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2,544,309

RELEASE AND REST MECHANISM FOR CLOTHES WRINGERS

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2 Sheets-Sheet 1

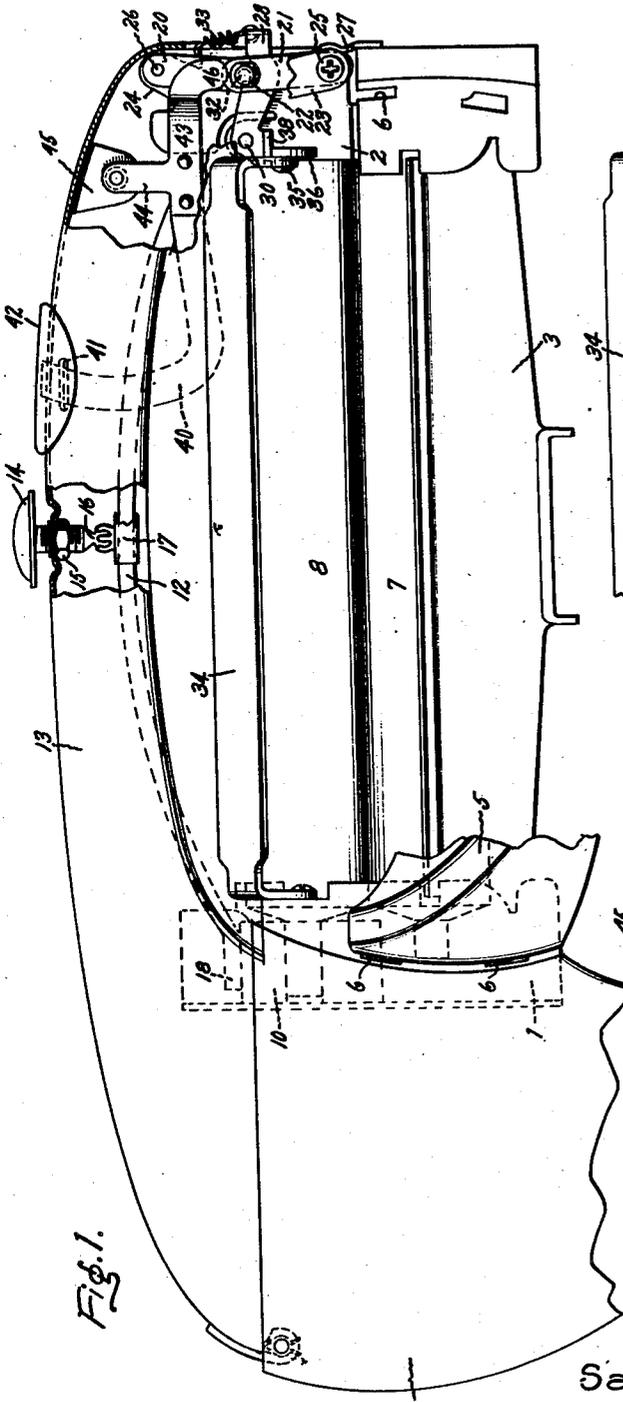


Fig. 1.

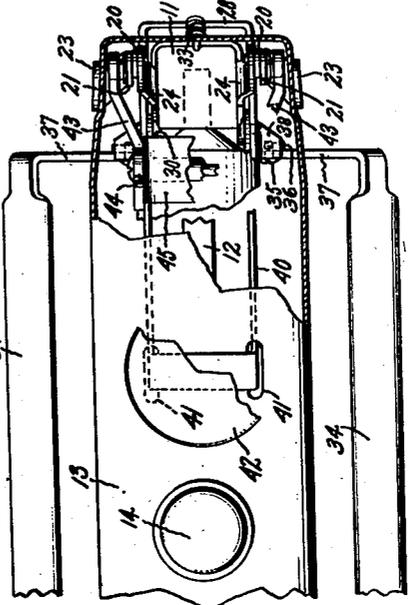


Fig. 2.

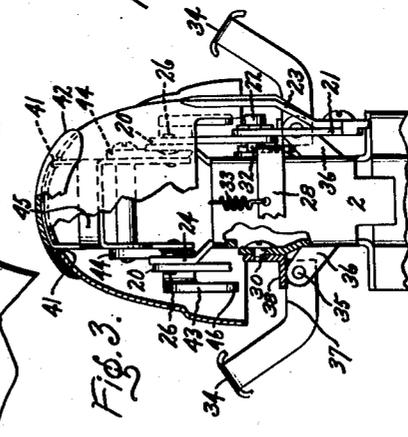


Fig. 3.

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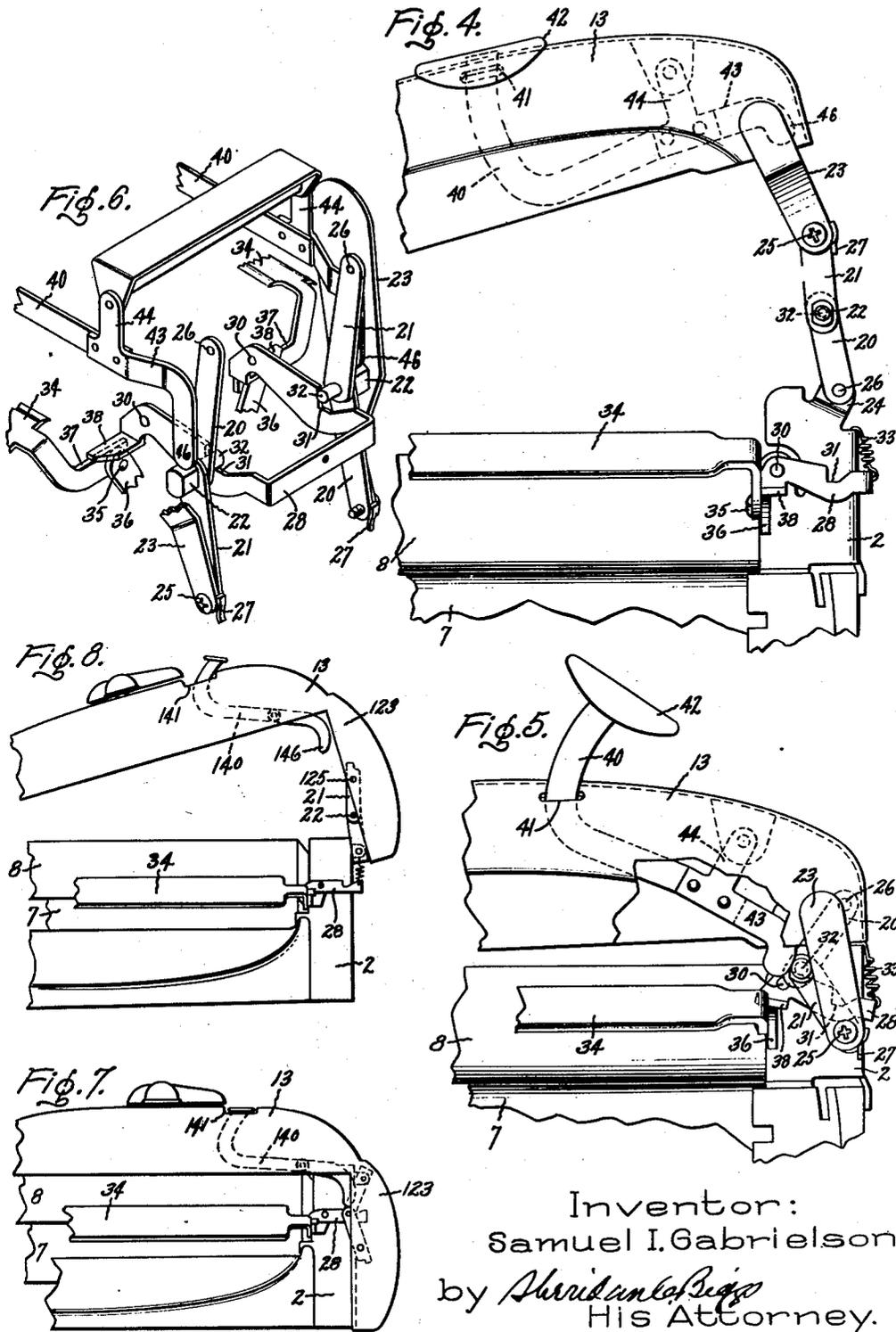
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RELEASE AND REST MECHANISM FOR CLOTHES WRINGERS

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2 Sheets-Sheet 2



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## UNITED STATES PATENT OFFICE

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RELEASE AND RESET MECHANISM FOR  
CLOTHES WRINGERSSamuel I. Gabrielson, Southport, Conn., assignor  
to General Electric Company, a corporation of  
New York

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7 Claims. (Cl. 68—263)

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This invention relates to power driven clothes wringers for domestic washing machines, with particular emphasis on an improved roll pressure release and restoring mechanism.

Power wringers are equipped with means for causing the rolls to spring apart under emergency conditions. Typical practice is to mount the rolls on bearing blocks slidably disposed within channel-like side frames or stiles. The operating pressure is provided by a leaf spring confined within a top frame member and supported at its ends by the upper roll bearing blocks. This top frame member is pivotally attached to a side structure of the wringer, and at its other end is held to the opposite side framework in spring compressing position by a latched linkage system operatively associated with a release bar which when struck or pulled disengages the latch, whereupon the reaction of the spring causes the top frame member to fly upwardly and thus free the top roll.

In many wringer constructions a member of the side frame or casing of the wringer is employed as a throw link in the linkage system, or as a lever or the like for resetting the linkage to restore normal operation. Such a side frame member must necessarily move outwardly of the wringer frame during release, and there is always present the possibility of it striking a person who might be standing at the side of the wringer when the release is actuated. This is particularly dangerous to small children whose heads might be at the level of the wringer. Experience has shown also that a heavy or relatively rigid object, such as a wash basket, placed adjacent the side frame member may hold the member against outward movement or delay its action, with resulting failure of the emergency pressure release system.

The present invention avoids these and other operational deficiencies and hazards by providing an improved linkage system and reset mechanism in which the linkage breaks inwardly rather than outwardly of the wringer during the operation of the release mechanism, and in which the reset mechanism is structurally independent of the linkage and is housed wholly within the frame structure.

It is therefore an object of the invention to provide an improved pressure release linkage having no parts or elements which can fly outwardly from the wringer during operation; and it is a further object to provide a reset lever which is structurally independent of the release mechanism and cannot prevent the normal operation of the emergency release even if the reset lever should be held in its home position at the time of operation of the release means.

It is a further object of the invention to provide an emergency roll pressure release and resetting mechanism which is simple in construction and

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assembly and which will operate without failure even under abnormal conditions.

Other features and advantages of the invention will be apparent from the following detailed description of a presently preferred embodiment, taken in connection with the accompanying drawings in which Fig. 1 is a side elevation of so much of a power wringer as is necessary for an understanding of the invention, certain frame elements being broken away more clearly to show the underlying construction; Fig. 2 is a fragmentary top plan view, partly in section; Fig. 3 is an end elevational view of the linkage end of the wringer, some elements, such as the pressure spring and bearing block, having been eliminated and portions of other elements broken away; Fig. 4 is a partial end elevation showing the upper frame member in maximum released position; Fig. 5 is a view similar to Fig. 4 but showing the apparatus just prior to its return to home position; Fig. 6 is a somewhat schematic perspective of the release and resetting mechanism; Fig. 7 is a partial side elevation of a second embodiment; and Fig. 8 is a partial elevation of the same, but showing the released position.

The drawings illustrate a typical power driven wringer having a frame provided with side stiles 1 and 2 suitably secured by a bottom frame member 3 affixed to a main frame structure 4. A drain board 5 is removably attached to each side of the wringer as by engagement with slots 6 in the stiles. The lower and upper pressure rollers 7, 8, are suitably journaled in bearing blocks within the channel-like stiles. The lower roller is arranged to be power driven by suitable reversing gearing (not shown) within the main frame 4. A typical driving means and other elements of construction will be found in the G. W. Dunham Patent No. 2,336,233 granted December 7, 1943 for "Wringer" and assigned to the assignee of the present invention. The upper roll bearing blocks 10, 11 are slidable within the respective stiles 1 and 2 and pressure is exerted on the upper roll 8 to urge it resiliently into engagement with the roll 7 by means such as a leaf spring 12 supported within a top frame member 13 which is pivotally attached to the main frame structure 4 as indicated in Fig. 1. The spring 12 is adjustably held within said frame member by any suitable means, such as the old and well known combination of an adjustment screw 14 passing through a threaded block 15 fixed to the underside of the frame member 13 and having a headed end 16 engaged by fingers of a saddle 17 embracing the spring 12, said headed end bearing directly against the spring. The ends 18 of the spring, Fig. 1, are flattened to rest firmly on the upper surfaces of the bearing blocks and when the frame member 13 is locked in home position, as presently explained, the spring 12 exerts downward force on

the ends of the bearing blocks according to the adjustment of the screw 14. The frame member 13 provides a pressure base for the spring, and it will be obvious that to free the upper roll in the sense of removing the pressure thereon it is necessary to release said frame member for response to the reaction forces of the spring 12. The present invention is concerned with improved means for effecting such release in an emergency and to restore the structure to operating position when desired.

In one embodiment of the invention, frame member 13 is connected to the stile 2 by a linkage system best shown in Fig. 4. Said system comprises a pair of links 20, 21 pivotally attached as at 22; the free ends of this series of links are respectively pivotally affixed to a rigid arm 23 affixed to the side of frame member 13 to provide, in effect, an extension thereof, and to an ear 24 projecting from the stile 2. An identical linkage system is provided at each side of the stile, for symmetry and balance. As best shown in Figs. 2 and 6, the rigid links 23 are offset so as to pass freely to the outside of pivots 22. The several pivotal connections are relatively loose so as to permit easy operation of the linkage when emergency release is required. As best shown in Figs. 4 and 5, the angle of extension of arm 23 from frame member 13 is such that when the frame member 13 approaches home position as shown in Fig. 5 the pivotal connection 25 passes to the outside of the stile pivot 26, and at home position the head of pivot 22 is inwardly—that is, toward the center of the wringer—of a line extending between the respective pivots 25, 26, at the ends of the linkage system. In this relationship the folded linkage assumes an unstable position, and although it will inherently tend to break inwardly, I prefer to add the tabs 27 to the ends of arms 23 to positively restrain the links 21 from rotating clockwise of Fig. 6 when the linkage is released. It is evident from Fig. 4 that the ends of said tabs prevent links 21 from throwing to the right of arm 23 when in extended position. With frame member 13 in seated position, spring 12 exerts a continuing pressure on the linkage system to cause it to unfold; this is restrained by a U-shaped latch frame 28, pivotally attached to stile 2 at 30, and having a notch 31 against the rear edge of which seats a stud 32 extending inwardly from each of the pivots 22. A spring 33 urges the latch 28 counterclockwise of Fig. 1 to hold the notch in seated position. Frame member 13 is thus releasably locked against movement and the spring 12 will exert such pressure as is desired on the upper roll bearing blocks.

For emergency release I provide on each side of the wringer a push bar 34 pivotally mounted at 35 on ears 36 projecting from the side walls of the stiles 1 and 2. At stile 2, the arm portion 37 of said push bar lies closely beneath an extension 38 which projects outwardly from the side arms of the latch 28, and is so related to the pivot 30 as to provide a first-order lever system. As best shown in Fig. 3, lever 38 extends outwardly of pivot 35 and the top surface of the arm portion 37 engages with lever 38 on both sides of the pivot. Therefore, rotation of arm 37 up or down about its pivot will exert a turning effort on the latch 28 so as to rotate it downwardly, that is, clockwise of Figs. 1 and 6, and release the linkage, and regardless of whether the operator pulls or pushes on the bar 34 it will result in release of the latch 28. It will also be observed

that the effective lever arms of latch frame 28 will produce a relatively large downward movement of the notched portion 31 of the latch with a very much smaller upward movement of the lever 38. In actual practice a touch or very slight pull on the release bar 34 is sufficient to disengage the notch 31 from the pintles 32 whereupon the reaction of the spring 12 causes the linkage to unfold inwardly to release the frame 13 and remove all pressure on the upper roll 8. Frame 13 will reach an extreme open position, as shown in Fig. 4, from which it will return by gravity to a position approximately that of Fig. 5, in which the pintles 32 engage the side arms of the latch frame 28 to the left of notch 31. Spring 33 will be placed under light tension.

To restore the wringer to operative position I provide a reset lever in which equal, parallel arm members 40 extend from a cross member through suitable slots 41 in the upper surface of the top frame 13. A suitably shaped handle or pressure plate 42 is affixed to the cross member. Extensions 43 of the lever arms 40 are provided with upwardly extending ears 44 for pivotal attachment to a bracket 45 secured within the frame member 13. The downwardly extending rounded ends 46 of the respective reset lever extensions 43 (the length thereof being somewhat exaggerated in Fig. 6) or disposed in operative relationship with the enlarged heads of the pivots 22 connecting the links 20, 21. The reset lever is wholly within the top frame member, and is structurally independent of the linkage system. In its home position, the lever effectively disengages from the linkage system, and the unfolding of the linkage will not cause the lever to throw. As shown in Fig. 4, handle 42 does not rise from cover 13 during the upward movement and therefore even if the user for some reason pressed on the handle 42 during the release of the wringer it would not affect the operation. When the frame member returns toward its home position the operator need only grasp the reset handle and lift it upwardly so as to rotate the extensions 43 in clockwise direction, thereby camming the lever ends 46 over their associated pivot heads 22 to the Fig. 5 position, following which the lever ends may be rotated counter-clockwise by pressing on plate 42 to exert pressure against the sides of said pivot heads. The wringer member 13 thereupon resets in home position as the pivots 22 and their associated links 20, 21 move to the right of Fig. 5 to straighten the linkage to its Fig. 1 position and permit the respective notches 31 to re-engage the respective pintles 32 to hold the linkage in its locked position. Even though the ends of the reset lever may when in home position actually rest upon the pivots 22, I consider that the lever has effectively disengaged from the linkage because the ends of the lever are out of the path of travel of said pivots during release and therefore cannot restrain the movement thereof.

The basic structure and operation of the embodiment shown in Figs. 7 and 8 are identical with the previously discussed structure. I have provided, however, an element 123 which functions the same as the rigid links 23 while providing a cover or shield for the release mechanism when the wringer is in operative position. Accordingly, I pivot link 21 to the shield 123 at 125, said pivot occupying substantially the same position relative to the other pivots of the toggle system as in the prior embodiment. The latch, release bar, and other elements are identical

with or structurally similar to elements previously discussed and have been similarly designated. I have chosen to show a reset lever 140 pivoted to the side walls of cover member 13, and have illustrated said lever as passing through a single opening 141 therein. As in Fig. 6, the ends of the lever, designated 146 engage with the pivots 22 to urge the toggle linkage to engage latch 28 in home position.

It will thus be observed that the wringer and reset mechanism is so constituted that there is no projection or motion of mechanism or linkage outwardly of the arc of greatest radius described by frame member 13 as it separates from the main frame, thus minimizing possibility of injury to the operator or failure of operation by conflict with external objects. It will also be observed that the reset lever itself is not a part of the toggle system and therefore its operative position at the instant of release is immaterial.

While I have shown particular embodiments of my invention, it will be understood, of course, that I do not wish to be limited thereto since many modifications may be made; and I therefore contemplate by the appended claims to cover any such modifications as fall within the true spirit and scope of my invention.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. In a clothes wringer having a main frame including end stiles, means for journalling pressure rolls therein, a top frame member pivotally mounted on said main frame and extending thereacross above said rolls, and a spring confined between said top frame member and said roll journalling means to exert operating pressure on said rolls, the improvement in mechanisms for emergency release of roll pressure and for restoring the same, which comprises a linkage including a series of mutually interconnected links pivotally attached at their respective outer ends to said top frame member and to one of said stiles, said linkage when free to move to extended position permitting movement of said top frame member under reaction of said spring to release said rolls and being foldable to an unstable position providing a length effective to draw the top frame member into operating position to place said spring under strain; a latch rotatably carried on said one stile and engageable with said linkage to hold the same in folded position against the reaction of said spring; a lever system pivotally carried by said main frame and movable in either of two directions to rotate said latch into linkage releasing position; a reset lever pivotally carried by said top frame member and temporarily engageable with said linkage to return the same to folded, latched position; and handle means accessible externally of said top frame member remote from said one stile for manual operation of said lever.

2. The improvement in release and resetting mechanisms according to claim 1, in which the resetting lever is substantially wholly within the top frame member.

3. The improvement in release and resetting mechanisms according to claim 1, in which the handle means of said resetting lever is disposed at the top of said top frame member intermediate the ends thereof.

4. The improvement in release and resetting

mechanisms according to claim 1, in which the latch engages with the mutual interconnection of said links to restrain the linkage against unfolding.

5. The improvement in release and resetting mechanisms according to claim 1, in which a pintle extends from one of the links of said linkage and the reset lever engages said pintle during the resetting operation to drive said pintle into engagement with said latch and thereupon assumes a home position out of the path of movement of said pintle during a subsequent unfolding operation of said linkage.

6. In a clothes wringer having a main frame structure, mutually cooperating pressure rolls journaled therein, spring means for exerting pressure against one of said rolls to urge the same resiliently against an adjacent roll, and a top frame member pivotally attached to said main frame structure and providing a pressure base for said spring means, said frame member being lockable in a home position in which said spring means are compressed for pressure exertion; the improvement comprising a toggle linkage between said main frame structure and said top frame member, said linkage being foldable to a length effecting said home position; a pintle extending from an element of said toggle linkage; a spring biased latch engaging with said pintle to maintain the toggle in folded position against the reaction of said spring means; means for disengaging said latch and pintle to release said toggle linkage for extension and resulting separation of said frame member from said main frame structure for release of pressure on said roll; and a reset mechanism structurally independent of said toggle linkage and carried by said top frame member, said reset mechanism being manually operable for engagement with said toggle linkage to restore the same to latched position and thereby relock said frame member in home position.

7. A release and resetting mechanism for a clothes wringer according to claim 6, in which the toggle linkage comprises a series of pivotally interconnected links, one end of said series being pivotally attached to the main frame structure and the other end pivotally attached to a portion of said top frame member, said portion extending downwardly and angularly therefrom sufficient to position the interconnecting pivot point of said links more centrally of the frame member than the points of pivotal attachment of the links with the main frame structure and the top frame member, whereby said linkage will always break toward the center of the frame member during movement thereof toward or away from home position.

SAMUEL I. GABRIELSON.

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