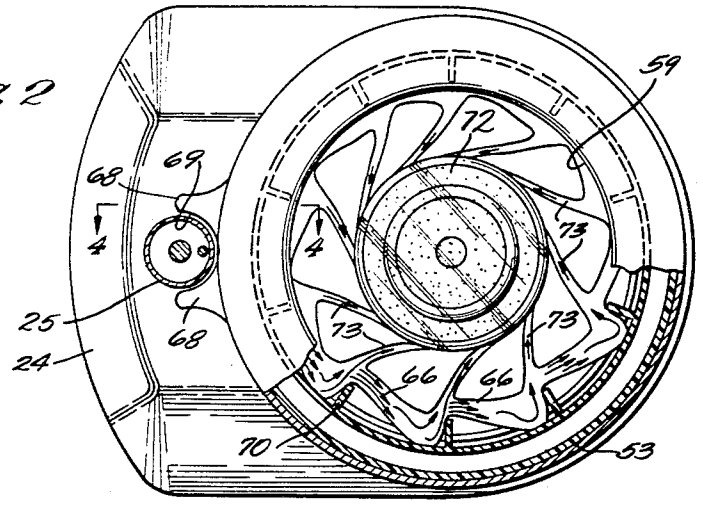
Dec. 3, 1968 J. F. GALLO 3,413,672

BASKET CAP FOR GLASS WASHING MACHINE

Filed May 29, 1967 2 Sheets-Sheet 1

Fig. 2



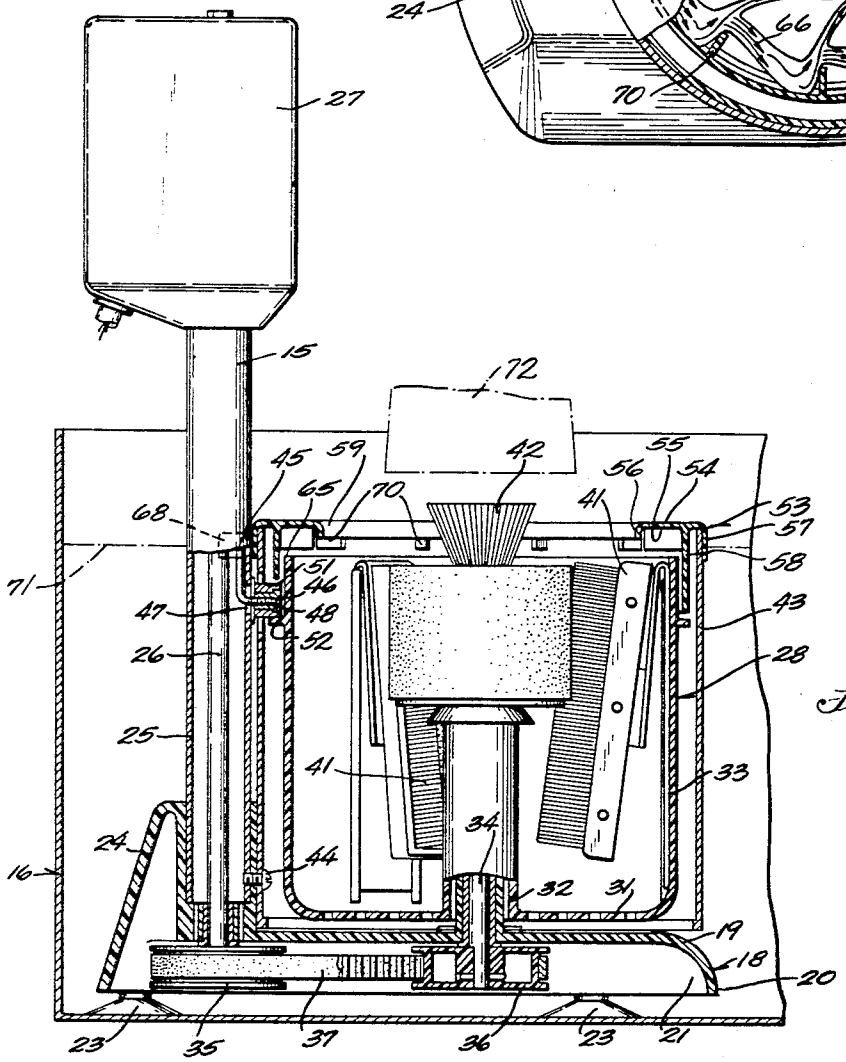


Fig. 1

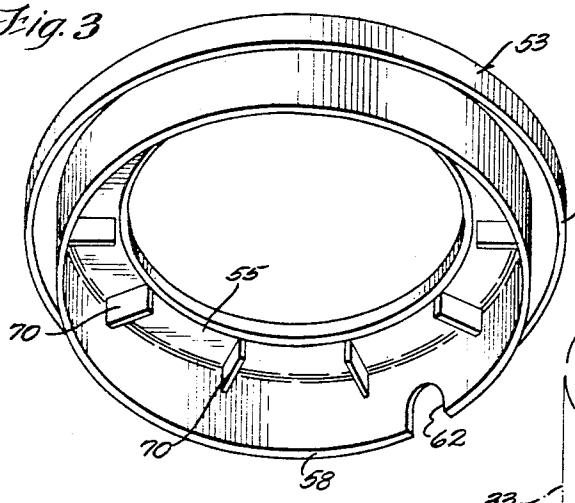
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BASKET CAP FOR GLASS WASHING MACHINE

Filed May 29, 1967 2 Sheets-Sheet 2

Fig. 3



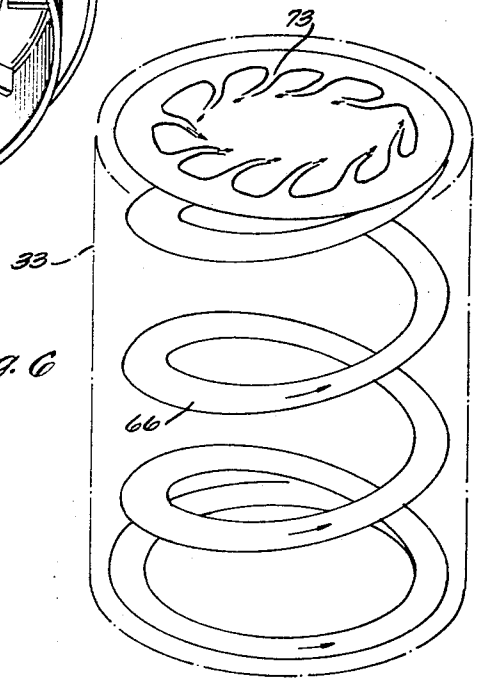


Fig. 6

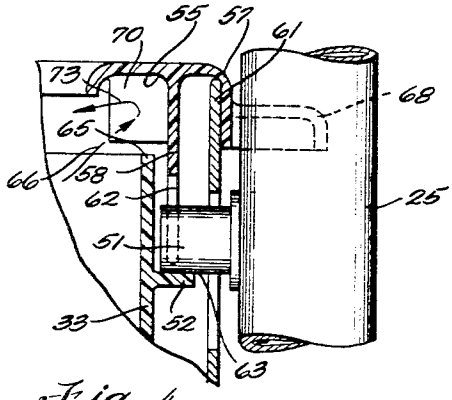


Fig. 4

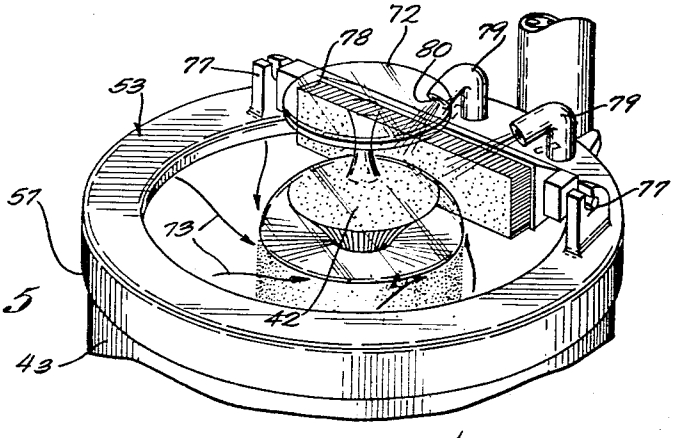


Fig. 5

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BASKET CAP FOR GLASS WASHING MACHINE

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Filed May 29, 1967, Ser. No. 642,073
10 Claims. (Cl. 15—76)

ABSTRACT OF THE DISCLOSURE

Disclosed herein is a cap or bumper ring for a glass washing machine of the type having a motor driven basket and brush assembly which is rested in a sink basin or tank partially filled with water. The cap is constructed of an impact resistant plastic and is in the form of an annular ring with inner, outer and intermediate concentric depending flanges. The intermediate flange is relatively deep as compared with the other flanges and is located outside the lip or rim of the basket and extends below the rim to prevent lemon rinds, debris, etc., from getting into the area of the motor switch actuating arm and to prevent water from overflowing the basket rim. Radial vanes or jetties located on the undersurface of the cap return the centrifugally swirling water into the center of the basket as it climbs to the top. The vanes deflect the water in the form of a series of high velocity water jets having an inwardly curved trajectory. In one embodiment, the cap is provided with upstanding tabs to mount a stationary brush which projects inwardly toward the center of the basket and which is utilized to clean the stem of the glass.

Background of invention

The present invention relates to improvements and further developments of the subject matter disclosed in my previous patents No. 3,204,273 and 3,315,294, and in particular to an improved cap, guard or bumper ring for a glass washing machine.

Summary of invention

The cap of the invention includes an annular top ring with inner, outer and intermediate concentric depending flanges. The outer flange is adjacent the outer margin of the top plate and the inner flange is adjacent the inner margin. The intermediate flange is spaced between the inner and outer shallow flanges. The intermediate flange provides a shield to prevent debris from fouling the motor switch actuating lever located adjacent the basket.

The deep flange also guides basket movement and eliminates the need for the guide plugs disclosed in my Patent No. 3,315,294 and accordingly affords easy removal of the basket for cleaning purposes. The close tolerance of the deep flange to the basket wall also minimizes water overflow over the basket rim.

Rotation of the basket during operation causes a centrifugal swirling of the water contained therein. The cap is provided with radially extending vanes or jetties located between the deep or intermediate flange and the inner flange. The vanes create a series or plurality of high velocity water jets which flow inwardly in a curved path or trajectory toward the center of the basket. This jet action assists in cleaning the stems or bases of glasses which ordinarily are not engaged by the rotating brushes in the basket. The water jets replace the water in the center region of the basket which was centrifugally removed or exhausted during basket rotation and thus enhance the cleaning capacity of the brushes.

In a further embodiment of the invention, the cap is provided with upstanding tabs molded integrally with the annular top ring which facilitate the mounting of a stationary brush which extends inwardly toward the center of the basket to engage and clean the stem or base of a glass which is rotating with the basket. A pair of tubes or elbows direct a water flow on the brush.

Further objects and advantages of the present invention will become apparent from the following disclosure.

Drawings

FIGURE 1 is a partially broken away side elevational view of a glass washing machine embodying the invention.

FIGURE 2 is a partially broken away plan view of the glass washing machine shown in FIGURE 1.

FIGURE 3 is a bottom perspective view of the glass washing machine cap in accordance with the invention.

FIGURE 4 is an enlarged fragmentary sectional view along line 4—4 of FIGURE 2.

FIGURE 5 is a fragmentary perspective view of a further embodiment of the invention.

FIGURE 6 is a diagrammatic view of the water flow path within the basket and cap.

Detailed description

Although the disclosure hereof is detailed and exact to enable those skilled in the art to practice the invention, the physical embodiments herein disclosed merely exemplify the invention which may be embodied in other specific structure. The scope of the invention is defined in the claims appended hereto.

Referring to the drawings, there is shown a glass washing machine which is designated **15** and which, except for the cap **53** hereinafter described in detail, can be constructed in accordance with my Patent No. 3,315,294. The glass washing machine **15** is shown located in a sink or basin **16** which has a horizontal bottom wall **17**. The machine includes a base **18** having a horizontal top wall **19** and a rounded downturned marginal flange **20** forming an open bottom chamber **21**. The bottom wall **17** is provided with suction cups **23** to secure the washing machine to the bottom wall of the sink, thus to firmly support the base **18**. The base **18** includes an upstanding embossment **24** which receives a tubular column or post **25** which encloses a drive shaft **26** driven by a motor and drive train located within a motor housing **27**.

The glass washing machine has rotary brushing means which include an open topped cup-like member or basket **28** which has an apertured bottom wall **31** from which upstands a central tubular hub or sleeve **32** and a concentric outer wall **33**. The tubular hub or sleeve **32** surrounds a shaft **34**. Rotation of the basket by the motor in housing **27** is afforder by pulleys **35** and **36** respectively located on the shafts **26**, **34** and a belt **37** reeved in the pulleys.

The basket **28** also includes three outside glass cleaning brushes **41** which can be detachably mounted on the basket wall **33** in accordance with the disclosure in my Patent 3,315,294. The hub **32** also supports a central interior cleaning brush **42**.

The basket **28** is surrounded by a concentric cylindrical and stationary open-topped outer casing or shell **43** which is supported on the base **18** and secured to embossment **24** by a screw **44**.

The motor is actuated by a switch (not shown) located within the motor housing **27**. The switch is actuated by a switch actuating rod **45** which extends longitudinally within the interior of tubular post **25**. The rod **45** has a laterally bent lower end **46** which extends through a short vertical slot **47** in the post **25** and is threaded to receive a sleeve nut **48** which carries thereon a follower or nylon roller **51**. The roller **51** rides on the upper surface of a peripheral flange **52** which extends outwardly from the side wall **33** of the basket **28**. The basket is normally biased or urged upwardly under pressure of a coil spring (not shown) located within hub **32** to maintain the switch actuating rod **45** in a raised position and the motor switch

in a normally open condition when the machine is not in use. The motor switch is actuated by insertion of a glass over the central brush **42** and depressing the basket slightly by downward pressure permitting the switch rod **45** to descend slightly and allow the switch to assume its closed position and energize the motor. Problems have been encountered in preventing fouling of the switch actuating rod **45** and the roller **48** by debris.

In accordance with the invention, there is provided a basket cap, or bumper ring which is designated generally **53** and which is desirably injection molded of a high resistant plastic such as polypropylene. The cap includes an annular top ring **54** which has an undersurface **55** and concentric inner, outer and intermediate depending flanges respectively **56**, **57** and **58**. The inner flange **56** forms the inner margin of the cap **53** and is rounded to form a smooth throat **59** or entrance to the basket. The outer depending flange is adjacent the outer margin of the top plate **54** and is located exteriorly of the shell or casing **43** and frictionally fits with the upper edge **61** of the shell to secure the cap in place. The intermediate flange **58** is relatively deep as compared with the inner and outer flanges **56**, **57** and is located exteriorly of the basket wall **33** and extends downwardly to a position overlapping the top margin of the basket and slightly above the peripheral switch actuating flange **52**. The intermediate flange **58** serves as a guide or support for the upper edge of the basket for guiding basket rotation and preventing lateral displacement of the basket as a glass is urged against the side cleaning brushes **41**. The deep flange accordingly obviates the need for the cylindrical plugs disclosed in my Patent No. 3,315,294, thus affording easy basket removal for cleaning purposes.

The intermediate deep flange **58** is provided with a notch **62** which receives the nylon roller **51** thereby permitting the flange **58** to extend downwardly to the lower edge **63** of the roller. Thus, the deep intermediate flange **58** functions as a shield to prevent solids or other particles removed from the glass from traveling into the area of the nylon roller or peripheral flange **52** to cause accidental actuation or fouling of the motor switch. The deep flange also minimizes outflow of the water over the basket rim **65** as hereinafter described.

To direct the centrifugally swirling water toward the center of the basket and to enhance the cleaning capability of the washing machine as hereinafter described, the cap **53** is provided with a series of substantially radially disposed jetties or vanes **70** (FIGS. 3, 4). The vanes **70** are spaced circumferentially around top plate **54** and extend radially inwardly toward the axis of rotation of basket **28**. The vanes **70** can depend from the undersurface **55** as shown in FIGURE 3 or they can extend from flange **58** and be spaced slightly from undersurface **55**.

To secure the cap **53** against angular displacement relative to the outer casing **43** and to assist in aligning the notch **62** around the nylon roller **51**, the outer flange **57** is provided with two spaced and outwardly projecting ears **68** which form an intermediate gap or notch **69** which receives the tubular post **25**.

When the glass washing machine is in use it is normally operated in a sink basin **16** with the water level **71** slightly beneath the cap **53** as shown in FIGURE 1. Water flows into the basket from the sink basin through the apertured basket bottom wall **31**. When the motor is actuated by inserting a glass and depressing the basket, the rotating basket together with the side brushes located in the basket causes a centrifugal swirl **66**, as shown in FIGURE 6, of the water in the basket. Since the basket is rotating at speeds between 250 and 300 revolutions per minute, the centrifugal forces involved cause the water to climb the wall **33** to the basket **28** until the water reaches the undersurface **55** of the cap **53**. The deep intermediate flange **58** minimizes outflow of water over the basket rim **65**, as shown in FIGURE 4. The centrifugally pressurized and swirling water climbing the basket wall impinges on the sides of the stationary vanes **70**. The vanes **70** act as water baffles to deflect the water radially inwardly and create a plurality of radial water jets **73** as shown in FIGURE 5, FIGURE 6 to assist in cleaning the base or stem of the glass **72**. The jets **73** may merge laterally to form a continuous funnel-shaped web or umbrella of water pouring onto the central zone of the basket.

Rotation of the basket **28** also causes a vortex around the central brush **42**. The water jets replace the water which is centrifugally exhausted from the region surrounding the central brush by basket rotation. Thus, the return of water in the form of high velocity water jets to the region surrounding the central brush continuously wets down the brushes, flushes dirt from the glass and brushes and enhances and promotes the cleaning action of the brushes on the glass.

In a further embodiment of the cap **53** of the invention as shown in FIGURE 5, the cap **53** is provided with two upstanding brackets **77** integrally molded to the cap to serve as mounting supports for a fixed brush **78**. The brush **78** projects inwardly toward the center of the basket and cleans the base or stem of a glass **72** when the glass **72** is partially released from the grip of the operator and permitted to rotate with the basket **28**. The cap **53** also includes two upstanding hollow tubes or elbows **79** which extend through the top plate **54** of the cap **53** and receive centrifugally pressurized water from beneath the cap **53** and direct the water over and on the brush **78**.

I claim:

1. In a glass washing machine having a rotary basket with brushes therein, a stationary cap at the top of the basket and a motor for rotating said basket and causing a centrifugal upward swirl of the water contained in said basket when said motor is energized, the improvement in which said cap comprises an annular top ring having an undersurface and inner and outer edges, concentric outer and intermediate flanges depending from said top ring, said outer flange depending from said outer margin, said intermediate flange extending below the upper margin of said basket and spaced radially from said basket so as to guide basket rotation, and a series of circumferentially spaced radially extending vanes depending from said top ring and located between said intermediate and inner flanges and disposed to deflect the swirling water in said basket inwardly in the form of water jets which return the water toward the center of the basket.

2. In a glass washing machine having a rotary basket with brushes therein, a stationary cap at the top of the basket and a motor for rotating said basket and causing a centrifugal upward swirl of the water contained in said basket when said motor is energized, the improvement in which said cap comprises a series of circumferentially spaced radially extending vanes disposed to deflect the swirling water in said basket inwardly in the form of water jets which return the water toward the center of the basket, and wherein said cap has two upstanding spaced apart ears, and a stationary brush removably secured to said ears, said brush projecting inwardly toward the center of said basket.

3. The improvement of claim **2** including a water supply tube for said brush, said tube having an inlet beneath said top plate and an outlet above said stationary brush.

4. A cap for a glass washing machine having an outer casing and a rotating basket therewithin, said cap being mounted on said casing and comprising an annular top ring having an undersurface and inner and outer margins and concentric inner, intermediate and outer flanges depending from said top ring, said inner and outer flanges being relatively shallow and said intermediate flange being spaced between said inner and outer flanges and being relatively deep and disposed exteriorly of said basket and overlapping the upper margin of the basket to guide basket rotation.

5. A cap in accordance with claim **4** including two upstanding spaced apart ears, and a stationary brush re-

movably secured to said ears, said brush projecting inwardly toward the center of said ring.

6. A cap in accordance with claim 4 including a series of circumferentially spaced radially extending vanes, said vanes being located between the intermediate flange and the inner flange.

7. A cap in accordance with claim 6 in combination with a glass washing machine having a rotatable basket and a stationary cylindrical casing concentrically surrounding said basket and wherein said outer flange of said cap frictionally engages said casing and said intermediate flange extends between said casing and said basket.

8. In a glass washing machine having a base, rotary brushing means projecting above and rotatably mounted on said base and including a depressible basket having a cylindrical wall with an exterior peripheral flange at its upper portion, a stationary cylindrical open-topped casing concentrically surrounding said basket and fixed to said base, basket-driving means including an electric motor, motor controlling switch means including a follower riding on said flange to be actuated upon depression of said basket, and spacing means carried by said casing and interposed between said casing and basket above said flange to limit lateral deflection of said basket, the improvement in which said spacing means comprises a cap

having an inner edge and outer and intermediate depending concentric flanges, said outer flange frictionally engaging said casing, and said intermediate flange extending between the basket and said casing to minimize overflow of water and debris from said basket and to guide basket rotation.

9. The improvement of claim 8 including a series of circumferentially spaced radially extending vanes located between said intermediate flange and said inner margin of said cap.

10. The improvement of claim 8 wherein said motor is supported by a tubular column upstanding from said base, said outer flange having outwardly projecting ears which form a notch embracing said tubular column.

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