeegee and this is adapted to engage the arm a^1 when the squeegee *g* is turned about its pivot by the pressure of the internal surface of a glass being put into the machine for cleaning purposes.

A rubber pad *k* provided upon the arm a^1 of each U element serves to guide the mouth of a glass being put into the machine and prevent its being damaged by contact with revolving metal parts.

Each rubber squeegee has its operative edge *m* (see Figure 6) set at an angle to the base *n* in which is the metal insert adapted to be pivoted to the U element. The direction of motion of

the squeegee relatively to the glass is indicated by the arrow in Figure 6.

Due to the relative motion of squeegee and glass and to the inclination of the squeegee edge *m*, the latter tends to turn over and take an effective grip upon the glass which results in an efficient cleaning action. There are two edges *m* and m^1 which come into action together due to the resiliency of the rubber and the pressure exerted against the glass.

One of the inner squeegees has a flexible extension *o* thereon which has a curved edge *p* (see Figure 7). When a glass is pressed into the machine, the bottom of the glass bends the flexible part *o* as shown in Figure 1 so that it sweeps across and cleans the bottom of the glass.

Each inner squeegee has its leading edge *m* at an angle to the axis of the revolving head or machine which is the axis of the tube *f*, with the end of the squeegee which comes to the bottom of the glass in advance of the end which is adjacent to the mouth of the glass when the latter is in the position shown in Figure 1, the effect of such angularity being to drive water towards the mouth of the glass as the machine rotates.

Each outer squeegee *r* has a metal insert *s* cast therein and this insert is pivoted at *t* to the arm a^2 of the U element *a*. There is a limited amount only of permissible free pivotal movement of each outer squeegee. The part r^1 of the latter which engages the exterior of the glass is very flexible, is curved as shown in Figure 9 and sloped downwards as shown in Figure 1. When a glass is being passed between the inner and outer squeegees towards the position shown in Figure 1, the outer squeegees pivot downwards so that the end r^1 moves to the right in Figure 1 which facilitates the insertion of the glass and the curved edge r^1 shapes itself to the outer surface of the glass. As the latter is being withdrawn, that is, is being moved towards the left in Figure 1, the outer squeegee turns about its pivot under the pressure exerted by the glass on the edge r^1 which causes said edge r^1 to move towards the left in Figure 1. The result is to cause such edge to exert a very strong grip and cleaning action upon the glass surface.

When the glass is being moved towards the left in Figure 1, the inner equeegees also have a pivotal movement which causes the edge of the squeegee which is nearer to the mouth of the glass to increase its pressure on the glass. This ensures a very effective cleaning of the whole of the glass surface and prevents streaking or parts left unevenly cleaned due to pressure between squeegee and glass not being maintained throughout the withdrawal movement of the glass at the same part of the squeegee.

Usually the axis of revolution of the machine or device is vertical with the left hand end of Figure 1 at the top.

What I claim is:

1. A cleaning head for a machine for cleaning glasses and other hollow ware, comprising a rotary spindle, a plurality of U-shaped members lying in planes radial of said spindle and having their inner arms pivoted to said spindle for movement of said members in said planes, a hollow stem forming a water conduit extending axially from said spindle and movable axially relatively thereto, a plurality of links, each pivotally connected to the inner arm of one U-shaped member and to said stem, a squeegee pivotally mounted upon the inner arm of each U-shaped member upon the radially outer side thereof for movement in the plane of the member, a resilient abutment disposed between said squeegee and said inner arm to the side of the pivotal connection between them towards the closed end of the U-shaped member, and a squeegee mounted upon the radially inner side of the outer arm of each U-shaped member.

2. A cleaning head as claimed in claim 1 wherein there is a rubber pad secured to and extending partway along the radially outer side of the radially inner arm of each U-shaped member between the pivoted squeegee secured to such inner arm and the closed end of the U-shaped member.

3. A cleaning head as claimed in claim 1 wherein the squeegees upon the radially outer arms of the U-shaped members are of curved form and are pivoted to parts of said arms bent over outwardly from the ends thereof for movement in the plane of such members.

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