

Nov. 21, 1967

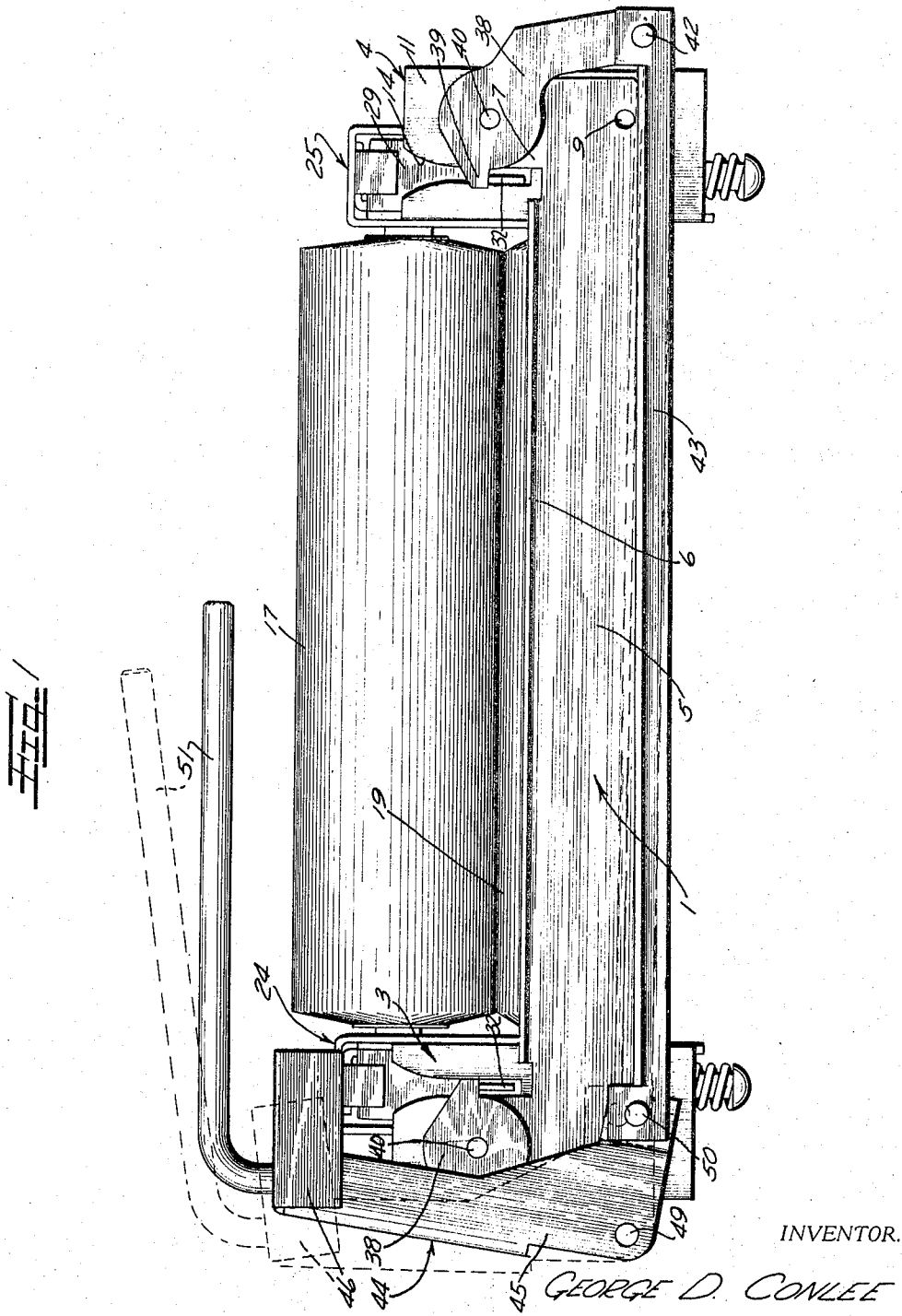
G. D. CONLEE

3,353,382

WRINGER

Filed Feb. 15, 1965

4 Sheets-Sheet 1



BY *Hill, Sherman, Meroni, Cross & Simpson*

ATTORNEYS

Nov. 21, 1967

G. D. CONLEE

3,353,382

WRINGER

Filed Feb. 15, 1965

4 Sheets-Sheet 2

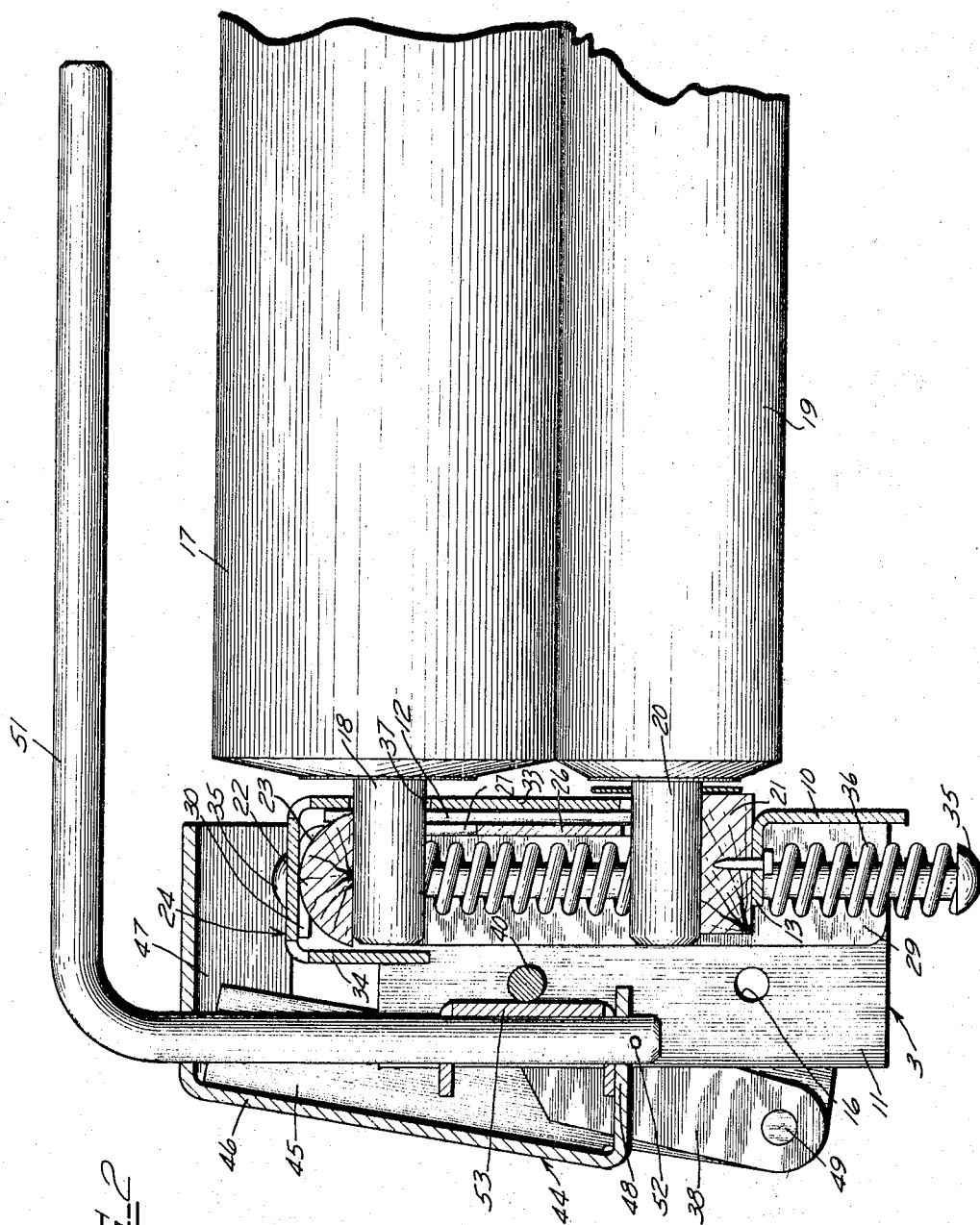


FIG. 2

INVENTOR.
GEORGE D. CONLEE

BY *Hill, Sherman, Munis, Good & Simpson*

ATTORNEYS

Nov. 21, 1967

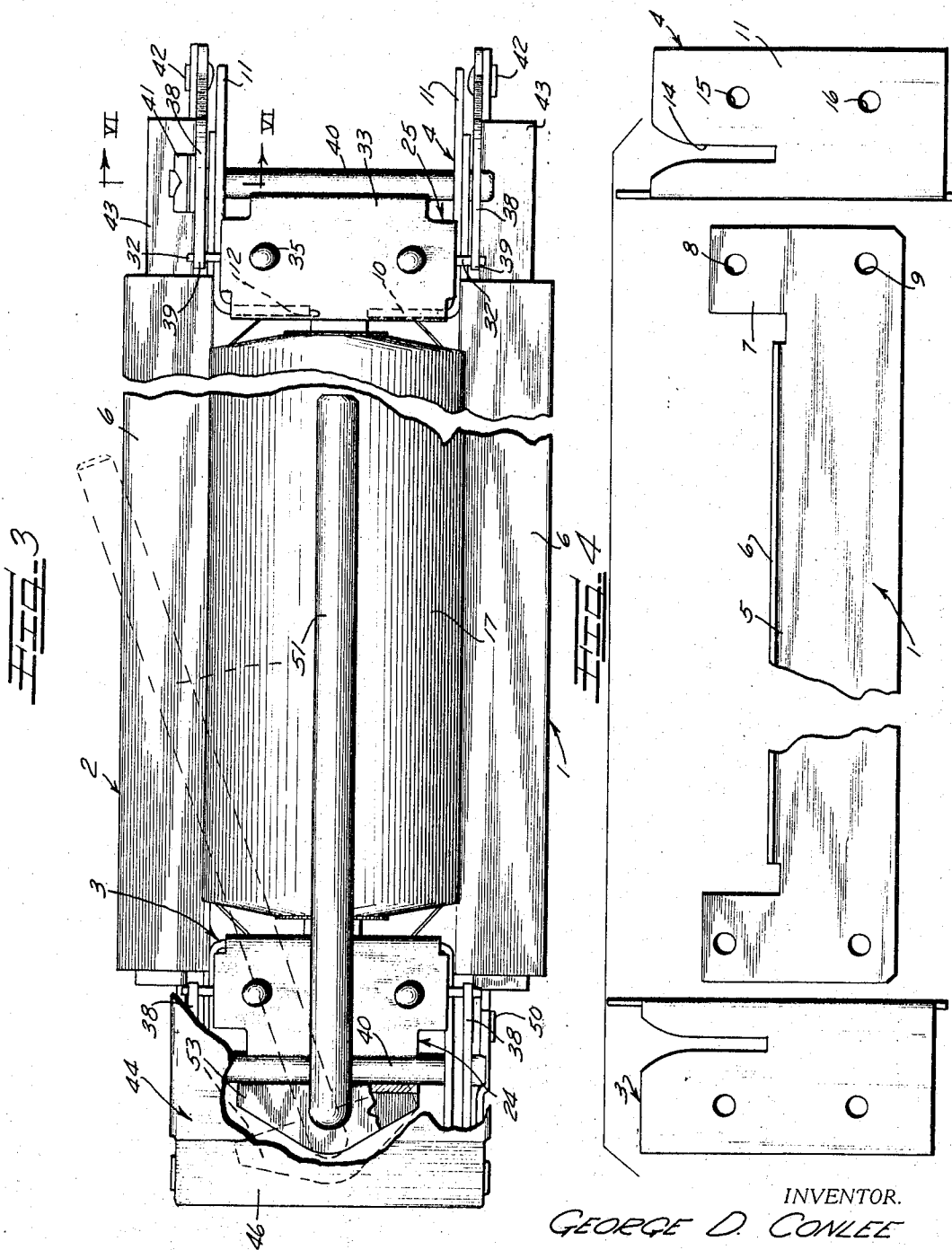
G. D. CONLEE

3,353,382

WRINGER

Filed Feb. 15, 1965

4 Sheets-Sheet 3



INVENTOR.
GEORGE D. CONLEE

BY *Hill, Sherman, Meier, Cross, Simpson*

ATTORNEYS

Nov. 21, 1967

G. D. CONLEE

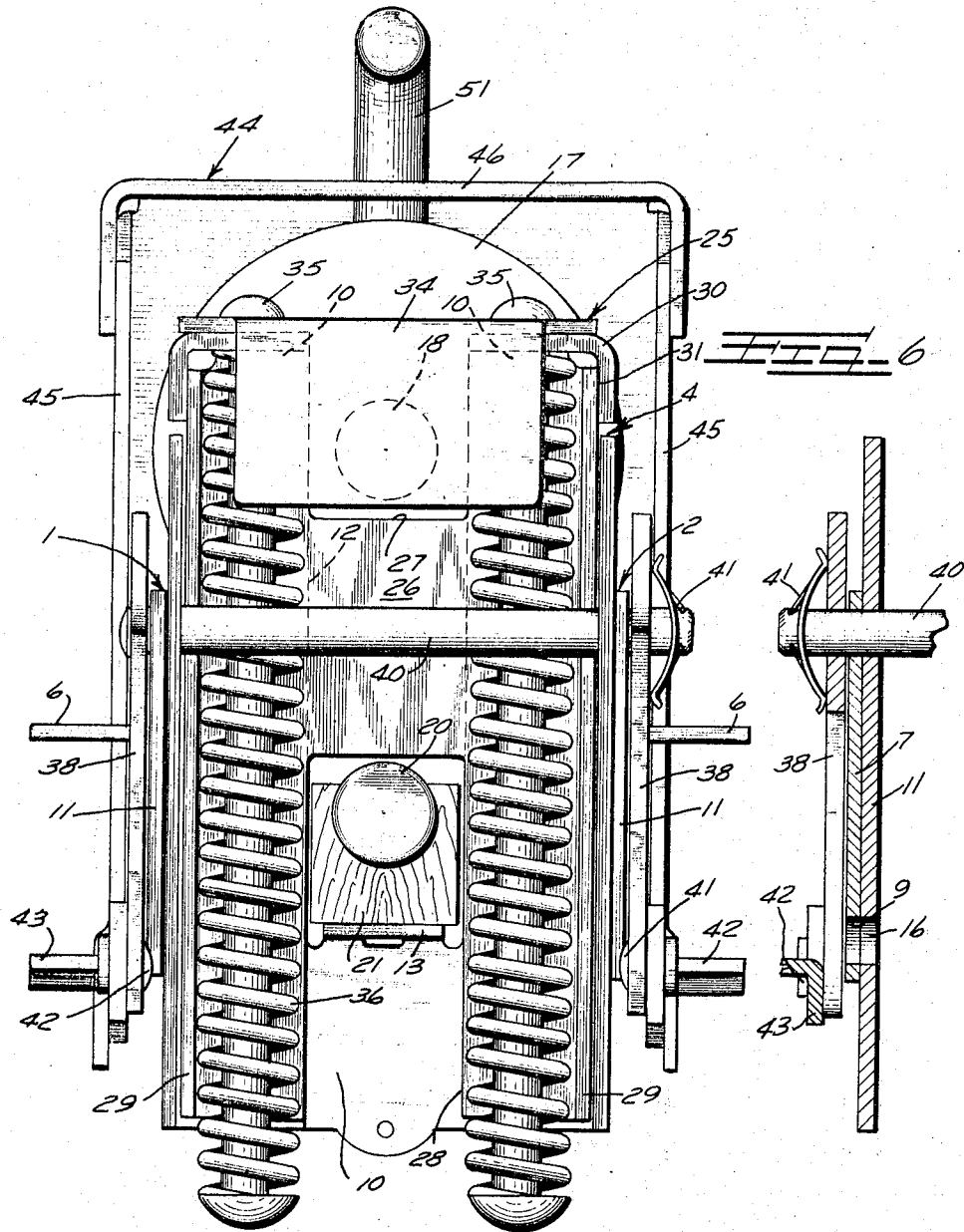
3,353,382

WRINGER

Filed Feb. 15, 1965

4 Sheets-Sheet 4

FIG. 5



INVENTOR.
GEORGE D. CONLEE

BY *Hill, Sherman, Merwin, Gross & Simpson*

ATTORNEYS

1

3,353,382

WRINGER

George D. Conlee, Cedar Falls, Iowa, assignor, by mesne assignments, to Lovell Manufacturing Company, Erie, Pa., a corporation of Pennsylvania
Filed Feb. 15, 1965, Ser. No. 432,486
3 Claims. (Cl. 68—257)

This invention relates to improvements in a wringer, and more particularly to a squeeze roll type wringer highly desirable for use in connection with household washing or laundry machines, although the invention will have other uses and purposes as will be apparent to one skilled in the art.

Ever since the advent of squeeze roll wringers, and particularly for the type adapted for use with household washing machines, efforts have been made to simplify the structure of the wringer, lessen the cost of production as well as the cost of tools for manufacturing the wringer, add to the ease of operation and yet provide adequate safety, lessen the number of working parts, and otherwise provide an easily operable sturdy and highly durable wringer requiring little, if any maintenance. While progress has been made toward that end, there has always been room for improvement.

With the foregoing in mind, it is an important object of the instant invention to provide a wringer possessing the above desiderata to an extent greater than was obtainable heretofore.

Also an important feature of this invention is the provision of a squeeze roll type wringer in which opposed parts are not allochiral as has heretofore been customary, but are identical and usable on either side or end of the wringer.

A further object of the invention is the provision of a squeeze roll type wringer having a single pressure release bar extending over the upper roll parallel to the axis thereof, and which is operable to release pressure when moved in three different directions.

Another object of the invention is the provision of a squeeze roll type wringer having a single pressure release bar extending over the upper roll, which release bar functions as a lever for resetting pressure on the rolls.

It is also an object of this invention to provide a squeeze roll type wringer in which the opposite side structures are identical, and the wringer is identical at opposite ends, with the single exception of pressure release and pressure reset mechanism added to one end only, whereby only a relatively few sets of tools and dies are needed for the manufacture of the entire wringer.

Still another object of the invention is the provision of a squeeze roll type wringer having a pressure release bar disposed in a handy position and yet in a location that leaves the entire upper wringer roll and the nip between the rolls fully visible at all times.

Still another feature of the invention is the provision of a squeeze roll type wringer, having upper and lower squeeze rolls, with the bearings for the upper roll being easily removable and replaceable, and also rockable to compensate for variations in thickness of material passing between the rolls.

While some of the more salient features, characteristics and advantages of the instant invention have been above pointed out, others will become apparent from the following disclosures, taken in conjunction with the accompanying drawings, in which:

FIGURE 1 is a side elevational view of a wringer embodying principles of the instant invention;

FIGURE 2 is a fragmentary enlarged view of the left-hand portion of FIGURE 1, with parts shown in central vertical cross-section;

2

FIGURE 3 is a fragmentary top plan view of the structure of FIGURE 1;

FIGURE 4 is an exploded view of parts of the wringer frame;

FIGURE 5 is an enlarged end view of the wringer taken from the right-hand end of FIGURE 1; and

FIGURE 6 is a fragmentary enlarged vertical sectional view taken substantially as indicated by the line VI—VI of FIGURE 3, looking in the direction of the arrows.

As shown on the drawings:

In general, the instant invention comprises a wringer having a frame, upper and lower squeeze rolls in the frame, spring cages to provide pressure for the rolls, an overcenter toggle linkage arrangement for setting and maintaining pressure on the rolls, and a release bar to actuate said toggle linkage to release pressure on the rolls and also actuate the toggle linkage to reset pressure on the rolls.

In most instances, where parts are fixedly secured together, they are welded, spot welded, or equivalently secured to eliminate the need of numerous bolts, rivets, and the like, and lower the cost of production.

The frame

The wringer frame is fabricated from four separate pieces including a pair of identical side members, generally indicated by numerals 1 and 2, and a pair of identical end stiles, generally indicated by numerals 3 and 4. These parts are spot welded or equivalently secured together to provide a rigid and strong rectangular frame.

Each side member, 1 or 2, comprises an elongated strip 5 having an outstanding lateral flange 6 on the upper edge thereof for strengthening purposes. The flange 6 does not extend the full length of the strip, as clearly seen in FIGURE 4, and at each end of the strip 5 there is a flat upstanding portion 7 outward of the termination of the flange and extending above the flange. This flat portion 7 has upper and lower holes 8 and 9 respectively therein. The upper hole 8 ultimately accommodates a cross-pin, while the lower hole 9 functions only and along with the upper hole to aid in the assembly of the frame.

Each end stile, 3 or 4, is in the form of a bracket, U-shaped in cross-section, including a back and spaced side wings 11—11 extending outwardly from the back. As seen in FIGURE 5, the back is provided with an elongated slot 12 therein so that the roll bearings may be freely disposed within the slot. As seen best in FIGURES 2 and 5 a shelf 13 is outwardly bent from the back 10 at the bottom of the slot 12 to support the lower roll bearing. With reference again to FIGURE 4, it will be seen that each side wing 11 is provided with a relatively deep slot 14 extending downwardly from the upper edge thereof to accommodate laterally projecting ears on a spring cage, as will later appear. Also the side wing 11 is provided with upper and lower holes 15 and 16 respectively sized and spaced in keeping with the aforesaid holes 8 and 9 on the frame side member.

In assembling the frame it is a simple expedient to dispose the end stiles and side members over four pins on a jig or the like with the holes 8 and 9 of the side members in alignment with the holes 15 and 16 of the end stiles, and the parts are conveniently held for spot welding the side members to the end stiles. The holes 9 and 16, as seen in FIGURE 6, will remain in alignment but have no other function than to facilitate frame assembly.

The rolls and spring cages

With reference more particularly to FIGURES 2 and 5, it will be seen that the wringer embodies an upper squeeze roll 17 having a protruding journal 18 at each

3

end thereof and a lower squeeze roll 19 having a journal 20 protruding at each end thereof. Each journal 20 of the lower roll rests in a customary hardwood wax impregnated bearing 21 supported by the shelf 13 of the respective end stile. Each journal 18 of the upper roll engages a bearing 22 disposed thereabove. This is also a hardwood bearing but as seen clearly in FIGURE 2 is curvate as indicated at 23 on its upper surface longitudinally of the respective journal 18.

Slidable in each end stile is a spring cage, generally indicated by numerals 24 and 25 for the end stiles 3 and 4 respectively. The spring cages are identical in structure and each is made of but two pieces. A single piece of material is shaped to provide a back 26 notched in the upper portion as indicated at 27 to clear the upper roll journal, and also provided with an elongated notch 28 in the lower portion so the cage will be free of the lower roll bearing 21. Integral with the back 26 at each side thereof are outwardly projecting identical flanges 29—29 and at the top of the back 26 and integral therewith is an outwardly folded L-shaped cover wing 30, part of which is folded downwardly over the adjacent side wing 29 and spot welded thereto as at 31. Each side wing 29 has a tongue or ear 32 struck therefrom and bent laterally to project sidewise into the aforesaid slot 14 in each end stile wing 11, as best seen in FIGURE 1.

The other part of the spring cage is a single piece saddle 33, which is of an inverted U-shape at the top thereof to overlie the top portions 30—30 of the cage piece 26 and has a front panel 34 extending downwardly over the outer end of the upper roll journal 18 and the bearing 22 as seen best in FIGURE 2. The saddle is disposed freely over the top portions 30—30 of the part 26 and is not secured thereto, but is connected therewith by a pair of spaced rods 35 headed at each end extending through both the saddle and the respective member 30 on the part 26 of the cage. Between the forward extending L-shaped portion 30 and the lower headed end of each bolt a spring 36 is disposed around the bolt. These springs are each preferably preloaded so that a predetermined degree of compression is already provided on the springs.

Inside the notch 27 of the part 26, the upper roll bearing 22 is disposed in contact with the saddle, as seen clearly in FIGURE 2. Such contact, by virtue of the curvature 23 of the bearing 22 will be a line contact and this bearing may rock against the inside face of the saddle and thus compensate for variations in thickness of material passing between the squeeze rolls 17 and 19.

A downward movement of the cage member 26 relatively to the saddle 33 adds to the compression of the springs and thereby causes more pressure to be placed on the squeeze rolls.

When the journals 18 of the upper roll are entered through an aperture 37 in each of the spring cages beneath the respective bearing 22, it will be noted that when there is no pressure on the rolls, the upper roll and both spring cages may be removed or assembled in the wringer as a single unit. With pressure off the rolls, the upper roll and both spring cages may be lifted entirely out of the wringer. With the journal of the upper roll withdrawn from the respective spring cage, the bearing 22 may be canted or cocked and withdrawn from between the springs 36—36 for replacement, without the necessity of substituting an entirely new spring cage for a worn bearing. Obviously, the bearings 21 for the lower roll are easily removable and replaceable by merely lifting out the lower roll.

The pressure setting and release means

With reference to FIGURES 1, 3 and 5, it will be seen that the pressure setting mechanism includes four identical cam levers 38 disposed one at each corner of the wringer. Each of these levers has a projecting nose 39 to overlie the respective ear 32 projecting from the spring

4

cage slide when the levers are in pressure setting position. A cross-pin is disposed through the apertures 8 in the frame side members 5 and the upper apertures 15 in the wings 11—11 of the respective end stile aligned with the apertures 8. This cross-pin 40 is headed at one end, and as seen in FIGURE 5 the cam levers are freely pivotal about the pin at opposite ends thereof, the pin being provided with a self-locking spring clip or the equivalent 41 at the headlines end thereof to maintain the parts assembled.

Each of the cam levers 38 associated with the end stile 4, at the inboard end of the wringer, has its lower end pivoted as at 42 to one of a pair of identical opposed pull links 43—43, these links being identical in structure. Intermediate the ends thereof these links are preferably angular in shape.

At the outboard end of the wringer there is a pressure reset link, generally indicated by numeral 44, which is fabricated from a pair of substantially L-shaped and identical side members 45—45 and a cover member 46 having a downwardly turned portion 47 at each side spot welded to the upper ends of the side plates 45. The cover extends downwardly over the edges of the side plates as clearly seen in FIGURE 2 and is provided with an inwardly turned horizontal tongue 48 to function as a seat.

The cam levers 38 associated with the end stile 3 are pivoted at their lower end, one to each of the side plates in the apical region thereof as indicated at 49 in FIGURES 1 and 2. Each end of the short leg of each side piece 45 is pivotally connected at 50 to the adjacent end of the aforesaid pull link 43 extending lengthwise of the wringer.

The reset link 44 is operated by a combination pressure release bar and pressure reset lever 51, which is L-shaped and the longer leg thereof extends horizontally over and above the upper roll 17, centrally thereof and parallel to the axis of the roll as clearly seen in FIGURES 2 and 3. The shorter leg of this bar extends downwardly through suitable apertures in the top portion of the part 46 of the reset link and the seat 48, the bar being held in position by means of a pin 52 in the lower end thereof below the seat 48. Resting upon the seat 48 but free therefrom is a channel bracket 53, and it will be noted that the inner flat face of this bracket abuts the cross-pin 40 when pressure is on the rolls as seen in FIGURE 2 and in the full line showing of FIGURE 3. The lateral wings of the bracket 53 are apertured so that the short leg of the bar 51 passes therethrough, and the bracket is securely welded to the shorter leg of the bar so that any movement of the bar in any direction will result in a movement of the bracket.

Operation

When it is desired to apply pressure upon the squeeze rolls 17 and 19, it is a simple expedient to utilize the bar 51 as a lever and force it downwardly in a vertical plane from the dotted line position of FIGURE 1 to the full line position. Such movement of the bar may be accomplished easily and as the bar assumes horizontal position, the cam levers 38 force down the springs in each of the spring cages placing pressure upon the rolls. It will be noted from the showing in FIGURE 1 that when the bar 51 is in horizontal position, on each side of the wringer the pivot point 50 has been moved down below an imaginary line through the centers of the pivots 49 and 42 whereby the toggle linkage is disposed overcenter and will maintain pressure on the rolls. As the bar 51 is forced downwardly to apply pressure, the bracket 53 secured to the shorter leg of that arm fulcrums about the cross-pin 40 until it assumes substantially the vertical position seen in FIGURE 2. The length of the bar 51 and the fulcruming of the bracket 53 provide relatively great leverage so the operation of applying pressure is rather easy.

When it is desired to release pressure on the rolls, for any reason, it is a simple expedient to elevate the bar 51 from the full line position of FIGURE 1 to the dotted line position whereupon the toggle linkage is moved from its overcenter position and pressure is released. Should it be desired to give the wringer some attention, it is a simple expedient to move the bar outwardly beyond the dotted line position shown and the upper roll and both spring cages may be lifted out as a unit. During release of pressure, the bracket 53 on the short leg of the bar again fulcrums about the cross-pin 40.

It should also be noted that pressure on the rolls may be released by moving the bar 51 in either direction horizontally, as indicated by the dotted line showing in FIGURE 3. In that event the bracket 53 will pivot about the bar on one of its side edges depending on whether the bar is pushed or pulled. Such movement of course throws the shorter leg of the bar outwardly sufficiently to move the toggle linkage out of overcenter position. Thus, it will be seen that the same element, namely the bar 51, is movable in at least three directions to release pressure, and functions as a reset lever movable in a downward direction to apply pressure to the rolls.

It should also be noted that the bar 51 by virtue of its positioning directly above and over the upper roll is in a position of easy access from either side of the wringer and eliminates the need for the customary release bars, one on each side of the wringer. Further, the positioning of the bar provides 100% visibility of the upper roll and the nip between the rolls, there being nothing to occlude the operator's vision during usage of the wringer.

Economy of production of the wringer and ease of assembly are greatly enhanced by the fact that the side frame members are identical, the end stiles are identical, the spring cages are identical in structure and carry identical parts, the cam levers 38 are identical and the assemblies at each end of the wringer are substantially identical except for the provision of the bar 51, bracket 53, and toggle link 44 at one end of the wringer. Thus it is apparent that few sets of tools and dies are necessary for the stamping out and shaping of the various component parts.

It will be understood that modifications and variations may be effected without departing from the scope of the novel concepts of the present invention.

I claim as my invention:

1. In a wringer,
 - a frame comprising
 - a pair of identical side members,
 - a pair of identical end stiles secured to said side members,
 - a pair of identical spring cages disposed one in each of said end stiles,
 - a pair of squeeze rolls in said frame,
 - springs in said cages to apply pressure on said rolls,
 - identical lever means to force said springs into pressure applying position,
 - a toggle linkage to actuate said lever means to apply pressure on the rolls including identical links one on each side of said frame and pivoted at one end thereof to one of said lever means,
 - a reset link pivoted to the other ends of said links, and

a bar connected to said reset link to give added leverage thereto when pressure is applied, said bar extending over one of said rolls and operable to release pressure on said rolls.

2. In a wringer,
 - a frame,
 - upper and lower squeeze rolls in said frame,
 - means to apply pressure to said rolls,
 - an overcenter toggle linkage to cause pressure to be maintained when moved to pressure applying position and pressure to be released when moved away from said position,
 - a cross-pin in one end of said frame,
 - an L-shaped bar having the longer leg thereof extending centrally over and above said upper roll parallel to the axis thereof when pressure is on the rolls and the shorter leg connected with a part of said toggle linkage,
 - said bar functioning as a release bar when moved laterally or vertically to move said linkage to pressure released position and function as a lever to move said linkage to pressure maintaining position, and
 - a fulcrum bracket secured to the shorter end of said bar to fulcrum about said cross-pin when said bar is moved to move said toggle linkage to or away from pressure applying position.

3. In a wringer,
 - a frame,
 - upper and lower squeeze rolls in said frame,
 - means to apply pressure to said rolls,
 - an overcenter toggle linkage to cause pressure to be maintained when moved to pressure applying position and pressure to be released when moved away from said position,
 - a cross-pin in one end of said frame,
 - an L-shaped bar having the longer leg thereof extending over and above said upper roll and the shorter leg connected with a part of said toggle linkage, and
 - a bracket secured to the shorter leg of said bar and having a flat face to bear against said cross-pin when said toggle linkage is in overcenter pressure applying position,
 - said bracket fulcruming against said cross-pin to move the toggle linkage away from overcenter position and release pressure on the rolls when the long leg of said lever is moved laterally in either direction or raised vertically.

References Cited

UNITED STATES PATENTS

1,805,557	5/1931	Schuda	68—244
1,817,603	8/1931	Behan	68—263
2,080,318	5/1937	Kauffman	68—263
2,100,074	11/1937	Etten	68—262
2,323,331	7/1943	Kauffman	68—263
2,327,998	8/1947	Clausen	68—256 X
2,638,768	5/1953	Etten	68—257
2,770,963	11/1956	Etten	68—262
2,865,190	12/1958	Etten	68—263
2,962,887	12/1960	Platt	68—263 X

LOUIS O. MAASSEL, *Primary Examiner*,