

Dec. 23, 1958

N. L. ETTEN

2,865,190

WRINGER

Filed Dec. 8, 1955

4 Sheets-Sheet 1

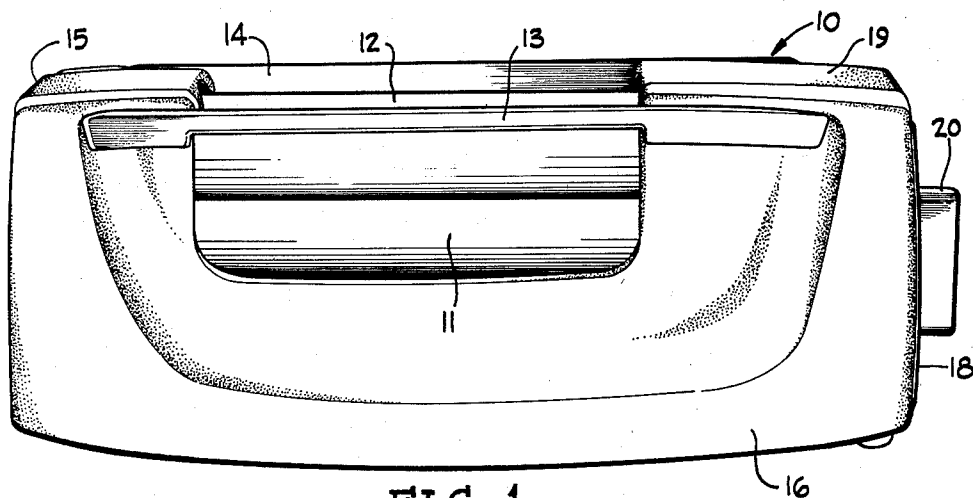


FIG. 1

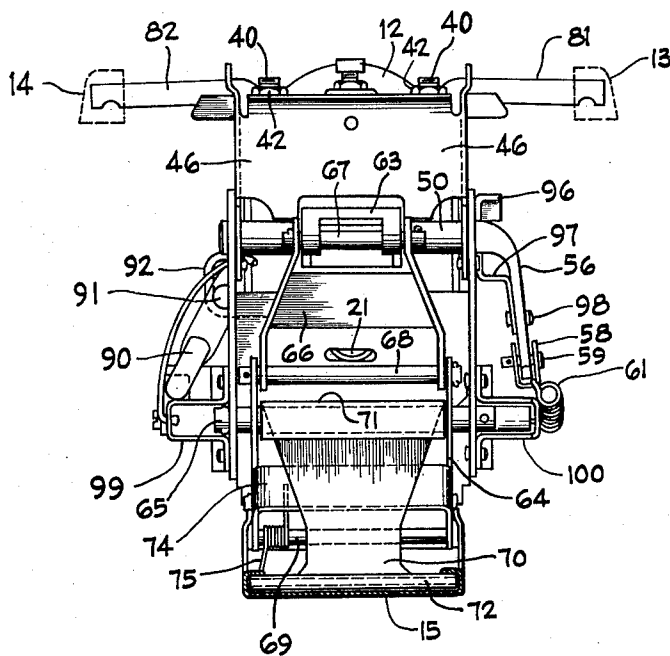


FIG. 3

INVENTOR
NICHOLAS L. ETTEN

BY *Hill, Sherman, McLean, Chase & Simpson*

ATTORNEYS

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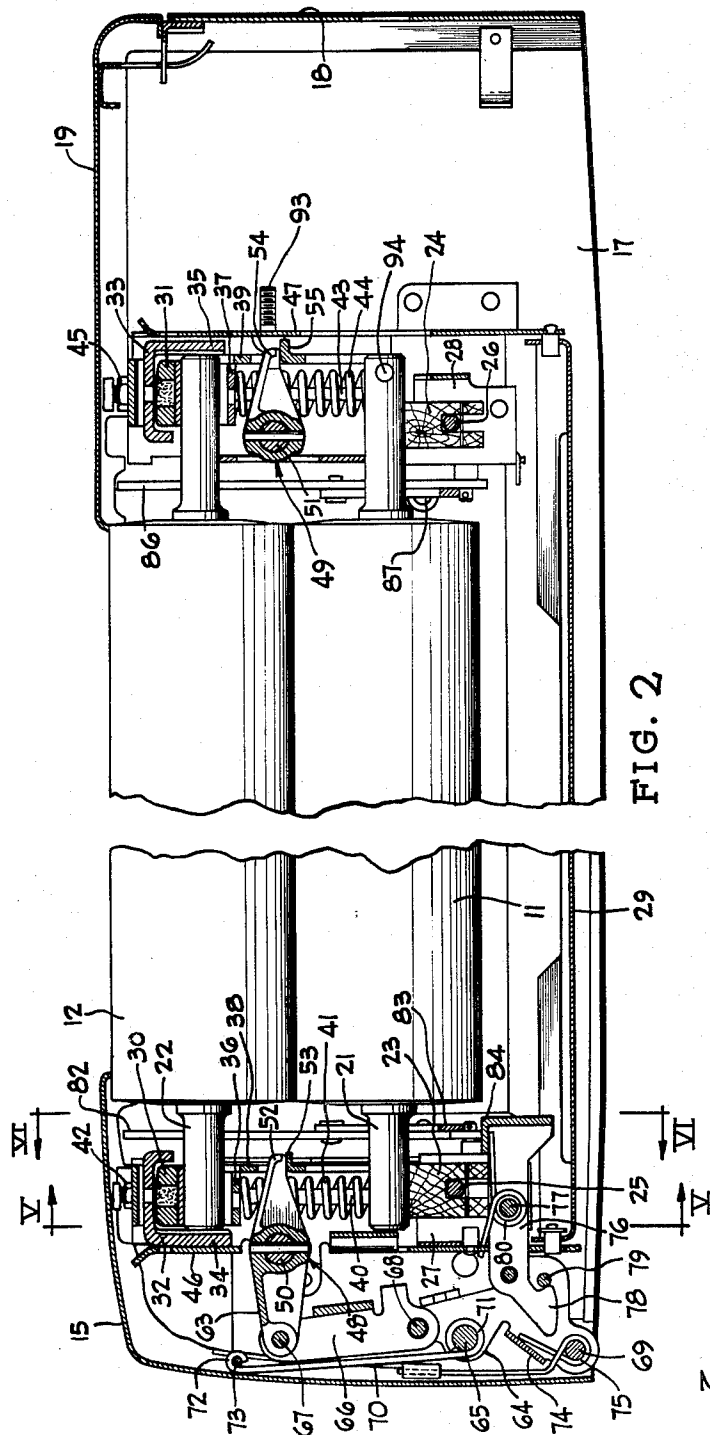


FIG. 2

INVENTOR
NICHOLAS L. ETTEN

By *Hill, Sherman, Meroni, Chad & Simpson* ATTORNEYS

Dec. 23, 1958

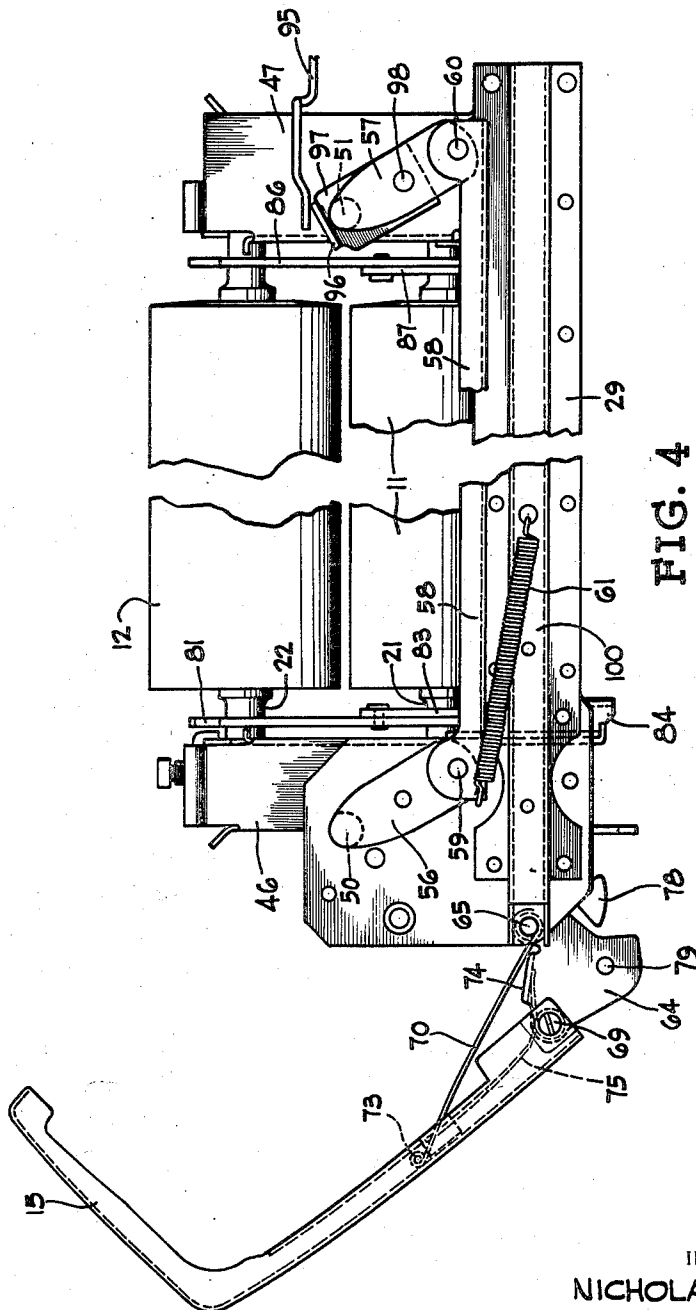
N. L. ET TEN

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4 Sheets-Sheet 3



INVENTOR
NICHOLAS L. ET TEN

By *Hill, Sherman, Merani, Chase & Simpson* ATTORNEYS

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N. L. ETTEN

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4 Sheets-Sheet 4

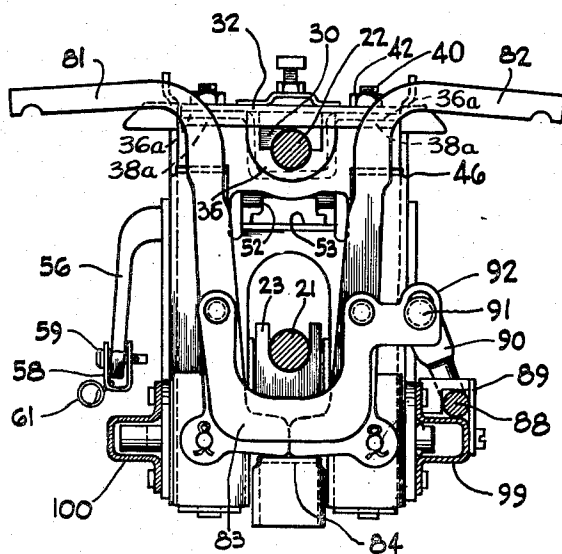


FIG. 6

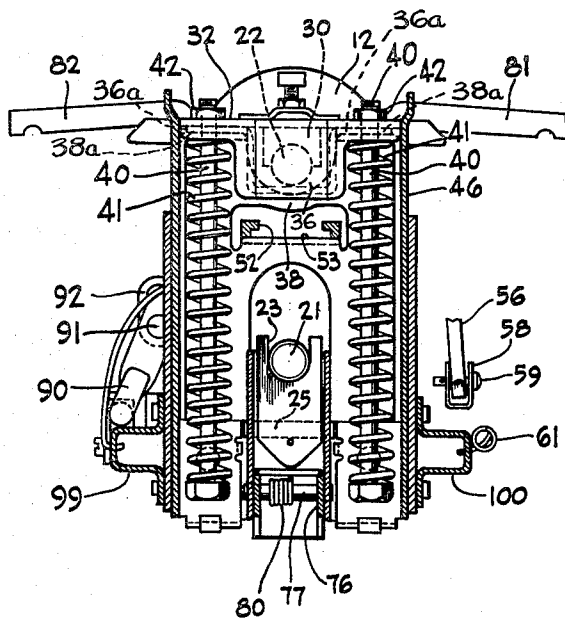


FIG. 5

INVENTOR
NICHOLAS L. ETTEN

BY *Kill, Sherman, Merani, Gross & Simpson*

ATTORNEYS

1

2,865,190

WRINGER

Nicholas-L. Etten, Cedar Falls, Iowa, assignor to Chamberlain Corporation, Waterloo, Iowa, a corporation of Iowa

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This invention relates to a wringer of the type in which clothes or the like are passed between a pair of rolls rotatable on vertically spaced parallel horizontal axes. In such wringers, lightweight articles oftentimes cling to one of the rolls, usually the upper roll when the lower roll is driven, to become wrapped therearound and prevent proper functioning of the wringer. It is therefore desirable that the wringer have a construction such that articles be readily removed from the upper roll, and it is an object of this invention to provide such a wringer.

A more specific object of the invention is to provide a wringer in which the top structure usually provided over the upper roll is eliminated to obtain an open top construction by which removal of articles is facilitated, as well as to obtain a compact wringer.

Another specific object of the invention is to provide a wringer in which the rolls are movable a substantial distance apart which also facilitates removal of articles which may become wrapped around the rolls.

A further object of the invention is to provide a wringer having a pressure-applying mechanism which is readily actuated to obtain the proper pressure between the rolls.

Another object of the invention is to provide a wringer which is compact, simple and reliable in construction and operation, and which comprises parts readily and economically manufactured and assembled.

It is desirable that the upper roll be the vertically movable roll and that a drive connection be provided on the lower and stationary roll. It may be noted that with the lower roll driven, any curling effect produced on the clothing article being processed is opposed by gravity and if the article does cling to one of the rolls, it will be the upper roll.

According to a specific feature of the invention, an actuating element on the frame is arranged to engage a stop surface connected to at least one of the bearings for the movable roll to move the same toward the stationary roll, and such actuating element is movable out of the path of the abutment surface so as not to interfere with movement of the movable roll away from the stationary roll. Thus, the rolls can be readily moved apart a substantial distance.

Preferably, a pair of actuating elements are provided with each being associated with a stop surface connected to one of the bearings for the movable roll. Such actuating elements may be mounted on the frame for pivotal movement about parallel axes transverse to the axes of the rolls, with a link connected between arms on the actuating elements for effecting conjoint actuation thereof. Thus, the link may extend parallel to the rolls and may be positioned below the lower side of the upper roll for providing the open top construction.

The actuating element or elements may be directly actuated but preferably are actuated through a force-multiplying mechanism. In accordance with an important feature of the invention, a manually actuatable handle element is arranged to project outwardly from the wringer

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for ready actuation to reset the rolls of the wringer into pressure engagement, but such handle element is foldable inwardly into compact relation to the wringer. Preferably, the handle element when not in use forms a part of the outer housing for the wringer.

This invention contemplates other and more specific objects, features and advantages which will become more fully apparent from the following detailed description taken in conjunction with the accompanying drawings which illustrate a preferred embodiment and in which:

Figure 1 is a perspective view of a wringer constructed according to the principles of this invention;

Figure 2 is an elevational sectional view through the wringer of Figure 1;

Figure 3 is an end elevational view of the mechanism of the wringer of Figure 1 with a handle element moved downwardly toward a pressure resetting position;

Figure 4 is a side elevational view of the mechanism of the wringer of Figure 1 with pressure released between the wringer rolls and with a reset handle in an intermediate position;

Figure 5 is a sectional view taken substantially along line V—V of Figure 2; and

Figure 6 is a sectional view taken substantially along line VI—VI of Figure 2.

Reference numeral 10 generally designates a wringer constructed according to the principles of this invention in which articles of clothing or the like are passed between a lower roll 11 and an upper roll 12 on vertically spaced parallel horizontal axes. The rolls 11 and 12 are normally urged together with considerable pressure which may be released by either pushing or pulling either one of a pair of release bars 13 and 14 extending along the sides of the wringer.

To reset the rolls 11 and 12 into pressure engagement, a handle element 15 is swung in a counter-clockwise direction as viewed in Figure 1 to a position in which it projects outwardly from the wringer and is then moved downwardly after which it may be released to allow spring means to return it to the position illustrated in Figure 1. The handle element 15 forms part of the outer housing for the wringer which housing also includes a pair of side plates 16 and 17, an end plate 18 and a top plate member 19 arranged to swing upwardly in a clockwise direction as viewed in Figure 1 when pressure is released between the wringer rolls. The wringer is preferably arranged to be mounted on a washing machine or the like with the rolls 11, 12 coupled to a driven element of the washing machine through a suitable coupling assembly controlled by a flipper element 20.

The rolls 11 and 12 are formed by molding rubber on shafts 21 and 22 which project at both ends beyond the rubber. The left and right-hand ends of the lower roll shaft 21 are supported on bearing blocks 23 and 24 which are preferably of hard wood supported on pins 25 and 26 which are supported through brackets 27 and 28 from the opposite ends of a frame member 29 underlying the lower roll 11.

In the operative position of the upper roll 12, pressure is exerted downwardly on the ends of the shaft 22 to exert pressure between the rolls. For this purpose, a pair of bearings 30 and 31 are arranged to press downwardly against the left and right-hand ends of the shaft 22. The bearings 30 and 31 are engaged by saddle plates 32 and 33 which have flange portions 34 and 35 extending downwardly past the ends of the upper roll shaft 22. A pair of generally U-shaped brackets 36 and 37 have bight portions underlying the end portions of the upper roll shaft 22 and out-turned ears underlying the end portions of each of the saddle plates 32 and 33.

The out-turned ears of the bracket 36 are indicated by

reference numeral 36a in Figures 5 and 6 and it will be understood that similar ears are provided on the bracket 37.

A pair of vertically extending cage members 38 and 39 are provided each of which has a pair of out-turned side flange portions and a pair of in-turned ears at the upper ends of such flange portions which ears underlie the ears of the brackets 36 and 37. The inturnd ears of the bracket 38 are indicated by reference numeral 38a in Figures 5 and 6 and it will be understood that similar ears are provided on the bracket or cage member 39. A pair of bolts 40 and a pair of coiled compression springs 41 are provided for the left-hand bearing assembly, the bolts 40 having head portions at the lower ends thereof and shank portions extending upwardly through the springs 41, through the ears of the cage member 38, the ears of the bracket 36 and the end portions of the saddle plate 32 with nuts 42 being threaded on the upper end of the bolts 40. The nuts 42 are adjustable to obtain the proper pressure between the rolls. A similar pair of bolts 43, springs 44 and nuts 45 are provided on the right-hand bearing assembly. A pair of generally channel-shaped upright guide members 46 and 47 are secured to the left and right-hand ends of the frame member 29 to guide the bearing assemblies in vertical movement.

To exert pressure between the rolls 11 and 12, downward pressure is exerted on the cage members 38 and 39 to exert downward pressure on the upper ends of the springs 41, 44. The springs urge the bolts 40, 43 downwardly to pull the saddle plates 32, 33 downwardly and press the bearings 30, 31 downwardly against the end portions of the upper roll shaft.

To move the cage members 38 and 39 downwardly, a pair of actuating elements 48 and 49 are provided in the form of cam levers secured to shafts 50 and 51 having parallel horizontal axes transverse to the axes of the rolls 11, 12. The lever 48 has a pair of finger portions 52 arranged to extend into an opening in the cage member 38 and engage an abutment surface defined by a struck-out or turned-over ledge 53. The lever 49 has a similar pair of finger portions 54 arranged to extend into an opening in the cage member 39 and engage a ledge 55 thereof.

The levers 48 and 49 are rotated in a clockwise direction as viewed in Figure 2 to cause the fingers 52 and 54 to move into the openings in the cage members 38 and 39 and engage the ledges 53 and 55 to move the cage members 38 and 39 downwardly and exert pressure between the rolls. To release the pressure, the levers 48, 49 are rotated in a counter-clockwise direction to withdraw the fingers 52, 54 out of the path of the abutment surfaces defined by the ledges 53 and 55 so as not to interfere with upward movement of the cage members 38 and 39 and thereby allow substantial upward movement of the upper roll 12.

Means are provided interconnecting the levers 48 and 49 for effecting conjoint movement thereof. In particular, a pair of lever arms 56 and 57 are secured to the ends of the shafts 50 and 51 as shown in Figure 4 and a generally channel-shaped link bar 58 has end portions pivotally secured by pins 59 and 60 to the lever arms 56 and 57 at equal radii from the axes of the shafts 50 and 51 with the pins being spaced apart a distance substantially equal to the spacing of the axes of the shafts 50 and 51. A coiled tension spring 61 is secured at one end to the left-hand end of the link bar 58 and at the other end to the frame member 29 to exert a force urging the levers 56 and 57 in a counter-clockwise direction.

Either one of the levers 48 or 49 might be directly actuated. Preferably, however, the lever 48 is actuated through a force-multiplying mechanism. In particular, the lever 48 has an arm portion 63 which is coupled to a lever 64 on a shaft 65 through a link 66 pivotally connected by a pin 67 to the arm 63 and by a pin 68 to the lever 64. The spacing between the axes of the pin 68 and shaft 65 is preferably less than the spacing between

the axes of the pin 67 and shaft 50 to provide force-multiplication.

The lever 64 is actuated by the handle element 15. In particular, the handle element 15 is connected to the lever 64 through a pin 69 with means being provided for limiting counter-clockwise movement of the handle 15 after it is moved to a position projecting outwardly from the wringer so that with downward movement of the handle 15 after it has reached such a position, the lever 64 will be rotated in a counter-clockwise direction. Such means comprises a plate 70 which is turned over at one end to define a hooked portion 71 pivoted on the pin 65 and turned over at the other end to define a hooked portion 72 which carries pin 73. The ends of the pin 73 ride in channels formed in the handle 15. When the handle is rotated in a counter-clockwise direction, the ends of the pin 73 will ride in such channels until the plate 70 engages an integral flat plate portion 74 of the lever 64. The handle 15 is almost in such a position in the illustration of Figure 4. With further counter-clockwise movement of the handle 15, it will move as a unit with the lever 64 and plate 70, so that pressure can be applied between the rolls with considerable leverage.

The handle 15 is swung in a clockwise direction toward its folded position by a wire spring 75 coiled about the pin 69 with one end thereof engaging the portion 74 of the lever 64 and with the other end thereof locked to the handle 15.

Releasable latch means are provided for latching the mechanism in a pressure-applying position. In particular, a latch lever 76 is pivoted on a pin 77 and has a hook-shaped portion 78 arranged to receive a pin 79 on the lever 64 to prevent clockwise movement thereof. The latch lever 76 is urged by a spring 80 in a counter-clockwise direction to a latching position, and a release mechanism operated by the release bars 13 and 14 is provided for moving the lever 76 in a clockwise direction to release the pressure-applying or reset mechanism. In particular, a pair of generally upright levers 81 and 82 are pivotally secured at their lower ends to the bracket 27 and a generally U-shaped link member 83 connects the levers 81 and 82. The levers 81 and 82 have inwardly extending arms arranged to engage a flange portion 84 of the latch member 76 when the levers 81, 82 are pivoted in either direction.

The levers 81 and 82 are turned outwardly at their upper ends for receiving the left-hand ends of the release bars 13 and 14 and a similar pair of levers 85 and 86 receive the right-hand ends of the release bars 13 and 14 with the levers 85 and 86 being pivoted at their lower ends to the bracket 28 and being connected by a link 87 similar to the link 83.

The left-hand release lever assembly 81, 82 and 83 and the right-hand assembly 85, 86 and 87 are, of course, coupled together by the release bars 13 and 14 and may be additionally coupled together by a rod 88 extending along the frame of the wringer and journaled by means including a bracket 89. The rod 88 has an arm portion 90 at its left-hand portion 92 of the link 83, and the rod 88 has a similar arm portion at its right-hand end coupled to the link 86 in a similar fashion. By thus using the rod 88 to couple the release lever assemblies together, the release bars 13 and 14 do not have to be relied upon for this purpose, and the release bars and the connection of the same to the lever assemblies do not have to be as strong as they would otherwise have to be.

It should be noted that the drive coupling for the wringer is not illustrated but such is mounted in the right-hand side of the wringer between the guide 47 and the plate 18, the coupling being supported by means including a screw 93. The lower roll 11 is provided with a drive connection such as a pin 94 on the right-hand portion of the shaft 21.

It is desirable that the drive of the wringer rolls be discontinued when pressure is released between the rolls.

For this purpose, an element 95 of the drive coupling mechanism may be engaged and actuated by a flange portion 96 of a plate 97 mounted on the shaft 51 inside the lever arm 57 and locked to the lever arm 57 by a pin 98. The drive coupling assembly and the exact manner of functioning of element 95 form no part of the present invention, and they are therefore not described or illustrated in detail.

It may be noted that channels 99 and 100 extend along the sides of the frame member 29 to rigidify the same and also to serve as a means for mounting the side plates 16 and 17 of the shroud or housing.

It will thus be appreciated that this invention provides a wringer having an open top construction with the upper roll being releasable to move upwardly a substantial distance for ready access thereto. The pressure-applying mechanism is readily actuated and released and is reliable in operation. It is to be noted that a minimum number of parts are required and many of the parts are duplicated for ease and economy of manufacture. The rolls 11 and 12 may be substantially identical in construction and are readily and economically manufactured by molding rubber or the like directly on the shafts 21 and 22.

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

I claim as my invention:

1. In the wringer in which clothes or the like are passed between lower and upper rolls rotatable on vertically spaced parallel horizontal axes, a frame extending parallel to said rolls, a first pair of bearing means on said frame supporting the opposite ends of said lower roll, a second pair of bearing means supporting the opposite ends of said upper roll, said second pair of bearing means being movable vertically relative to said frame for vertical movement of said upper roll into and out of operative relation to said lower roll, a pair of yokes connected to said second pair of bearing means, a pair of cam levers pivoted on parallel horizontal axes transverse to and between the axes of said rolls and pivotal in the same direction to engage said yokes to move said upper roll downwardly, a pair of lever arms connected to said cam levers and extending generally downwardly from the axes thereof, and a rigid link connected at opposite ends to the lower ends of said lever arms, said frame and said link being disposed below the lower side of said upper roll to provide an open-top construction.

2. In a wringer including bottom and top rolls rotatable on vertically spaced parallel horizontal axes, a reset mechanism for applying pressure between said rolls including a lever element at one end of the wringer pivotal about a horizontal axis transverse to said axes and having an arm portion extending generally outwardly from said axis and movable to pivot the lever element in a direction to apply pressure between the rolls, a lever member operatively connected to said arm to pivot said arm and lever element with pivotal movement of the lever member, a handle element pivotally mounted on said lever member for movement about a horizontal axis parallel to the axis of movement of said lever, spring means

urging said handle element inwardly to a generally vertical position against said one end of the wringer, said handle element being pivotal downwardly to an operative position projecting outwardly from the wringer, link means connected to said lever member at a location spaced from the location where the handle is pivotally mounted on the lever, a sliding connection between said handle and said link means permitting the link to slide vertically on the handle as the handle is pivoted away from its vertical position, and stop means on said lever member positioned to be engaged by said link means when the handle has been pivoted a predetermined distance from its vertical position and said link means applying a pivotal force to said lever member, whereby said lever is actuated with downward movement of said handle element after a predetermined movement to apply pressure between the wringer rolls.

3. In a wringer including bottom and top rolls rotatable on vertically spaced parallel horizontal axes, a reset mechanism for applying pressure between said rolls including a lever element at one end of the wringer pivotal about a horizontal axis transverse to said axes and having an arm portion extending generally outwardly from said axis and movable to pivot the lever element in a direction to apply pressure between the rolls, a lever member, a connecting link pivotally connected to said lever member at one end and pivotally connected to said arm portion at the other end to pivot said arm and lever element with pivotal movement of the lever member, a handle element pivotally mounted on said lever member for movement about a horizontal axis parallel to the axis of movement of said lever, said handle element being pivotal downwardly to an operative position projecting outwardly from the wringer, link means connected to said lever member at a location spaced from the location where the handle is pivotally mounted on the lever, a sliding connection between said handle and said link means permitting the link to slide vertically on the handle as the handle is pivoted away from its vertical position, and stop means on said lever member positioned to be engaged by said link means when the handle has been pivoted a predetermined distance from its vertical position and said link means applying a pivotal force to said lever member, whereby said lever is actuated with downward movement of said handle element after a predetermined movement to apply pressure between the wringer rolls.

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