Feb. 9, 1926. 1,572,759

R. J. ANDERSON

CLOTHES WRINGER

Filed Jan. 8, 1923 4 Sheets-Sheet 1

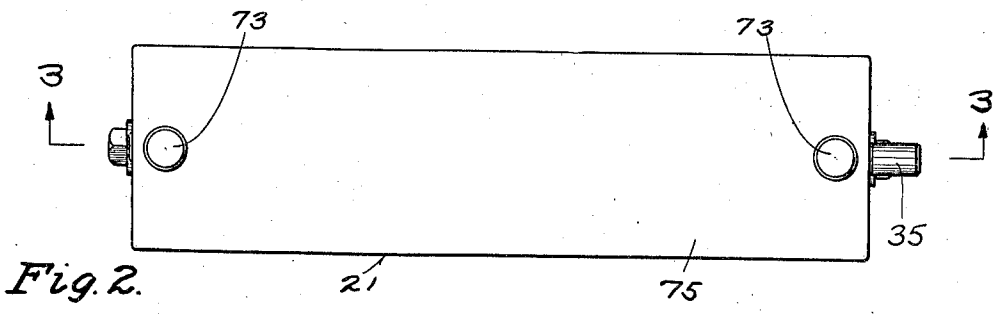


Fig. 2.

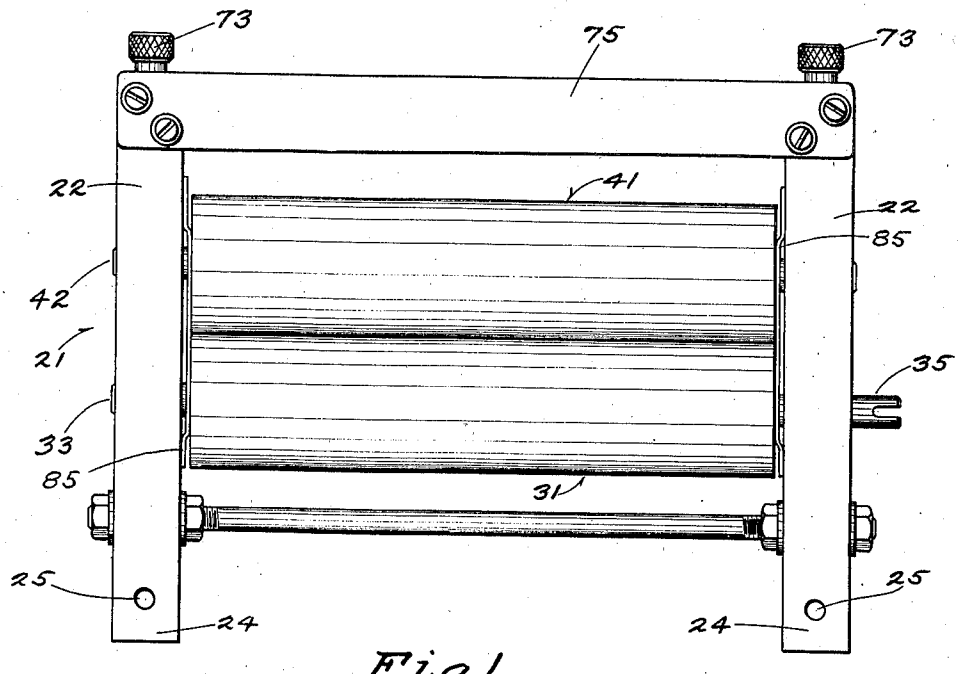


Fig. 1.

Inventor:
Robert J. Anderson,
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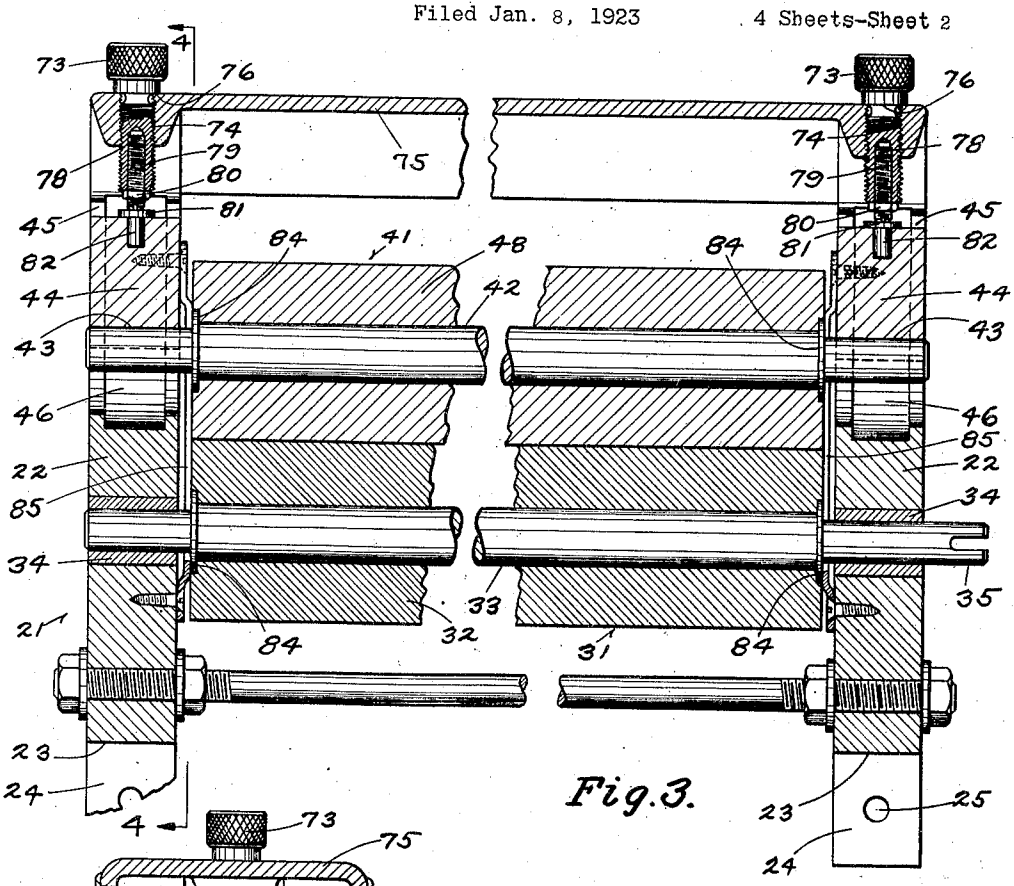


Fig. 3.

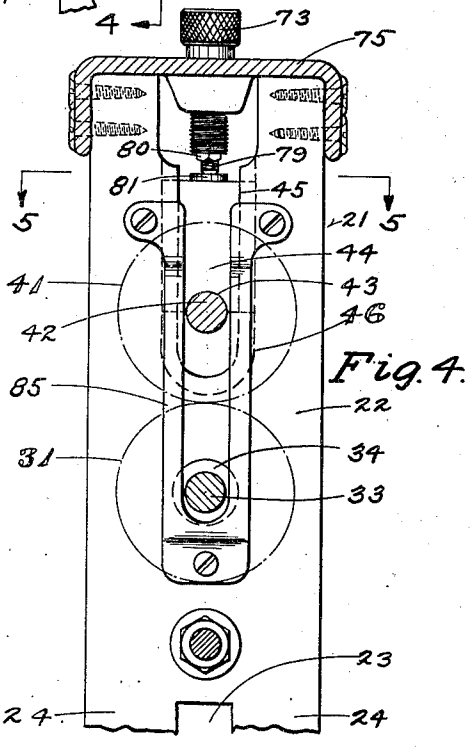


Fig. 4.

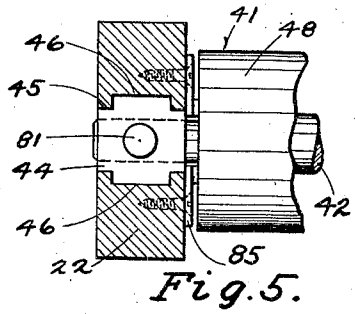


Fig. 5.

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R. J. ANDERSON

CLOTHES WRINGER

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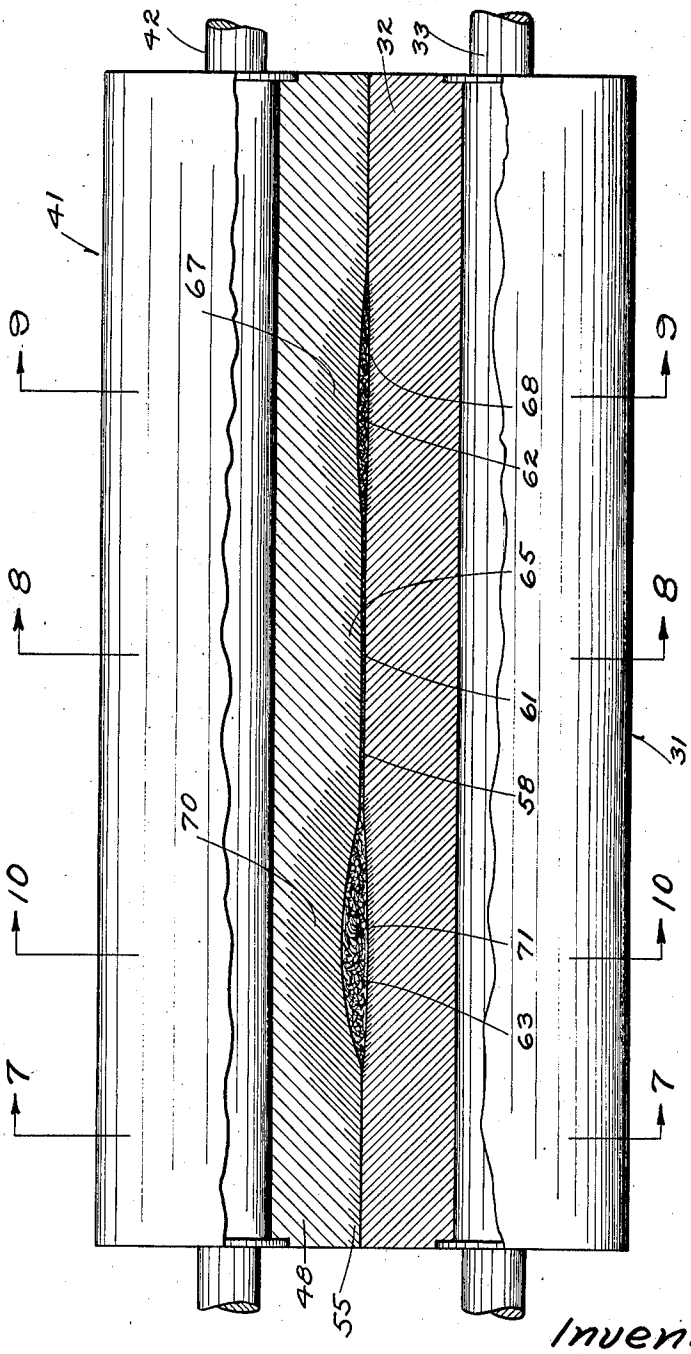


Fig. 6.

Inventor:
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R. J. ANDERSON

CLOTHES WRINGER

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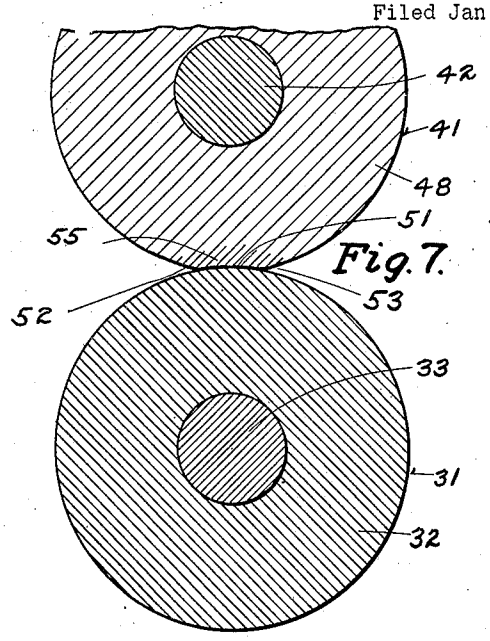


Fig. 7.

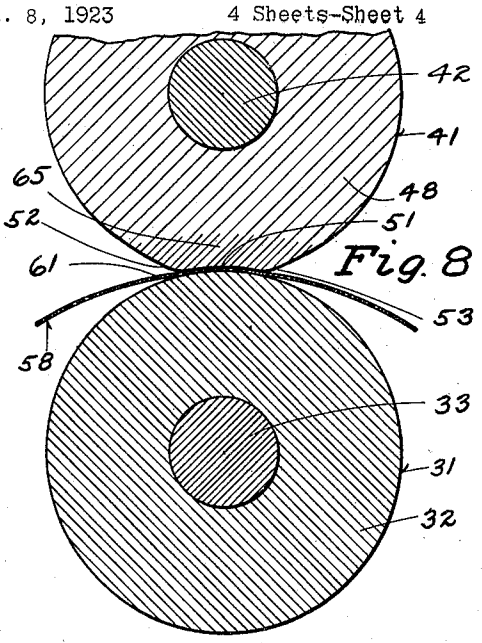


Fig. 8

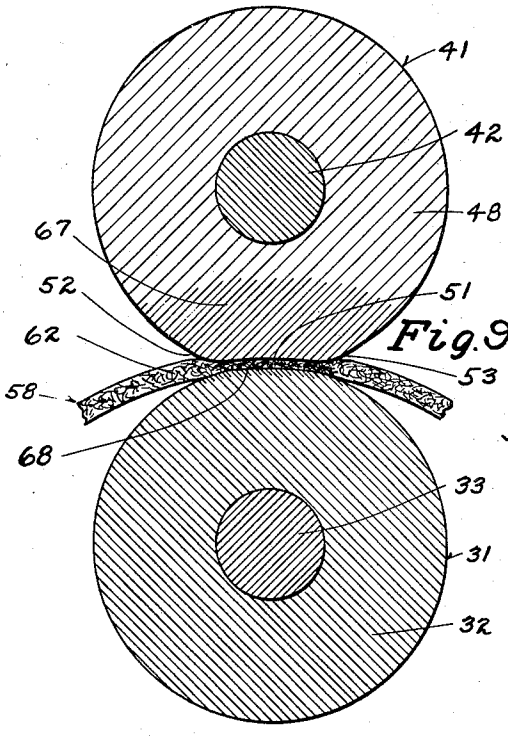


Fig. 9

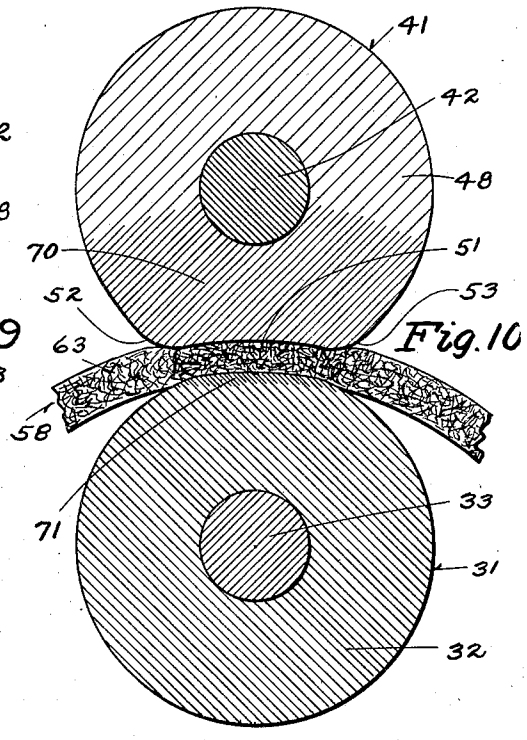


Fig. 10

Inventor:

Robert J. Anderson
by D. F. Herbstlet
his Attorneys

Patented Feb. 9, 1926.

1,572,759

UNITED STATES PATENT OFFICE.

ROBERT J. ANDERSON, OF SIDNEY, OHIO.

CLOTHES WRINGER.

Application filed January 8, 1923. Serial No. 611,242.

To all whom it may concern:

Be it known that I, ROBERT J. ANDERSON, a citizen of the United States, residing at Sidney, in the county of Shelby and State of Ohio, have invented certain new and useful Improvements in Clothes Wringers, of which the following is a specification.

My present application is a continuation of a copending application heretofore filed by me in the United States Patent Office, January 20, 1922, as Serial No. 530,579, for clothes wringers, as to all matters common to the two applications.

My invention relates to wringers for wringing clothes for laundry purposes, and has for its object the provision of novel wringer rolls, and, further, means in association with such wringer rolls for determining the distance between their axes of rotation, for adjusting such distance, and for relieving pressure between the rolls while maintaining the adjustment for distance between said axes.

In carrying out my invention I provide coacting wringer rolls, one of which is a comparatively hard wringer roll and the other of which is a comparatively soft wringer roll. I have instanced the lower wringer roll as the comparatively hard wringer roll and the upper wringer roll as the comparatively soft wringer roll.

I further prefer to provide wringer rolls of comparatively large diameters. Instancing this latter feature, it may be stated as an example but not as a limitation, that it is the practice to have the wringer rolls usually employed in connection with power washing machines for home laundry purposes and for hand wringers one and three-quarters inches in diameter. I prefer to make my improved wringer rolls substantially two and three-quarters inches in diameter, thereby providing a body of greater thickness, especially for the comparatively soft wringer roll, permitting yield throughout a substantial great thickness of comparatively soft resilient body, resisted by a comparatively hard body in the wringing operation, in order to permit the comparatively soft wringer roll to conform to the cross-sectional shape of the goods passing between the rolls at all points throughout the length of the rolls in order to express the fluid from the goods regardless of differences in thickness of the same, and minimizing the danger and the detrimental effect of having the operator seized between the wringer rolls.

A further object of my invention is to provide a clothes wringer capable of successful operation without the employment of gearing between the ringer rolls. It has been found necessary in present usual practice to provide driving gearing between the two rolls of a wringer to cause the rolls to grip the goods presented therebetween in order to cause entrance of the goods between the wringer rolls. In such present usual construction and arrangement of wringer rolls it is necessary to employ gearing to cause the wringer rolls to bite upon the goods to cause entrance thereof between the wringer rolls, as without such driving gearing the driven wringer roll merely turns idly upon the goods and the wringer rolls fail to exert sufficient surface traction upon the goods to feed the same in between the rolls.

A further object of my invention is to provide the resiliency desired between the rolls in the comparatively soft wringer roll itself; further, to provide a comparatively hard wringer roll which is resilient and is arranged to yield to pressure of the goods passing between the rolls to substantially less extent than the yield to pressure of the comparatively soft wringer roll, and a further object is to dispense with the necessity for springs and other resilient pressure means acting upon the shafts of the rolls.

It is the object of my invention, further, to provide novel wringer rolls and arrangement of wringer rolls whereby said wringer rolls are self-cleaning; and the invention will be further readily understood from the following description and claims, and from the drawings, in which latter:

Fig. 1 is a front elevation of a wringer embodying my invention.

Fig. 2 is a plan view of the same.

Fig. 3 is a longitudinal vertical section of the same, taken on the line 3—3 of Fig.

2, with the middle portion of the wringer broken away.

Fig. 4 is a vertical cross-section of one end of the clothes wringer taken in the plane of the line 4—4 of Fig. 3.

Fig. 5 is a horizontal cross-section of a detail of the same, taken on the line 5—5 of Fig. 4.

Fig. 6 is a diagrammatic longitudinal section of the opposed wringer rolls, showing the comparatively soft wringer roll contacting the comparatively hard wringer roll at its end in driving relation, and a heavy bunching of goods, a light bunching of goods, and a normal stretch of goods between the wringer rolls, to show the compressive effects of these various conditions, especially upon the soft wringer roll.

Fig. 7 is a diagrammatic vertical cross-section, taken in the plane of the line 7—7 of Fig. 6, and showing the wringer rolls in normal contact relation, with the lower portion of the soft wringer roll compressed and displaced by the hard wringer roll under normal pressure for driving relation.

Fig. 8 is a diagrammatic cross-section, taken in the plane of the line 8—8 of Fig. 6, showing the compressive and displacement action on the soft wringer roll caused by the pressure of a normal stretch of goods between the wringer rolls.

Fig. 9 is a diagrammatic cross-section, taken in the plane of the line 9—9 of Fig. 6, showing the relatively material compressive and displacement action instanced on the comparatively soft wringer roll and materially less compressive and displacement action instanced on the comparatively hard wringer roll caused by the pressure of a light bunching of goods; and

Fig. 10 is a diagrammatic cross-sectional view, taken in the plane of the line 10—10 of Fig. 6, showing the relatively material compressive and displacement relation instanced as caused upon the comparatively soft wringer roll and the materially less compressive and displacement relation instanced as caused upon the comparatively hard wringer roll by a heavy bunching of goods between the wringer rolls.

I do not herein claim the specific means for adjusting the distance between the wringer rolls or the pressure between the wringer rolls, or for relieving and renewing contact or pressure between the wringer rolls, herein shown and described, having shown, described and claimed the same in my aforesaid application, Serial No. 530,579.

The frame of the wringer is exemplified at 21, the lower ends of the end posts 22 of which are provided with slots 23 to form legs 24 arranged to be suitably secured for instance to the usual wringer-bar of a washing machine when the wringer is used on a power washer, or to a suitable tub when used as a manual wringer, the bar or the rim of the tub being received in the slots and suitable securing means therefor being received through holes 25 in the legs of the end frames.

A lower roll 31 comprises a body 32, which is of comparatively hard substance, for instance, of comparatively hard resilient rubber, such as is now usually employed in wringer rolls, having a large amount of hardening substance, for instance, chalk, clay or other earthy substance, in its composition, for making the same substantially resistant to indentation by pressure of the goods passing between the rolls, though not wholly so. This body is shown fixed on a shaft 33 journaled in bearings 34, and has attaching means 35 at its end by means of which to connect the shaft with the power shaft of a washing machine, or with a crank-handle when used as a manually operated wringer. This roll is exemplified as the driving roll of the clothes wringer.

A comparatively soft wringer roll 41 is provided to oppose the comparatively hard wringer roll. The roll 41 is shown provided with a shaft 42, and is shown held toward the comparatively hard wringer roll by means of bearings 43, in bearing blocks 44. The bearing blocks are arranged to slide in guides 45 of the end frames, having guideways 46, preferably arranged to prevent undue turning of said bearings in their guides, and for locating the bearings 43 thereof in parallelism with the shaft of the upper wringer roll.

The bearings 34 of the lower roll shaft are shown as bushings inserted in the intermediate solid portions of the respective end frames. These bushings and the upper bearings are preferably anti-friction bearings, the lower bearings being preferably so-called Arbuta bearings, and the upper bearings being of wood impregnated with a fatty substance, for instance, tallow.

Suitable means are provided for preferably unyieldingly holding the bearings of the upper roll and lower roll at definite distances apart for causing any yield there may be during ordinary operation between the rolls to take place within the rolls, and more especially in one of the rolls, namely, the soft wringer roll, which is substantially more yieldable than the comparatively hard wringer roll coacting therewith.

This comparatively soft wringer roll comprises a body 48, which is preferably a substantially pure, soft vulcanized rubber, forming a comparatively soft resilient yielding body, with relation to the comparatively hard body of the comparatively hard wringer roll. This comparatively soft wringer roll is also of substantially greater diameter than wringer rolls of this character

heretofore employed, for providing a resiliently yielding body of substantial depth to receive and resist the goods passing between the rolls in such manner that pressure is exerted upon the goods throughout the length of the roll, regardless of different thicknesses of goods which may simultaneously pass between the rolls along their lengths, in order to simultaneously express the fluid from goods of different thicknesses between the rolls. The wringer rolls are instanced as of equal diameters.

I have shown the manner of coaction between the comparatively soft wringer roll and the comparatively hard wringer roll and the goods of different thicknesses therebetween diagrammatically by the section lining in Figs. 6 to 10 inclusive.

The bearings for the wringer rolls are normally so placed that the outer periphery or cylinder of the hard wringer roll normally slightly enters the normal outer peripheral or cylindrical projection of the soft wringer roll along the contact line between the wringer rolls, to form a contacting strip 51 between the wringer rolls, the soft wringer roll being thereby formed with bulges 52, 53, along the wringer roll at the respective sides of said contacting strip. The pressure effect or compressive action upon the soft wringer roll and its extent is indicated by the closer section lining 55.

This indentation of the soft wringer roll by the hard wringer roll forms a driving connection between the wringer rolls, the hard wringer roll being instanced as the driving wringer roll, and the soft wringer roll as the driven wringer roll, this indentation of the soft wringer roll by the hard wringer roll preferably forming the sole driving connection between the wringer rolls.

Upon goods 58 being passed between the wringer rolls, the indentation of the soft wringer roll is increased locally at the goods, thereby resiliently yielding to the increased pressure of the goods resisted by increased pressure of the body of the soft wringer roll, dependent on the thickness of the goods.

This yielding is local merely, so that goods of different thicknesses, as at 61, 62 and 63, may be passed side by side between the wringer rolls, the soft wringer roll yielding locally or in spots to the bunchings of various thicknesses, and the yielding taking place in the soft wringer roll or in both wringer rolls, dependent on the thickness, so that all portions of the goods simultaneously passing between the wringer rolls receive pressure for expressing the fluid therefrom, at the same time maintaining driving connection between the wringer rolls or between the wringer rolls and the goods therebetween. The normal thickness of goods at 61 (see Fig. 8), is exemplified as causing yield only in the soft wringer roll, as indicated by the section lining 65 of greater extent.

If undue pressure is exerted by thicknesses of goods between the wringer rolls, the relatively hard resilient wringer roll will also yield to the pressure, but preferably to materially less extent than the yield of the soft wringer roll at the points of such excess pressures. Such undue pressures to different degrees and their relative effects upon the respective wringer rolls are exemplified at the points in the lengths of the wringer rolls where the bunchings 62 and 63 of the goods are shown in Fig. 6, and in Figs. 9 and 10. The pressure effect and compressive action for a bunching of goods, such as shown at 62, is illustrated in Fig. 9 by the still greater extent of closer section lining 67 in the comparatively soft wringer roll and the closer section lining 68 of materially less extent in the comparatively hard wringer roll. The pressure effect and compressive action for a bunching of goods, such as shown at 63, is illustrated in Fig. 10 by the more extended closer section lining 70 in the comparatively soft wringer roll and the closer section lining 71 in the comparatively hard wringer roll, the closer section lining 71 being of greater extent than that shown in the comparatively hard wringer roll in Fig. 9, but of materially less extent than that shown in the comparatively soft wringer roll shown in Fig. 10. These examples are given as illustrations, but are not to be construed as limitations.

The resilient yieldings in the respective wringer rolls take place in the yielding resilient materials of which their bodies are composed, preferably to materially greater extent in the softer resilient material of the softer wringer roll than in the harder resilient material of the harder wringer roll, depending on the thicknesses of the various portions of the goods between the wringer rolls. The yieldings in the materials of the rolls preferably take place radially of the rolls, the yieldings being preferably in the yielding resilient materials of the body of the wringer rolls toward their respective shafts.

The indentation of the hard wringer roll into the soft wringer roll and the bulges in the soft wringer roll at the sides of the band of contact between the wringer rolls, progresses about the periphery of the wringer rolls as the wringer rolls are rotated, forming traction between the wringer rolls for rotating one wringer roll by means of the other, and thereby dispensing with gearing between the wringer rolls, and acting upon the peripheral surfaces of the wringer rolls to knead and clean the same, whereby the peripheral surfaces of the

wringer rolls are kept free from the soapy, oily and slimy conditions prevalent with wringer rolls as heretofore usually employed. This coaction between the rolls also resists the tendency to form flat spots on the peripheries of the wringer rolls, and to remove any flat spots that may be formed, as the rolls are being continually kneaded during operation to cause the materials in the rolls to resume their original shape.

The soft wringer roll in my improved arrangement of wringer rolls further yields to buttons, buckles and other hard substances that may pass between the wringer rolls, thereby minimizing the tearing of buttons, buckles and the like from the goods in the act of wringing, and further minimizing the danger of injury to the user in case a finger and the hand should be caught between the wringer rolls.

My improved construction is such, further, that the employment of springs or similar tension devices acting upon the wringer rolls may be dispensed with, and I prefer to fixedly position the bearings of the upper wringer roll with relation to the bearings of the lower wringer roll, but desirably provide means whereby adjustment may be obtained between the wringer rolls for adjusting the pressure therebetween, and whereby relief of such pressure is obtained, for instance, when the washing is done or the wringer is not to be used for a time, and whereby repositioning of the wringer rolls into operative relations may be obtained without disturbance of adjustments for distance relations between the axes of rotation of the upper and lower wringer rolls.

The means for positioning the upper bearings are shown as a pair of positioning screws 73, received in threaded holes 74, shown located in the top bar 75 of the wringer frame. The positioning screws are provided with shoulders 76, arranged to bear upon the upper ends of the walls of the threaded holes for determining the limit of movement of the positioning screws toward the bearings, and having knurled heads to readily turn the same. If desired, the positioning screws may be unscrewed for relief of pressure between the rolls, as when the wringer is out of use, the shoulders however determining the normal positional relations between the bearings when the wringer is again placed in normal use.

If adjustment for the upper bearings, that is, adjustment of normal distance between the axes of rotation of the wringer rolls, is desired, I prefer to provide an adjusting means between said positioning screws and said bearings. This is accomplished in the present instance by providing the inner ends of the positioning screws with threaded bores 78, in which abutment screws 79, are adjustably received, jam-nuts 80 clamping the abutment screws in adjusted positions. The abutment screws are arranged to coact with contact heads 81, having shanks 82, received and held in holes in the respective upper bearings.

The ends of the respective rolls are provided with washers 84 which coact with end plates 85 secured to the posts 22 to position the wringer rolls endwise.

My improved device forms exceptionally efficient means for expressing the fluids from the goods, especially where the goods are passed between the wringer rolls in uneven thicknesses lengthwise of the wringer rolls; provides ready means whereby the pressures between the wringer rolls may be readily temporarily relieved for accommodating undue thicknesses of goods, as by temporary adjustment of the positioning screws 61, while maintaining the adjustments for usual thickness of goods passing between the wringer rolls; provides ready means whereby the comparatively hard wringer roll and comparatively soft wringer roll are positioned at distance relations, for effective wringing of the goods; provides ready means whereby the comparatively soft resilient wringer roll of itself or in conjunction with the comparatively hard resilient wringer roll conforms to the cross-sectional shapes of the goods passing between the rolls at all points throughout the length of the rolls, whereby the injurious effect of having the finger or hand of the operator seized between the wringer rolls is minimized or obviated, and whereby the employment of gearing or other extra driving means between the rolls is avoided; and provides self-cleaning properties for the wringer rolls.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is:

1. In a clothes wringer of the character described, the combination of a comparatively hard resilient wringer roll, a comparatively soft resilient wringer roll, each of said wringer rolls being solid and of substantially equal resilience throughout its body, a central rigid shaft in the body of said comparatively soft resilient wringer roll, and pressure means exerting pressure on said shaft at the ends of said last-named roll, and said wringer rolls being substantially coextensive in length.

2. In a clothes wringer of the character described, the combination of a comparatively hard resilient wringer roll, a comparatively soft resilient wringer roll, each of said wringer rolls being solid and of substantialy equal resilience throughout its body, said wringer rolls being substantially coextensive in length, a rigid shaft cen-

trally located in each of said wringer rolls, means exerting pressure on said shaft in said comparatively soft resilient wringer roll at the ends of said last-named roll, and means driving said shaft of said comparatively hard resilient wringer roll, and said comparatively soft resilient wringer roll located in tractive relation with said comparatively hard resilient wringer roll to form the sole driving connection between said wringer rolls.

In testimony whereof, I have hereunto signed my name.

ROBERT J. ANDERSON.