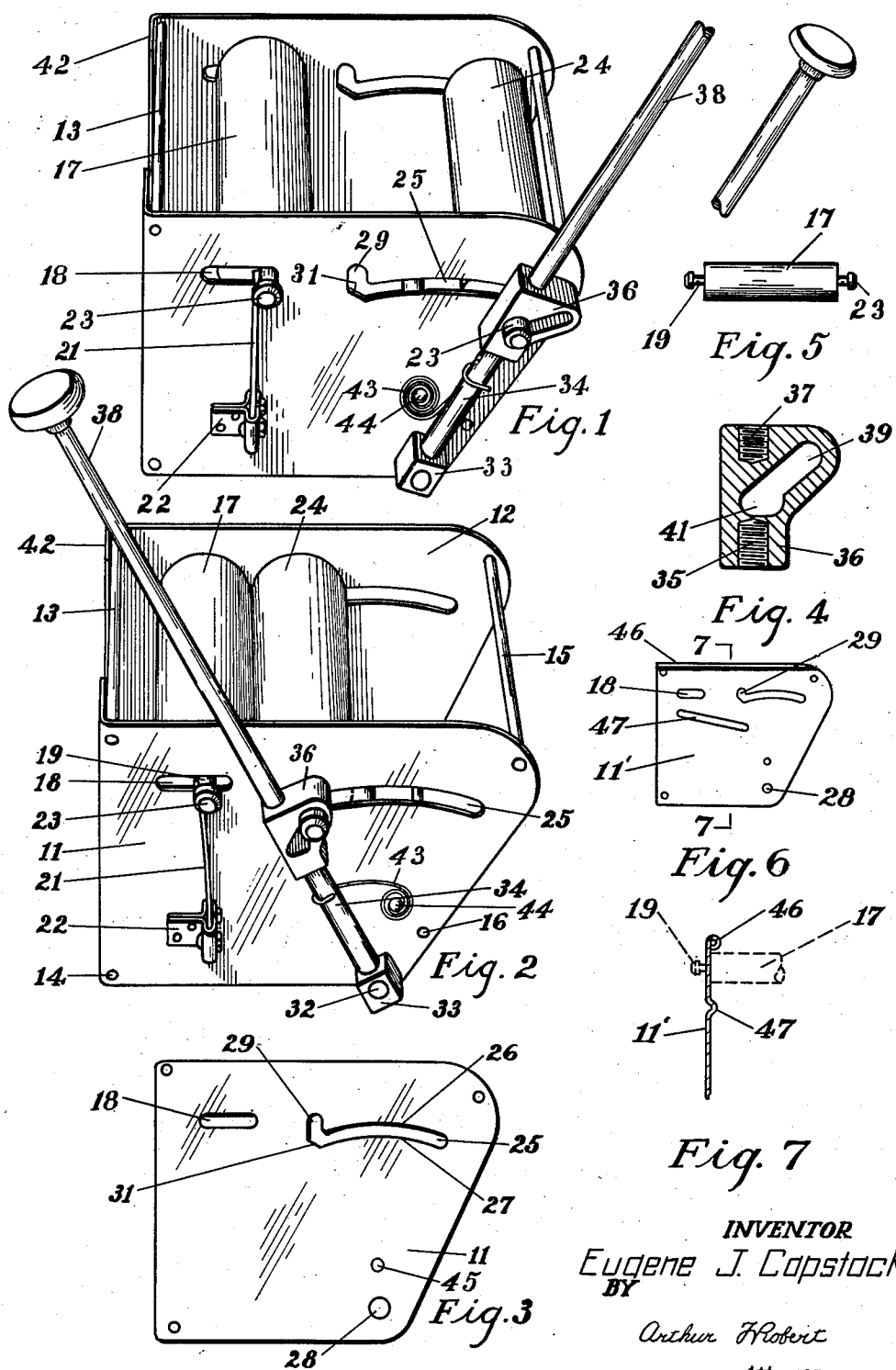


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E. J. CAPSTACK
SELF-LOCKING MOP WRINGER

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SELF-LOCKING MOP WRINGER

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This invention relates to a mop wringer.

The constructions of mop-wringers of the type adapted for use in buckets, sinks and like receptacles have been numerous and varied. Mop-wringers in present day use are usually of the foot-operated type or operated by a hand-lever, the pressure applied to the rolls in each case being left to the strength and energy of the operator. The foot-operated types require the use of one foot to hold the bucket and one foot to hold the lever operating the rolls with the result that the operator is placed in a somewhat clumsy position to pull the mop through the wringer rolls. The lever arrangements, so far as I am aware at present, have been such that the operator, in handling the lever, is also put in an awkward position as regards pulling the mop through the wringer rolls. Such leverage systems have been particularly undesirable for sink installations as the levers project into the area around the sink in a manner to hamper operations. Prior mop wringers of this general type have also been of relatively cheap construction and characterized by a relatively short life because of the hard use to which they are put.

In overcoming the aforesaid disadvantages of the prior art, it is an object of my invention to provide a novel mop wringer of durable construction and capable of standing hard usage wherein the wringer rolls are controlled to apply a substantially constant and uniform pressure to the mop independent of any variable pressure applied by the operator, the hands and feet of the operator, when the wringer is positioned as in a sink, being entirely free for pulling the mop through the rolls.

A further object of my invention is the provision of a novel mop-wringer wherein a mop can be dried to the maximum amount possible with wringer rolls with 15–20% less pull effort than required by conventional wringers, the roll pressure being applied with about one-third the effort required by conventional mop-wringers.

A further object of my invention is the provision of a mop wringer wherein novel means is provided to insure against spreading or fanning of the mop with a resultant increase in efficiency and insurance against entanglement of the mop strands with the device.

Still a further object of my invention is the provision of a novel mop wringer having wringer rolls of larger size than those hitherto employed with the result that less pull is required on the mop and the life thereof increased.

Further objects and advantages of my inven-

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tion will appear from the following description and claims taken in connection with the attached drawings wherein:

Fig. 1 is a perspective of a preferred embodiment of the invention with the rolls separated to receive the mop to be wrung.

Fig. 2 is a view similar to Fig. 1 with the rolls in closed position.

Fig. 3 is a side elevation of a side frame of the wringer of Fig. 1.

Fig. 4 is a side elevation in section of the roll operating cam of Fig. 1.

Fig. 5 is a reduced plan of one of the wringer rolls.

Fig. 6 is a side elevation of a modified reduced side frame.

Fig. 7 is a section taken on the line 7—7 of Fig. 6 with a roll shown in broken lines.

The embodiment herein shown, which it is to be understood is only by way of illustration, includes: a frame having front and rear ends and opposed side wall members, 11 and 12, connected in spaced relation by cross-rods 13, 14, 15 and 16; and a rear wringer roll 17 mounted for limited movement in guide slots 18, formed in the side frames, by axially projecting shafts or trunnions 19. The shafts or trunnions 19 project outwardly from the side wall members a distance equal to approximately the width of flat spring elements 21, rigidly secured in brackets 22 adjacent the bottom of the side frames and positioned to engage shafts 19 and resiliently force rear roll 17 toward the right end of slots 18 as viewed in Figs. 1, 2 and 3. With this arrangement, rear roll 17 is normally in the position shown in Fig. 1 but is able, when pressure in excess of that exerted by springs 21 is placed thereagainst, to move backwardly or rearwardly in slots 18.

Preferably, enlarged knobs 23 are secured to or made integral with the ends of shafts 19 to insure the correct positioning of the upper ends of springs 21.

A movable front wringer roll 24, also having axially extending shafts 19 with knobs 23 thereon, is mounted to move in opposed guide tracks 27 toward and from rear roll 17. Each guide track or slot 25 is defined by arcuate edges 26 and 27, formed substantially as arcs of circles having their approximate centers at the center of openings 28 in the side frames. The left ends of slots 25, as viewed in Figs. 1–3, terminate in substantially vertical portions 29, the upper ends of which terminate in a plane substantially coincident with that defining the upper edges of slots 18. The left edges of vertical slots 29 and the

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lower edges 27 of slots 25 are connected by a portion of the side frames formed with a surface or track 31 at an angle of approximately 30° from the horizontal.

A cross-shaft 32 is mounted in openings 28 in the side frames, a connecting block 33 being secured at each end thereof as shown in Figs. 1 and 2. Each block 33 is bored and tapped to receive a lever 34, the opposite end of each lever being threaded into a tapped aperture 35 in an operating cam 36. Cams 36 are bored and tapped at 37 in substantial axial alignment with aperture 35 to receive the threaded end of a hand operating lever 38, the lever being secured in either cam as desired.

Cam 36 is formed as shown in Fig. 4 with a slot 39 at an angle of about 50° to the axis of bores 35 and 37 joining a slot 41 having its bottom surface corresponding generally to the arc of curvature of edge 27 of slot 25. Slots 39 and 41 are of sufficient widths to receive shafts 19 of front roll 24.

When assembled in the manner shown in Fig. 1, shafts 19 of front roll 24 are supported on tracks 25 of the side frames and extend through slots 41 of cams 36. As hand lever 38 is moved toward the position of Fig. 2, the right surfaces of slots 41 function to move the front roll 24 to the left on tracks 25. Because of the corresponding arcuate shape of slot 41, jamming is avoided. When shafts 19 of front roll 24 reach track 31, they are cammed upwardly into vertical slot 29. Continued forward motion of cam 36 causes trunnions 19 to cam on the lower surface of slot 39, thereby forcing the rods up to the tops of vertical slots 29.

In wringing a mop, the wringer is positioned in a sink or bucket and secured therein as by bolting flanges 42 formed at the end of the side frame to the receptacle. The hand lever is placed in the position shown in Fig. 1 and the mop placed between the rolls. Lever 38 is then moved to the position of Fig. 2, the shafts 19 of front roll 24 moving upward in vertical slots 29. This movement may be assisted, if desired, by a slight withdrawal of the mop. The wet mop is then held between the rolls under the pressure exerted by springs 21, the front roll 24 being locked in place. Hand lever 38 may be released and both hands used to withdraw the mop. As rolls 17 and 24 are preferably of a diameter of about 2½" or more, it has been found possible to withdraw the mop with less force than required with prior wringers and at the same time, press as much or more water therefrom as prior wringers. Rolls 17 and 24 are of lengths such that they practically contact the adjacent surfaces of the side frames and are of sufficient diameter to cover the adjacent slots so that there is little possibility of the strands of the mop being caught at the ends of the rolls or in the slots.

By reason of the locking of the front roll 24 in place prior to the wringing of the mop, a constant and uniform quantity of water is removed from the mop each time since the pressure of the rolls is independent of the operator. In an installation such as a fixed sink, the operator has both hands and feet free to pull the mop through the rolls. I preferably employ a coil spring 43, fixed to and coiled about a stud 44 secured in an aperture 45 in a side frame, for the purpose of returning the unlocked front roll 24 assembly to the open mop receiving position, the free end of the spring being coiled about lever 34 as shown. Return springs may be mounted on one

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or both side frames. Thus when there is no mop between the rolls and the hand lever is moved to the position shown in Figure 2 and is released, sufficient force is stored in the spring 43 to move cam 36 in the direction away from roll 17, this movement of the cam plus the weight of the front roll 24 and the inclined form of slot 39 serving to force the roll 24 downwardly in the vertical slot to the arcuate portion 25, and the spring then operates through the cam to return the front roll 24 to the full open position. This is because, when the rolls are in wringing position, the line of centers between rolls 17 and 24 is substantially horizontal and spring 21 is not quite strong enough to cause roll 17 to support roll 24 against the bias of spring 43. However, the pull of the mop as it is drawn upwardly between the rolls is enough to overcome the retracting action of cam track 39 and spring 43 until the last strand is through the wringer, whereupon the spring and cam cause the front roll 24 to drop to arcuate groove 25 and the spring 43 withdraws the roll.

This is desirable to remove the water from the lower extremity of the mop which may be relatively thin as compared to the main mass of the mop.

In actual tests, it has been found that the rolls can be set or locked with about one-third the force required in prior wringers and that the mop can be withdrawn with from 15% to 20% less effort than required in prior wringers to produce a final water content of equal or less value.

Preferably the elements of the wringer are formed of stainless steel, the several parts being relatively heavy. With such a construction, it has been found that the present mop-wringer outlasts a number of conventional wringers and is actually more economical.

In Figs. 6 and 7, I have shown a modified frame 11' that may be used in place of frames 11 and 12 of the wringer of Fig. 1. This frame is designed to further eliminate the possibility of the strands of the mop entangling with the ends of the rolls.

The upper edge of frame 11' is rolled inwardly at 46 to form an inwardly extending projection over the wringer rolls, a portion of the frame beneath the rolls in wringing position being pressed inwardly as at 47. Projection 47 is angularly disposed as shown in Fig. 6 to lie closely adjacent but to clear the adjacent portions of the rolls in wringing position and roll 24 when the latter is moved to and from wringing position. Thus in wringing, projections 46 and 47, extending inwardly from the oppositely disposed side frames, function to keep the mop from spreading and force it toward the center of the rolls in a confining action which insures the full utilization of the applied pressure.

Having described my invention, I claim:

1. A mop wringer comprising: a support; a roll movably journaled in said support; a pair of opposed guide tracks on said support said tracks each having a vertical upwardly extending portion merging therewith adjacent said roll; means biasing said roll toward said tracks, a second roll guided by said tracks for movement toward and away from said first roll; and means for moving said second roll comprising a cam providing a track sloping upwardly away from the first roll in which said second roll is journaled, whereby the movement of the mop through the rolls holds the second roll in the vertical upwardly extending track portion.

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2. A mop wringer as specified in claim 1 wherein the cam track is enlarged at its lower end.

3. A mop wringer as specified in claim 1 having means biasing the second roll away from the first roll.

4. A mop wringer as specified in claim 1 wherein the vertical upwardly extending track portion is located at such distance from the first roll that the second roll is releasably held in said track by the first roll.

5. A mop wringer as specified in claim 1 wherein the means biasing the first roll comprises leaf springs.

6. A mop wringer as specified in claim 1 wherein said pair of opposed tracks comprise slots formed in the support.

7. A mop wringer as specified in claim 1 having ribs on the support extending below and between said rolls and overlapping the ends of the rolls.

8. A mop wringer comprising: a support; a roll movably journaled in said support; a pair of opposed arcuate guide tracks on said support, each track terminating adjacent said roll in a substantially vertical upward extension; means biasing said roll toward said tracks; a second roll guided by said tracks for movement toward and away from said first roll; a pivoted lever for moving said second roll including a cam having a track sloping upwardly away from the first roll in which said second roll is journaled.

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9. A mop wringer as specified in claim 8 having means biasing said lever away from the first roll.

10. A mop wringer as specified in claim 8 wherein the vertical upward extension of the track is located at such distance from the first roll that the second roll is releasably held therein by the first roll.

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