Nov. 19, 1963 R. H. MUSSER 3,111,019

CHAMOIS WRINGER

Filed Feb. 19, 1962

2 Sheets-Sheet 1

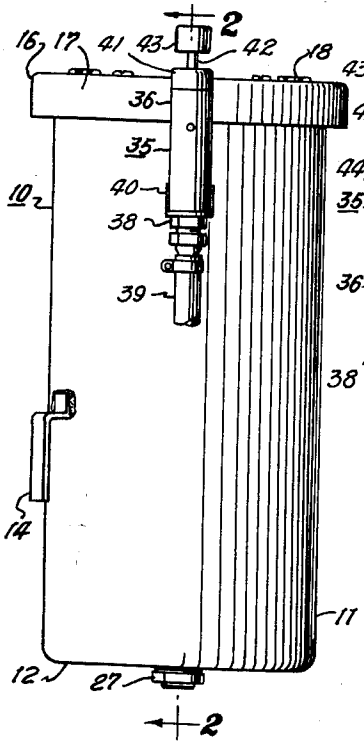


Fig. 1

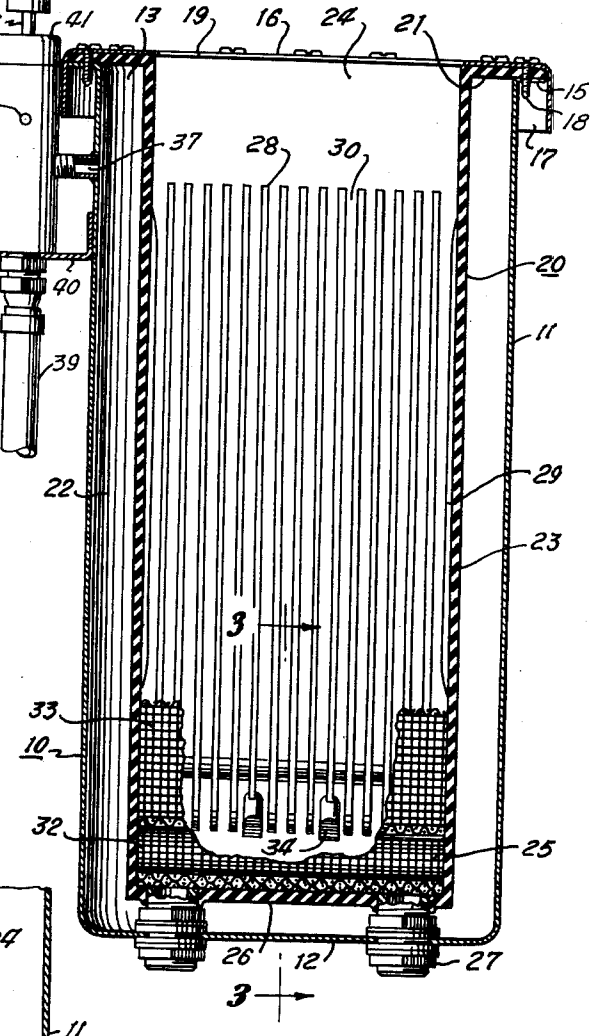


Fig. 2

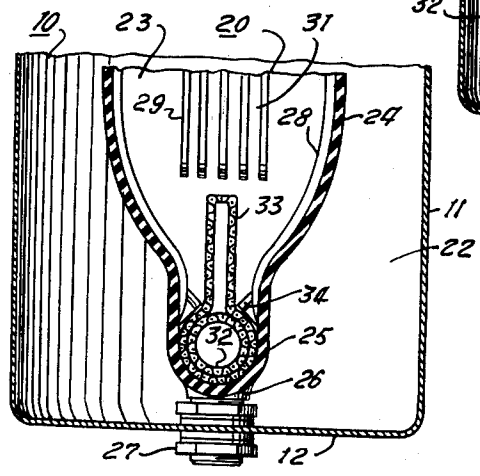


Fig. 3

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CHAMOIS WRINGER

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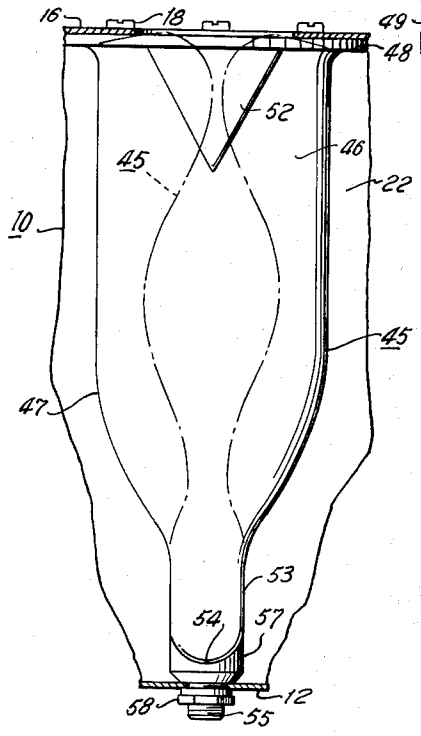


Fig. 5

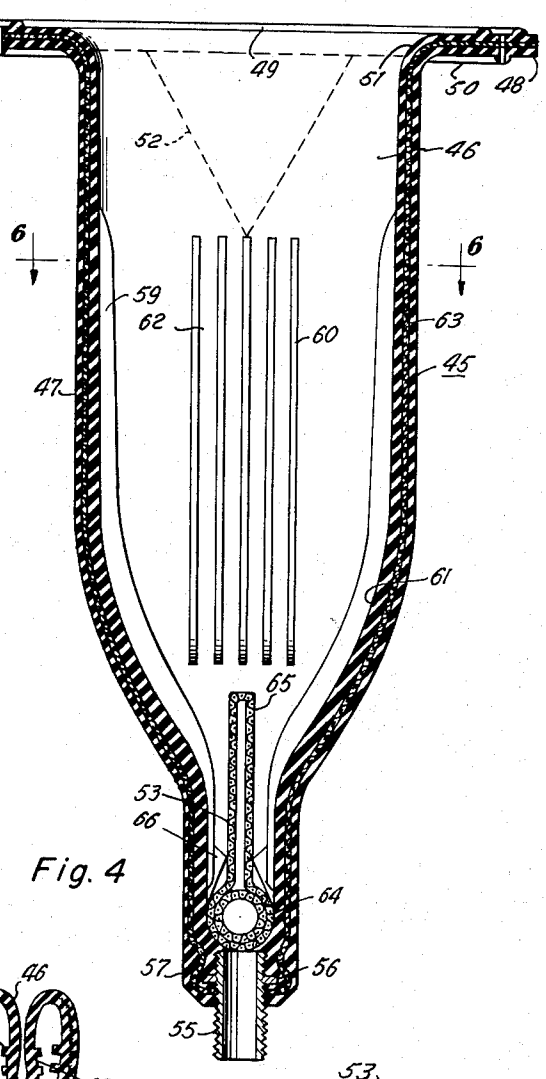


Fig. 4

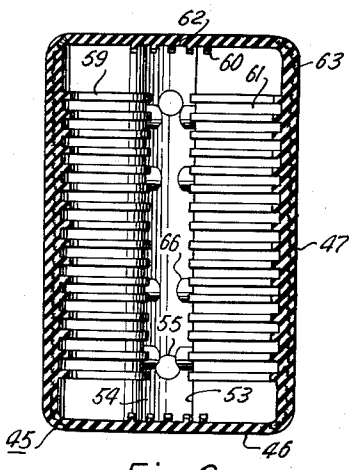


Fig. 6

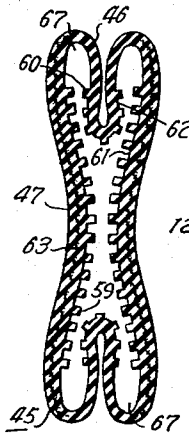


Fig. 7

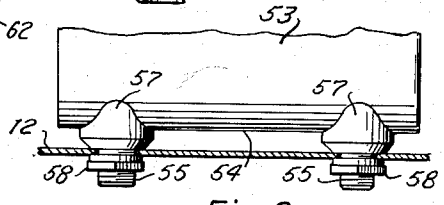


Fig. 8

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3,111,019

CHAMOIS WRINGER

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Filed Feb. 19, 1962, Ser. No. 174,196
14 Claims. (Cl. 68—242)

This invention relates to new and useful improvements in wringers for chamois, wiping cloths and the like.

One object of the invention is to provide an improved wringer for chamois and wiping cloths after washing and/or rinsing thereof having means actuated by air or other fluid under pressure to squeeze excess moisture from the chamois and cloths whereby the wringer may be employed conveniently by service stations and garages or any place having a supply of compressed air or other fluid under pressure.

Another object of the invention is to provide an improved chamois wringer of the type having an open top bag of flexible material for receiving the chamois to be wrung and surrounded by a chamber adapted to receive air or other fluid under pressure for collapsing the bag to squeeze water or liquid from the chamois, wherein said bag has a drain opening in its bottom and means between its side walls for preventing complete flattening of said bag and for conducting the water or liquid to the bottom thereof.

An important object of the invention is to provide an improved wringer, of the character described, wherein the collapsible bag is rectangular in cross-section and has opposed side walls connected by end walls of greater flexibility than the side walls whereby the end walls flex inwardly prior to the inward flexing of said side walls so as to center the chamois, said end walls folding inwardly upon themselves when said side walls flex inwardly so as to form drain passages at the corners of said bag for conducting liquid to the bottom thereof.

Another important object of the invention is to provide an improved wringer, of the character described, wherein the upper portions of the side walls of the bag are of greater flexibility than the lower portions thereof so as to flex inwardly before said lower portions for directing the liquid downwardly and confining the chamois as well as the liquid against ejection through the open top of said bag whereby a closure for said top is unnecessary.

A particular object of the invention is to provide an improved wringer, of the character described, wherein the collapsible bag has upright grooves extending longitudinally of its side walls for conducting water or liquid squeezed from the chamois to the bottom of said bag and a porous member for preventing complete flattening of said bag as well as for coacting with the grooves.

A further object of the invention is to provide an improved wringer, of the character described, wherein the porous member has a tubular portion extending transversely of the bag adjacent its drain opening to prevent collapsing of the bottom of said bag and to direct water or liquid into the opening.

A construction designed to carry out the invention will be hereinafter described, together with other features of the invention.

The invention will be more readily understood from a reading of the following specification and by reference to the accompanying drawings, wherein examples of the invention are shown, and wherein:

FIG. 1 is a side elevational view of a chamois wringer constructed in accordance with the invention,

FIG. 2 is an enlarged, transverse, vertical, sectional view, taken on the line 2—2 of FIG. 1,

FIG. 3 is a transverse, vertical, sectional view, taken on the line 3—3 of FIG. 2,

FIG. 4 is a transverse, vertical, sectional view, taken at a right angle to FIG. 2, of a preferred construction of the collapsible bag of the wringer,

FIG. 5 is a side elevational view of the preferred bag, being shown collapsed in broken lines, and a portion of the housing of the wringer being shown in section,

FIG. 6 is a horizontal, cross-sectional view, taken on the line 6—6 of FIG. 4, with the porous reinforcing member being omitted,

FIG. 7 is a view, similar to FIG. 6, of the preferred bag in its collapsed condition, and

FIG. 8 is a side elevational view of the bottom portion of the bag, the bottom wall of the housing being shown in section.

This application is a continuation-in-part of my co-pending application filed August 4, 1961, Serial No. 129,340.

In the drawings, the numeral 10 designates the upright casing or housing of a wringer for chamois, wiping cloths and the like which has a cylindrical side wall 11, a flat, horizontal bottom wall 12 and an open, upper end 13 (FIG. 2). An angular bracket or hook 14 is mounted on the side wall 11 to permit hanging of the housing within a tub or container (not shown) of water and/or cleansing solution. The upper end 13 of the housing 10 is surrounded by an external, radial flange or lip 15 for supporting a top plate or cap 16 which may be angular in cross-section so as to have an annular, external lip or skirt 17 depending in spaced, concentric relation to the side wall. A plurality of screws 18 fasten the cap 16 to the flange 15, and said cap has a large, rectangular opening 19 therein to permit access to the interior of the housing.

An open-top bag or tubular membrane 20, of rubber, plastics or other suitable flexible, impervious material, is suspended within the housing 10 by an external, radial flange or lip 21 at its upper end clamped between the flange 15 of said housing and the overlying cap 16 by the screws 18 so as to close and seal the upper end of said housing and provide a compartment or chamber 22 therein. Except for the circular periphery of its lip 21, the bag 20 is of elongate, rectangular cross-section, complementary to the cap opening 19, and has substantially flat, upright end and side walls 23 and 24 spaced from the housing side wall 11 (FIGS. 2 and 3). As shown by the numeral 25, a reduced sump is formed in the bottom of the bag by reducing the width of the lower end portions of its end walls 23 and by the lower end portions of its side walls 24 being curved inwardly and converging to form a curved or rounded bottom wall 26 for said bag and its sump. The bottom wall 26 is adjacent the bottom wall 12 of the housing and a pair of outlet fittings 27 extend through said walls to permit draining of the bag 20 and its sump 25 as well as to secure said bag to said housing bottom wall. To further facilitate draining of the bag and prevent complete flattening upon collapsing thereof, a plurality of internal, spaced projections or ribs 28 and 29 extends longitudinally of the side and end walls so as to provide flow channels or grooves 30 and 31 therebetween. Preferably, the ribs are parallel and the side wall ribs 28 are of greater length than and extend above

and well below the end wall ribs 29 into the upper portion of the sump 25.

As shown in FIGS. 2 and 3, the sump is substantially cylindrical and is reinforced by a porous, tubular member 32, of wire or plastics mesh or other suitable foraminous or reticulated material, which is complementary to and of substantially the same length as said sump. A coextensive, rectangular extension 33, of the same material, upstands from the member 32 between and in spaced relation to the lower portions of the side wall ribs 28 and below the end wall ribs 29 for preventing complete collapsing of the lower portion of the bag 20 immediately above its sump 25. If desired, the tubular member may have several concentric layers and the extension 33 may be made integral with the outer layer thereof. Accidental displacement of the member 33 from the sump is prevented by overlying projections or enlargements 34 at the lower ends of the ribs 28; however, insertion and removal of said member is permitted by the flexibility of the bag.

The chamois or wiping cloth to be wrung is dropped into the bag 20 through its open top and excess water or moisture is squeezed therefrom by collapsing and flattening of said bag. Due to the tubular member 32, the chamois or cloth is prevented from falling into the sump 25 and blocking the drain openings provided by the outlet fittings 27. Also, the member prevents collapsing of the sump. The ribs 28 as well as the ribs 29 and the extension 33 of the member coact to prevent complete flattening of the bag and the water squeezed from the chamois is directed to the sump by the channels 30 and 31 between said ribs as well as by said extension. For collapsing the bag, the chamber 22 is adapted to be filled with air or other fluid under pressure. It is noted that the material of the bag is relatively thick and has sufficient elasticity or resiliency to cause said bag to resume its original shape when the pressure in the chamber is released.

For controlling the admission and exhaust of air or other fluid to and from the chamber 22, a manual control valve 35 is provided and includes an elongate body 36 communicating with the upper portion of said chamber through a lateral nipple or pipe 37. An inlet fitting 38 is fastened to the lower or one end of the body 36 for connecting thereto a hose 39 which leads from a source of air or fluid supply (not shown). Preferably, the outer portion of an angular bracket 40, mounted on the housing side wall 11, is confined between the fitting 38 and the lower end of the valve body for supporting said body in an upright position. The opposite or upper end of the body 36 carries an end cap 41 through which a valve stem 42 projects for supporting an enlarged head or knob 43. One or more outlet ports 44 are formed in the intermediate portion of the valve body for exhausting fluid from the chamber 22.

Air or other fluid under pressure is supplied to the housing chamber 22 by manipulation of the manual control valve 35 so as to collapse the bag 20. When the pressure in the housing chamber exceeds a predetermined amount, the valve is adapted to vent the excess pressure through the outlet ports 44. This relief of the pressure prevents the collapsible bag from being exposed to excessive pressure which might rupture or otherwise damage said bag. As soon as the pressure in the housing chamber is sufficient to collapse the bag, the valve closes until it is again opened by depressing the valve stem 42. Due to its resiliency, the bag 20 returns to the position shown in FIGS. 2 and 3 when the pressure in the chamber is relieved. Manifestly, the use of air is preferred since it may be exhausted safely to the atmosphere. As will be explained, the end walls 23 of the bag are of greater flexibility than the side walls 24 so as to flex and fold inwardly upon themselves between said side walls and thereby center the chamois and provide drain passages at the corners of the bag. Also, the upper portions of the side walls are of greater flexibility than the lower portions thereof so as to flex inwardly before said lower portions for confining the contents of the bag against ejection through its open top and directing the liquid downwardly whereby a closure for the bag top is unnecessary.

Preferably, the collapsible bag of the chamois wringer is constructed as shown by the numeral 45 in FIGS. 4–7. This preferred bag is similar to the bag 20 and includes similar end and side walls 46 and 47 with a similar external, radial flange or lip 48 at its open top for clamping confinement between the flange 15 of the housing 10 and the overlying cap 16 by the screws 18 (FIG. 5). A pair of concentric ribs 49 are formed on the upper surface of the lip 48 and an annular rib 50 on the lower surface of said lip is disposed between the concentric ribs for sealing the open upper end of the chamber 22 of the housing as well as reinforcing said lip (FIG. 4). As shown by the numeral 51, the juncture between the lip and walls of the bag is arcuate or curved to reduce the possibility of fatigue due to flexing of said bag. The bag 45 is of elongate, rectangular cross-section (FIG. 6) complementary to the cap opening 19, and the upper end portions of its end walls 46 are reinforced by triangular portions or gussets 52 of increased thickness.

A reduced sump 53 is formed in the bottom of the bag in the same manner as the sump 25 of the bag 20 and has a similar rounded bottom wall 54 (FIGS. 5 and 8) adjacent the bottom wall 12 of the housing. To permit draining of the bag 45 and its sump 53, a pair of externally screwthreaded outlet fittings or nipples 55 extend through the bottom walls 12 and 54 and have suitable nuts 56 on their upper end portions embedded in the material of said bottom wall 54 so as to attach the nipples to said bag. As shown by the numeral 57, the material of the bag bottom wall is bonded to and molded around the upper portions of the nipples 55 for engaging the housing bottom wall to seal off around said nipples. Nuts 58 are adapted to be threaded on the lower end portions of the nipples to secure the bottom of the bag to the housing and prevent upward displacement of said bag upon the admission of fluid under pressure to the chamber 22 of said housing.

In order to facilitate draining of the bag 45 and prevent complete flattening on collapsing thereof, its side and end walls 47 and 46 have longitudinal projections or ribs 59 and 60 and flow channels or grooves 61 and 62, similar to the ribs 28 and 29 and channels 30 and 31 of the side and end walls 24 and 23 of the bag 20. The side wall ribs 59 are of greater length than the end wall ribs 60 so as to extend thereabove and well therebelow into the upper portion of the sump 53 for increasing the rigidity of the side walls. Also, the rigidity of the side walls 47 is increased by said walls being of greater thickness than the end walls 46 as well as by the ribs 59 being of greater thickness than the ribs 60. These thicknesses and consequent rigidity increase progressively downwardly whereby the lower portions of the side walls are of less flexibility than the upper portions, the portions of said walls immediately above the sump being of greatest rigidity.

Although the increased thickness of the side walls extends into the sump and throughout the bottom wall 54, the rib thickness in said sump may diminish. It is noted that the ribs 59 terminate well below the upper end of the bag, approximately at the bottom apex of the reinforcing gussets 52 of the end walls, so that the extreme upper portions of the side walls are of greater flexibility than the remainder thereof. Also, the end wall ribs 60 terminate well above the sump 53. It is pointed out that the rigidity of the side walls 47 is increased by having suitable reinforcing material 63 embedded therein and that this material extends into and reinforces the bottom wall and corners of the bag as well as the portions of its lip 48 at the upper ends of said walls. Also, the rein-

forcing material 63 prevents the upper portion of the bag from protruding above the lip 48 when pressure is applied.

A reinforcing member 64, similar to the member 32 and having a similar extension 65, is adapted to be removably confined in the sump 53 by overlying enlargements or projections 66 at the lower ends of the side wall ribs 59 to prevent collapsing of said sump and complete collapsing of the portions of the side walls 47 immediately above said sump. Also, the provision of two nipples assists in preventing collapsing of the sump as well as damaging or upward displacement of the reinforcing member. The member 64 prevents chamois or wiping cloths from falling into the sump and blocking the drain openings provided by the nipples 55. The ribs 59 prevent complete flattening of the bag 45 and the liquid squeezed from the chamois is directed to the sump by the channels 61 as well as by the channels 62 between the end wall ribs 60.

The primary drains, however, are provided by passages 67 which are formed at the four corners of the bag upon collapsing thereof. Due to the greater flexibility of the end walls 46, the admittance of fluid under pressure to the chamber 22 of the housing initially causes inward flexing of said walls. The greater rigidity of the side walls prevents inward flexing thereof until portions of the end walls are disposed therebetween. As a result, the end walls fold inwardly upon themselves when the side walls flex inwardly so as to center the chamois as well as form the corner passages 67. The reinforcing gussets 52 prevent excessive upward bulging of the upper portions of the end walls and consequent damaging of their junctures with the lip 48 of the bag. Since the upper portions of the side walls are of greater flexibility than the lower portions thereof, said upper portions flex inwardly before said lower portions so as to prevent the trapping of liquid above the chamois being wrung or squeezed, particularly, in the channels 61 of said walls and confine the liquid and chamois against ejection through the top of the bag whereby said bag top remains open for ready access. Since the corner passages remain open during collapsing of the bag, the end wall ribs 60 and channels 62 are not essential and may be omitted.

Although the medial portions of the side walls are relatively rigid, said portions are prevented from being flattened by the chamois therebetween, as shown in broken lines in FIG. 5; however, said side walls are flattened sufficiently to wring the chamois. It is pointed out that the bag collapses in the same manner each time the wringer is operated due to the rectangular shape of said bag, its relatively flexible end walls and relatively rigid side walls and that the inward folding of said end walls is essential to this uniform collapsing and thorough wringing of the chamois.

The foregoing description of the invention is explanatory thereof and various changes in the size, shape and materials, as well as in the details of the illustrated construction may be made, within the scope of the appended claims, without departing from the spirit of the invention.

What I claim and desire to secure by Letters Patent is:

1. A wringer for chamois, wiping cloths and the like including a housing having an opening in its top, an impervious flexible bag secured in the housing against bodily displacement and having an open top communicating with the top opening of said housing, the bag being of rectangular cross-section and having upright end and side walls spaced from said housing, a drain outlet in the bottom of said bag extending to the exterior of said housing, means for sealing off between the tops of said bag and housing to provide a chamber between said housing and the walls of said bag, and means for supplying fluid under pressure to the chamber for collapsing said bag to squeeze moisture from the contents thereof, the end walls being of greater flexibility than the side walls of said bag so as to flex inwardly before inward flexing of said side walls whereby said end walls fold inwardly upon themselves between said side walls to center said bag contents and provide longitudinal drain passages at the corners of said bag when said side walls flex inwardly.

2. A wringer as set forth in claim 1 wherein the upper portions of the side walls of the bag are of greater flexibility than the lower portions thereof so as to flex inwardly before said lower portions for confining the contents of said bag and directing the moisture downwardly whereby the top of said bag may remain open to facilitiate access to the interior thereof.

3. A wringer as set forth in claim 2 wherein the upper portions of the side walls of the bag are of less thickness than the lower portions thereof so as to be of greater flexibility.

4. A wringer as set forth in claim 2 including upright spaced ribs projecting inwardly of the side walls of the bag to prevent complete flattening thereof upon collapsing of said bag and to increase the rigidity of said side walls, the ribs providing upright channels for conducting moisture to the lower end portion of said bag, said ribs terminating below the upper end of said bag and extending substantially to the bottom thereof, the lower portions of said ribs being of greater thickness than the upper portions thereof so as to increase the rigidity of the lower portions of said side walls.

5. A wringer as set forth in claim 4 wherein the bottom of the bag is reduced in width to provide an elongate sump having a transversely curved bottom communicating with the drain outlet, and a porous reinforcing member in the sump and complementary thereto to prevent collapsing thereof and closing of said outlet.

6. A wringer as set forth in claim 4 including reinforcing material in the side walls of the bag and extending into the corners and bottom thereof to increase the rigidity of said side walls, corners and bottom.

7. A wringer as set forth in claim 2 wherein the bottom of the bag is reduced in width to provide an elongate sump having a transversely curved bottom communicating with the drain outlet, and a porous reinforcing member in the sump and complementary thereto to prevent collapsing thereof and closing of said outlet.

8. A wringer as set forth in claim 7 including reinforcing material in the side walls of the bag and extending to the corners and bottom thereof to increase the rigidity of said side walls, corners and bottom.

9. A wringer as set forth in claim 2 including reinforcing material in the side walls of the bag and extending to the corners and bottom thereof to increase the rigidity of said side walls, corners and bottom.

10. A wringer as set forth in claim 1 including upright spaced ribs projecting inwardly of the side walls of the bag to prevent complete flattening thereof upon collapsing of said bag and to increase the rigidity of said side walls, the ribs providing upright channels for conducting moisture to the lower end portion of said bag, said ribs terminating below the upper end of said bag and extending substantially to the bottom thereof, the lower portions of said ribs being of greater thickness than the upper portions thereof so as to increase the rigidity of the lower portions of said side walls whereby said upper portions flex inwardly before said lower portions for confining the contents of said bag so that the top of said bag may remain open to facilitate access to the interior thereof.

11. A wringer as set forth in claim 1 including upright spaced ribs projecting inwardly from the end walls of the bag to assist the centering of the contents of said bag by the inward folding of said end walls.

12. A wringer as set forth in claim 1 wherein the bottom of the bag is reduced in width to provide an elongate sump having a transversely curved bottom communicating with the drain outlet, and a porous reinforcing member

in the sump and complementary thereto to prevent collapsing thereof and closing of said outlet.

13. A wringer as set forth in claim 12 including reinforcing material in the side walls of the bag and extending to the corners and bottom thereof to increase the rigidity of said side walls, corners and bottom.

14. A wringer as set forth in claim 1 including reinforcing material in the side walls of the bag and extending to the corners and bottom thereof to increase the rigidity of said side walls, corners and bottom.

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