June 17, 1952 E. E. FOSTER 2,600,398

WRINGER PRESSURE APPLYING MECHANISM

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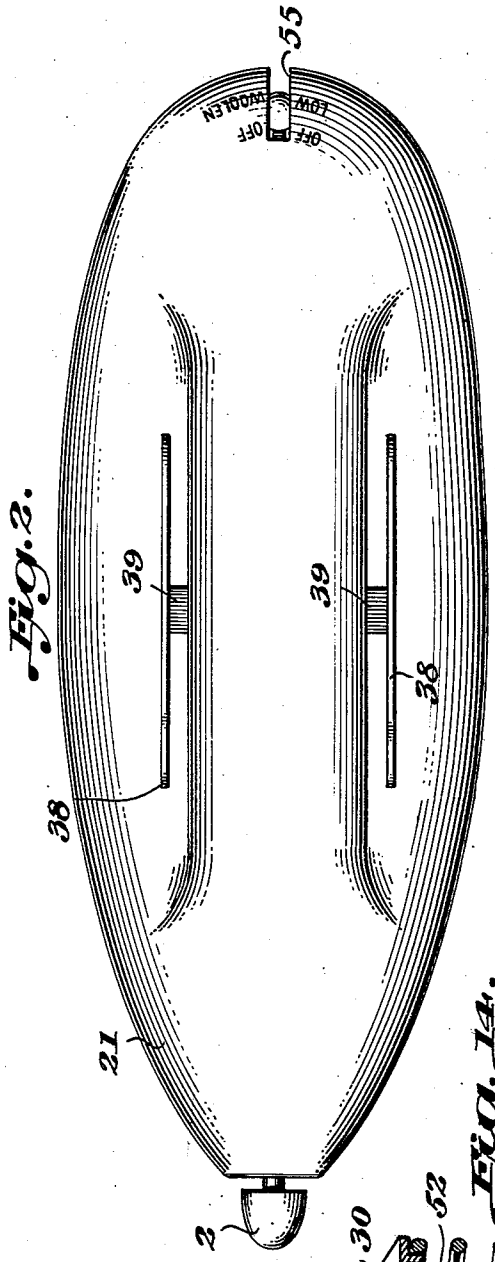


Fig. 2.

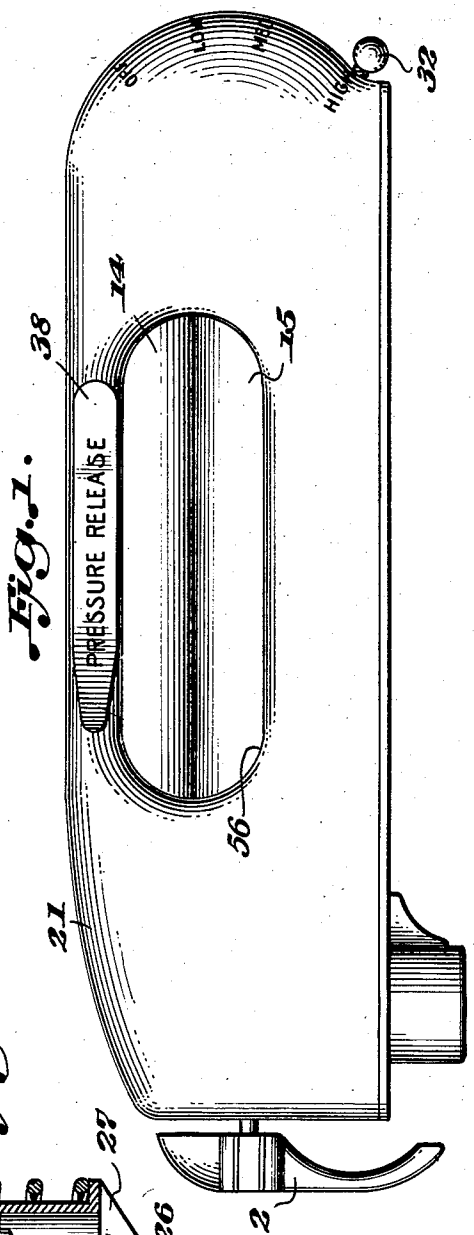


Fig. 1.

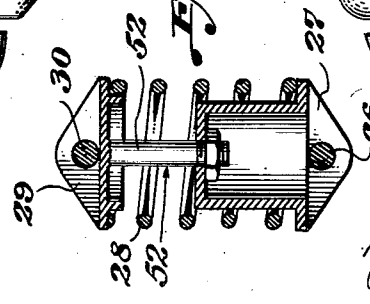


Fig. 14.

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Fig. 3.

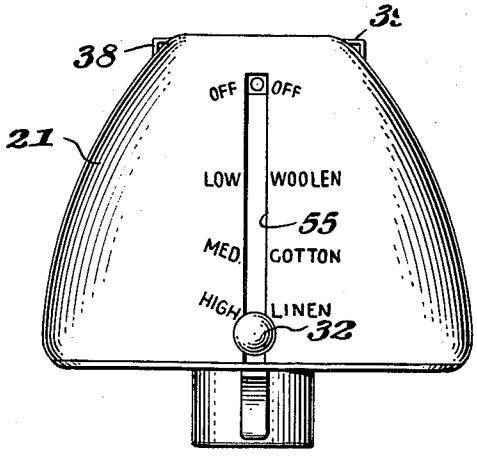


Fig. 10.

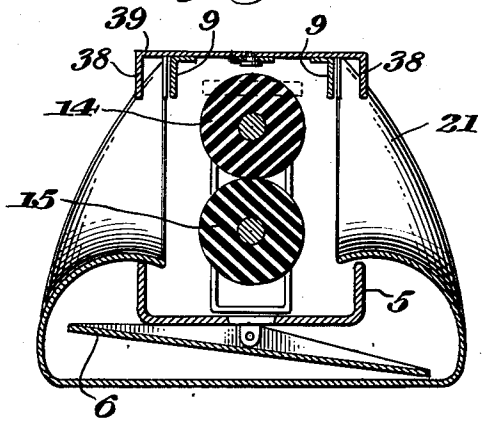


Fig. 7.

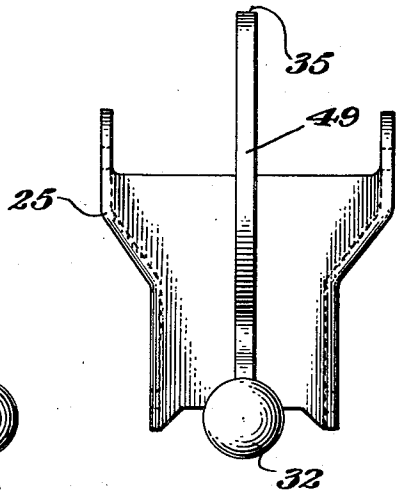
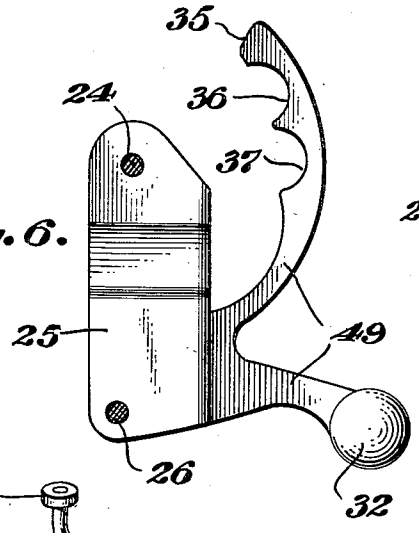


Fig. 6.



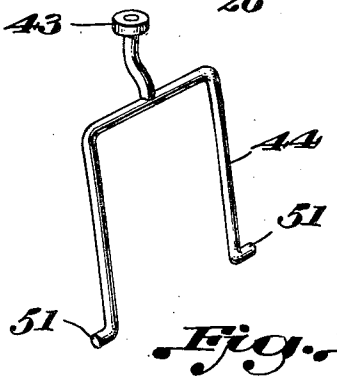


Fig. 12.

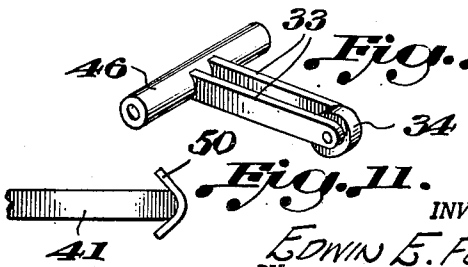


Fig. 13.

Fig. 11.

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WRINGER PRESSURE APPLYING MECHANISM

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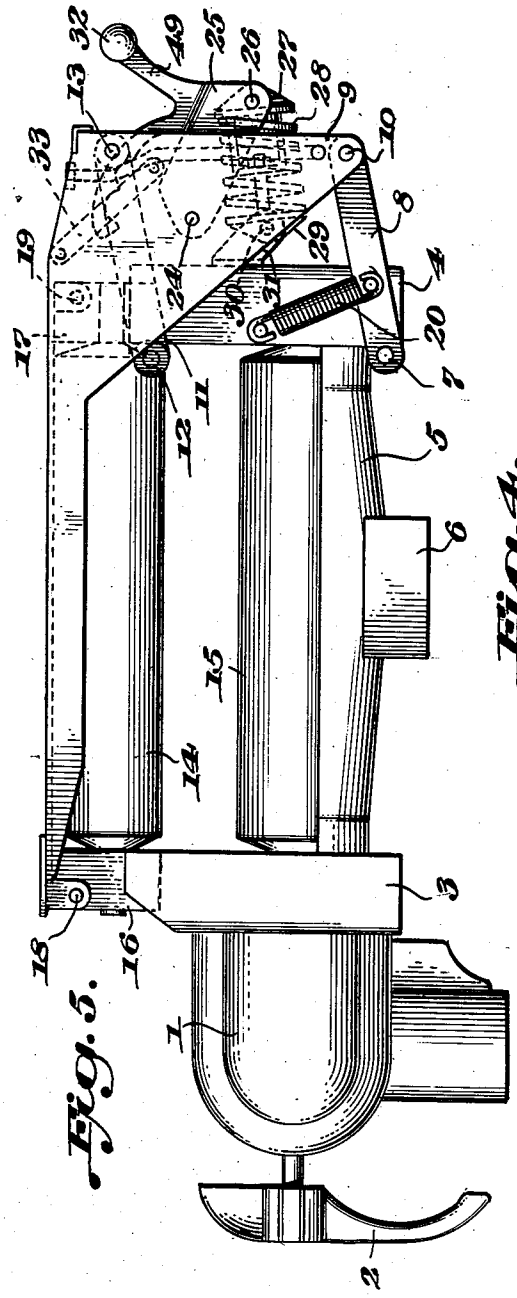


Fig. 5.

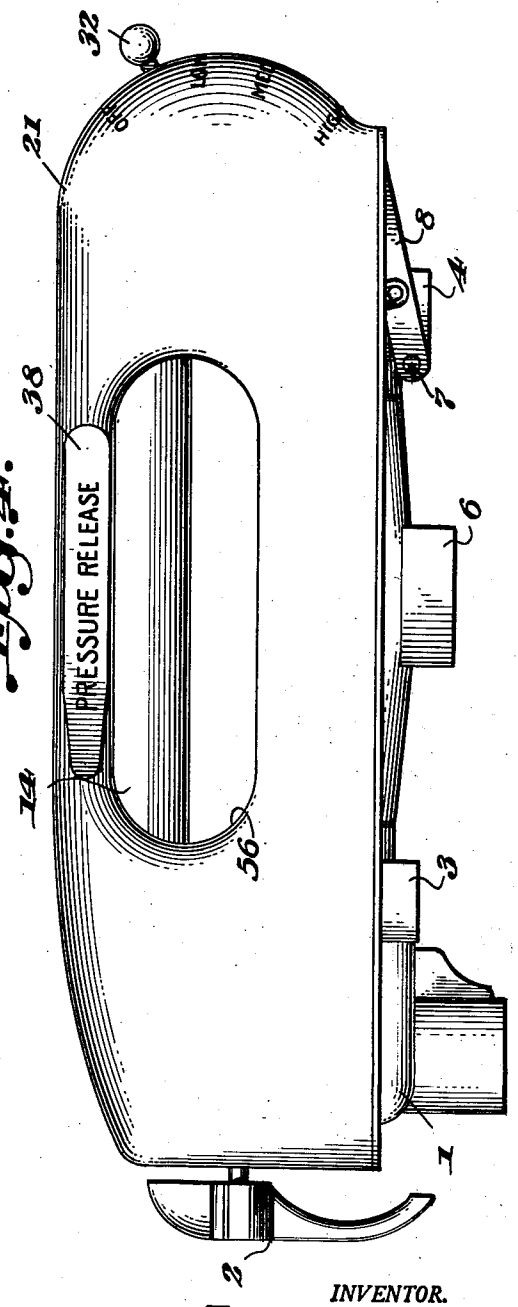


Fig. 4.

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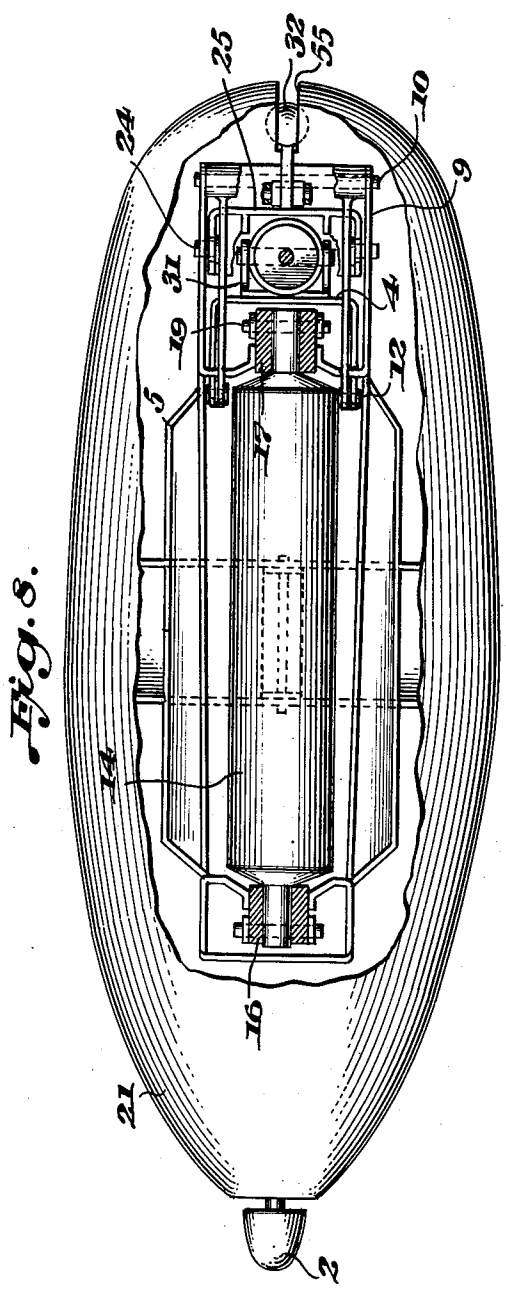


Fig. 8.

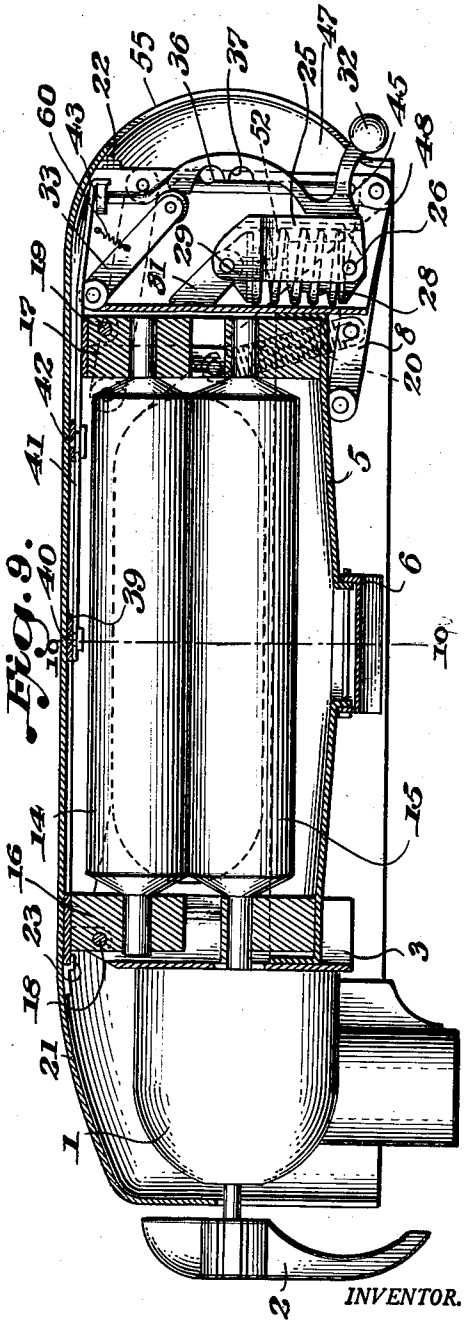


Fig. 9.

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WRINGER PRESSURE APPLYING MECHANISM

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Fig. 15.

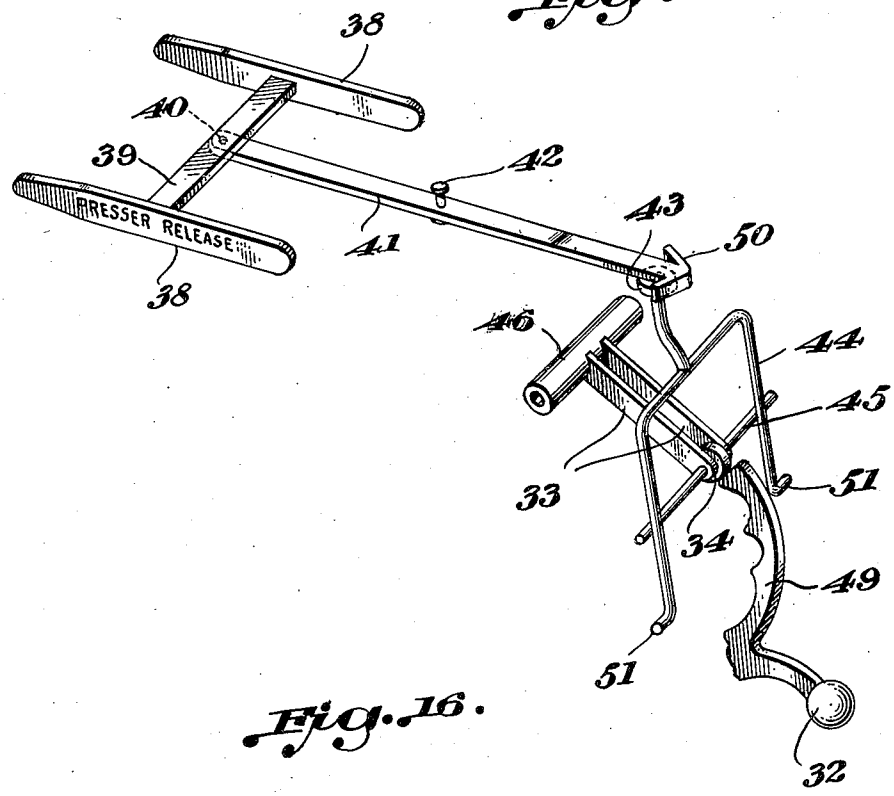
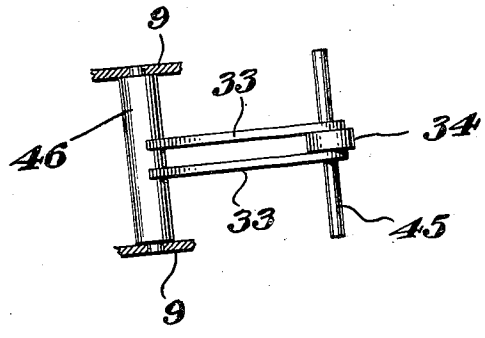


Fig. 16.



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UNITED STATES PATENT OFFICE

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WRINGER PRESSURE APPLYING MECHANISM

Edwin E. Foster, Austin, Tex.

Application August 28, 1946, Serial No. 693,549

13 Claims. (Cl. 68—263)

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This invention relates to a turret top wringer of the type in which the pressure between the rolls can be easily applied and released.

It is an object of the invention to provide a one-piece housing for a clothes wringer, in which the sides, top and ends of the housing are made of a unitary sheet metal member with suitable openings for the rolls and controls.

The housing encloses the wringer rolls, a gear box and a pressure mechanism to form a streamline housing which can be easily removed for cleaning and servicing purposes.

Another object of the invention resides in providing a permanently stored energy unit to provide the squeezing pressure which is adjustable to produce different pressures.

A still further object of the invention resides in the structure of the pressure mechanism and its mounting and operation which are all mounted in the housing and instantly operable to release, adjust or apply pressure.

Further objects will be apparent from the following description when considered in connection with the accompanying drawings in which—

Fig. 1 is a side elevation of the wringer with the pressure applied in the high position,

Fig. 2 is a plan view of the wringer,

Fig. 3 is an end view of the wringer,

Fig. 4 is a side elevation of the wringer with the pressure released and the top roll and housing in the extreme wide-open position,

Fig. 5 is a side elevation of the wringer similar to Fig. 4 with the housing removed,

Figs. 6 and 7 are side and end elevations respectively of a pressure applying control member and its mounting means,

Fig. 8 is a top plan view of the wringer similar to Fig. 2 with a portion of the housing removed,

Fig. 9 is a side elevation similar to Fig. 1 with part of the housing cut away,

Fig. 10 is a cross section of the wringer taken on line 10—10 of Fig. 9,

Fig. 11 is a top view of one end of a release lever,

Figs. 12 and 13 are perspective views of two details,

Fig. 14 is a longitudinal section of the force applying member,

Fig. 15 is a perspective view of the details of the pressure release mechanism, and

Fig. 16 is an end view of the details of the latch.

As shown in Fig. 5, a standard gear box 1 is provided with a gear shifting control handle 2, which is fitted to an upright standard 3. This

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upright standard 3 and a second upright standard 4 of suitable angle iron construction are connected by a strong U-shaped channel member 5, Figs. 9 and 10, which acts also as a water collector, and a tilting trough 6 pivoted thereto directs the water back into a tub or washer. The upright standards 3 and 4 serve as guides for the usual bearing blocks for both the upper and lower rolls of the wringer, and the upright standard 4 is provided with pivot points 7 to which a double link 8, Fig. 5, is pivoted. The opposite end of the connecting link 8 is pivoted to a double arm or members 9 at the pin 10, and a second double link 11 is hinged to the standard 4 at the points 12, as shown more clearly in Fig. 8. The other end of each double link 11 is connected to its respective arm member 9 at the point 13, and this 4-bar linkage is formed consisting of the standard 4, the arms 9 and the links 8 and 11 to cause the upper roll 14 to move up and down parallel to the lower roll 15. The double link 8 is provided with a connecting sleeve, not shown, through which the pin 10 fits, and this connecting sleeve causes the double link 8 to be rigid and to withstand any twisting load. The upper roll 14 is mounted in the bearing blocks 16 and 17, which are fastened to the arm members 9 by means of pins 18 and 19. The upper roll 14 and the arm members 9 are counterweighted by means of two tension springs 20, Fig. 5, one on each side of the standard 4 which are of sufficient strength to also counterweight the one-piece housing 21, whereby when the pressure is released the upper roll 14 and housing will lift away from the lower roll 15. The one-piece housing 21 is held in place on the arm 9 by means of a screw 22, Fig. 9, and a hook member 23. The housing 21 has suitable elongated side openings 56, one in each side thereof, Figs. 1, 4 and 10, through which the articles to be squeezed pass to and from the rolls 14 and 15.

The pressure for the squeezing rolls 14 and 15 is applied by means of a preloaded spring device, Fig. 14, which is adjustable for at least three different degrees of pressure—low, medium and high. A pressure control lever 49 shown in Figs. 6 and 7 is pivotally mounted to the floating arm 9 at the points or pivots 24 by means of a pivot member 25, the opposite end of which is provided with a pivot pin 26, whereby it is pivotally connected to a cup-shaped member 27, Fig. 14, which fits into one end of a compression spring 28. The opposite end of the compression spring 28 fits over a boss on a pivot member 29, which is pivotably

connected by means of a pin 30 to a U-shaped bracket 31, which is secured to or may be integral with the standard 4. The member 29 is provided with a tension bolt and nut 52, Fig. 14, which holds a preloaded tension in the compression spring 28. The lever 49 projects through a slot 55 in one end portion of the housing 21. When the wringer is in the open position of the rolls shown in Figs. 4 and 5, the preloaded energy in the spring is held by means of the tension bolt reacting against the bottom of the cup member 27, as shown more clearly in Fig. 14. When the operator pushes downward on the pressure control knob 32, on the end of lever 49, the floating housing 21 and the upper roll 14, which are mounted on the arm 9, will move downward until the rolls make contact just prior to the time the pivot 24 is in line with the pivot 30. A further movement downward of the control knob 32 will cause the spring 28 and the pivot member 25 to move as a unit about the points of coincidence 24 and 30 and assume the position shown in Fig. 9 for the high pressure position. The fact that the movable pivot 24 is slightly further away from the standard 4 than the stationary pivot pin 30, as shown in Fig. 5, results in an eccentric, or cam action, which causes the spring 28 and the pivot member 25 to be unstable except for the fact that they are latched into position by means of a prop stick latch 33, Figs. 9, 13 and 15 which is provided with a roller 34 to cooperate with one of three stop surfaces 35, 36 and 37, Fig. 6, in or part of the member 49. In order to constantly urge the latch 33 against the member 49 a suitable spring 60 may be provided. In order to release the pressure and allow the wringer to open, it is merely necessary for the operator to push or pull on one of the trigger bars 38, which are inter-connected by means of a flat member or rod 39 and to which is connected, by means of a pin 40, Fig. 15, to a lever 41, which latter is pivoted to the housing 21, by means of a shoulder screw 42, Figs. 9 and 15. The opposite end of the lever 41 is provided with a V-shaped portion 50, which operates against a roller 43 on the end of the Y-shaped member 44, Figs. 12 and 15, which latter is pivoted in the arm 9 at the pivots 51. The Y-shaped member 44, shown in detail in Figs. 12 and 15, pushes against an extended shaft 45 on the end of the prop stick 33 which is pivoted in the arm members 9 by means of a sleeve 46. Therefore, when one of the triggers 38 is pushed or pulled the lever 41 moves about the fulcrum 42 and causes the V-shaped end portion to move the Y-member 44 counterclockwise, Fig. 15, about its pivots 51, which causes the prop stick 33 to move clockwise about its pivot sleeve 46 and thus move the roller 34 away from the stop surface 35, so that the unstable pivot member 25 and the pressure spring 28 will move counter-clockwise about the pivots 24 and 30 and assume the position shown in Fig. 5. When the pressure spring 28 is in high pressure position shown in Fig. 9, the spring moves in direct proportion to the amount the upper roll is separated from the lower roll 15. When the pressure spring 28 and the pivot member 25 are stopped in medium position, however, the spring 28 will move slightly less than the amount this upper roll moves upward. Likewise, in low pressure position, at which time the pin 26 will be located at the imaginary point 47, Fig. 9, the compression spring 28 will need to move only a fraction of the amount that the upper roll 14 has moved, due to the angle at which it is operating. When the medium pressure position, that is, when the roller 34 is in the stop surface 36, the hinge pin 26 will be at the imaginary point 52, Fig. 9.

From the foregoing it will be obvious as to the operation of the wringer. By moving knob 32 to the position "Low, Medium or High" the desired squeezing pressure between the rolls 14 and 15 may be obtained, due to the position of the spring 28. Also by pulling or pushing one of the trigger bars 38 the prop stick latch 33 is moved out of a notch in the member 25, so that the spring 28 will move to the position of Fig. 5 where the force of the spring will be directed through the four bar linkage and not through or between the rolls.

The preloaded and energy stored spring 28 in any of its positions of adjustment, never releases its tension or compression force as the only energy which must be replaced is that lost through friction in the various bearings, which is negligible. Thus, a different setting of the knob 32 shifts the spring 28 to direct more or less force of the spring between the rolls, the remaining force of the spring acting through the four-bar linkage. In other words, the spring 28 is under the same tension in the position of Fig. 5 as in the position of Fig. 9 and also all intermediate positions. In Fig. 5, the force of the spring passes through the links 8 and 11 and not between the rolls 14 and 15 as in the position of Fig. 9.

The pressure release bar 38 can be instantly actuated from either side of the wringer for the reason that the rotation of the rod 41 in either direction will shift the member 44 counterclockwise, Fig. 15, to move the prop stick 33 from contact with the member 49. In this position due to the double cam 50, the member 44 abuts against the shaft 45 to move the prop stick from contact with the member 49.

If for any reason it is necessary to gain access to any parts of the wringer and its operating mechanism it is merely necessary to remove the screw 22 through the slot in which the knob 32 extends and then by a slight movement to the left, Fig. 9, the hook 23 will free itself from the frame which then permits the housing to be lifted from the wringer.

I claim as my invention:

1. A force applying mechanism for a wringer comprising a pair of rolls and bearings for the rolls, an arm member secured to one of the bearings of the rolls of the wringer and which is movable with the roll toward and away from the other roll, a stationary frame, a pair of spaced links each connected at one end to the stationary frame and the other end to the arm member, a preloaded spring connected at one end to the frame, and a pressure adjusting member pivotally mounted at one end in the arm member and the other end pivotally connected to the other end of the spring, said pressure adjusting member operating the spring to adjust the force between the rolls and to cause separation of the rolls from each other.

2. A force applying mechanism for a wringer comprising a pair of rolls and bearings for the rolls, an arm member secured to one of the bearings of the rolls of the wringer and which is movable with the roll toward and away from the other roll, a stationary frame, a pair of spaced links each connected at one end to the stationary frame and the other end to the arm member, a preloaded spring connected at one end to the frame, a pressure adjusting member pivotally mounted at one end in the arm member and the other end pivotally connected to the other end of the spring, said pressure adjusting member op-

erating the spring to adjust the force between the rolls and to separate the rolls from each other, and a prop stick latch secured to the arm member and cooperating with the pressure adjusting member to hold the latter in the positions of adjustment of the spring.

3. A force applying mechanism for a wringer comprising a pair of rolls and bearings for the rolls, an arm member secured to one of the bearings of the rolls of the wringer and which is movable with the roll toward and away from the other roll, a stationary frame, a pair of spaced links each connected at one end to the stationary frame and the other end to the arm member, a preloaded spring connected at one end to the frame, a pressure adjusting member pivotally mounted at one end in the arm member and the other end pivotally connected to the other end of the spring, said pressure adjusting member operating the spring to adjust the force between the rolls and to separate the rolls from each other, a prop stick latch secured to the arm member and cooperating with the pressure adjusting member to hold the latter in the positions of adjustment of the spring, and means adjacent the rolls connected to operate the latch to automatically release the pressure and separate the rolls.

4. A wringer comprising a pair of spaced upright standards, a pair of squeezing rolls, bearings in the standards in which the rolls are mounted and of which the bearings of the upper roll are slidable to permit the rolls to be separated relative to each other, a double arm member to which the slidable bearings of the upper roll are connected, a pair of spaced links each pivotally connected at one end to one of the upright standards and the other end connected to the arm member, a prestressed spring pivotally connected at one end to the last mentioned upright standard, a pressure adjusting member pivotally mounted at one end in the double arm member and the other end pivotally connected to the other end of the spring, said adjusting member having an operating means and a member having a series of stops, and a prop stick latch secured to the double arm and cooperating with the series of stops to maintain the spring in the adjusted position for the desired pressure between the rolls.

5. A wringer comprising a pair of spaced upright standards, a pair of squeezing rolls, bearings in the standards in which the rolls are mounted and of which the bearings of the upper roll are slidable to permit the rolls to be separated relative to each other, a double arm member to which the slidable bearings of the upper roll are connected, a pair of spaced links each pivotally connected at one end to one of the upright standards and the other end connected to the arm member, a prestressed spring pivotally connected at one end to the last mentioned upright standard, a pressure adjusting member pivotally mounted at one end in the double arm member and the other end pivotally connected to the other end of the spring, said adjusting member having an operating means and a member having a series of stops, a prop stick latch secured to the double arm and cooperating with the series of stops to maintain the spring in the adjusted position for the desired pressure between the rolls, and means adjacent the rolls to automatically trip the adjusting member to release the pressure between the rolls.

6. A wringer comprising a pair of spaced upright standards, a pair of squeezing rolls, bearings in the standards in which the rolls are mounted and of which the bearings of the upper roll are slidable to permit the rolls to be separated relative to each other, a double arm member to which the slidable bearings of the upper roll are connected, a pair of spaced links each pivotally connected at one end to one of the upright standards and the other end connected to the arm member, a prestressed spring pivotally connected at one end to the last mentioned upright standard, a pressure adjusting member pivotally mounted at one end in the double arm member and the other end pivotally connected to the other end of the spring, said adjusting member having an operating means and a member having a series of stops, a prop stick latch secured to the double arm and cooperating with the series of stops to maintain the spring in the adjusted position for the desired pressure between the rolls, and a spring connected to one of the links and one of the standards to counterbalance the weight of the movable roll and the double arm member.

7. A wringer comprising a pair of spaced upright standards, a pair of squeezing rolls, bearings in the standards in which the rolls are mounted, and of which the bearings of the upper roll are slidable to permit the rolls to be separated relative to each other, a double arm member to which the slidable bearings of the upper roll are connected, a pair of spaced links each pivotally connected at one end to one of the upright standards and the other end connected to the arm member, a prestressed spring pivotally connected at one end to the last mentioned upright standard, a pressure adjusting member pivotally mounted at one end in the double arm member and the other end pivotally connected to the other end of the spring, said adjusting member having an operating means and a member having a series of stops, a prop stick latch secured to the double arm and cooperating with the series of stops to maintain the spring in the adjusted position for the desired pressure between the rolls, a spring connected to one of the links and one of the standards to counterbalance the weight of the movable roll and the double arm member, and a one-piece sheet metal housing extending over the rolls, standards and pressure adjusting member and having a slot therein through which the operating means of the pressure adjusting member extends in the form of a handle.

8. A wringer comprising a pair of spaced upright standards, a pair of squeezing rolls, bearings in the standards in which the rolls are mounted and of which the bearings of the upper roll are slidable to permit the rolls to be separated relative to each other, a double arm member to which the slidable bearings of the upper roll are connected, a pair of spaced links each pivotally connected at one end to one of the upright standards and the other end connected to the arm member, a prestressed spring pivotally connected at one end to the last mentioned upright standard, a pressure adjusting member pivotally mounted at one end in the double arm member and the other end pivotally connected to the other end of the spring, said adjusting member having an operating means and a member having a series of stops, and a prop stick latch secured to the double arm member and cooperating with the series of stops to maintain the spring in the adjusted position for the desired pressure between

the rolls, said standard to which the links are connected, the links and the double arm member constituting a four-bar linkage as a parallelogram operable to permit movement of the upper roll and the double arm member in a parallel relationship relative to the other roll.

9. A wringer comprising a pair of spaced upright standards, a pair of squeezing rolls, bearings in the standards in which the rolls are mounted and of which the bearings of the upper roll are slidable to permit the rolls to be separated relative to each other, a double arm member to which the slidable bearings of the upper roll are connected, a pair of spaced links each pivotally connected at one end to one of the upright standards and the other end connected to the arm member, a prestressed spring pivotally connected at one end to the last mentioned upright standard, a pressure adjusting member pivotally mounted at one end in the double arm member and the other end pivotally connected to the other end of the spring, said adjusting member having an operating means and a member having a series of stops, a prop stick latch secured to the double arm member and cooperating with the series of stops to maintain the spring in the adjusted position for the desired pressure between the rolls, a spring connected to one of the links and one of the standards to counterbalance the weight of the movable roll and the double arm member, a one-piece sheet metal housing extending over the rolls, standards and pressure adjusting member and having a slot therein through which the operating means of the pressure adjusting member extends in the form of a handle, and means for removably securing the housing to the double arm member.

10. A wringer of the type having a pair of rolls with one roll movable away from the other roll, comprising a frame for the movable roll, a pair of parallel links on each side of the frame and connected to the frame for maintaining the movable roll in parallel relation relative to the other roll, a prestressed and energy stored spring and an actuating lever connected to adjust the frame and thereby the squeezing force between the rolls and the lever acting to raise the movable roll and frame, and means including a latch for locking the actuating lever and the spring in its adjusted position.

11. A wringer of the type having a pair of rolls with one roll movable away from the other roll, comprising a frame for the movable roll, a pair of parallel links on each side of the frame and connected to the frame for maintaining the movable roll in parallel relationship relative to the other roll, a prestressed spring and an actuating lever connected to adjust the frame and thereby the squeezing force between the rolls and the lever acting to raise the movable roll and frame, means for locking the actuating lever and the spring in its adjusted position, and means adjacent the rolls to trip the locking means to separate the rolls.

12. A wringer of the type having a pair of rolls with one roll movable away from the other roll, comprising a frame for the movable roll, a pair of links connected to the frame for maintaining the movable roll in parallel relationship relative to the other roll, a prestressed spring and an actuating lever connected to adjust the frame and thereby the squeezing force between the rolls and the lever acting to raise the movable roll and frame, means including a latch for locking the actuating lever and the spring in its adjusted position, and a second spring connected to one of the links to counterbalance the weight of the frame, movable roll and the actuating lever and its spring.

13. A wringer of the type having a pair of rolls with one roll movable away from the other roll and operating mechanism for the rolls, comprising a frame for the movable roll, a pair of parallel links on each side of the frame and connected to the frame for maintaining the movable roll in parallel relationship relative to the other roll, a prestressed spring and an actuating lever connected to adjust the frame and thereby the squeezing force between the rolls and the lever acting to raise the movable roll and frame, means including a pivoted latch for locking the actuating lever and the spring in its adjusted position, and a unitary housing extending over the rolls and the operating mechanism.

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