Feb. 4, 1936. H. L. MORIN 2,029,936

SAFETY FEEDING DEVICE FOR WRINGERS

Filed July 17, 1931 2 Sheets-Sheet 1

Fig. 1.

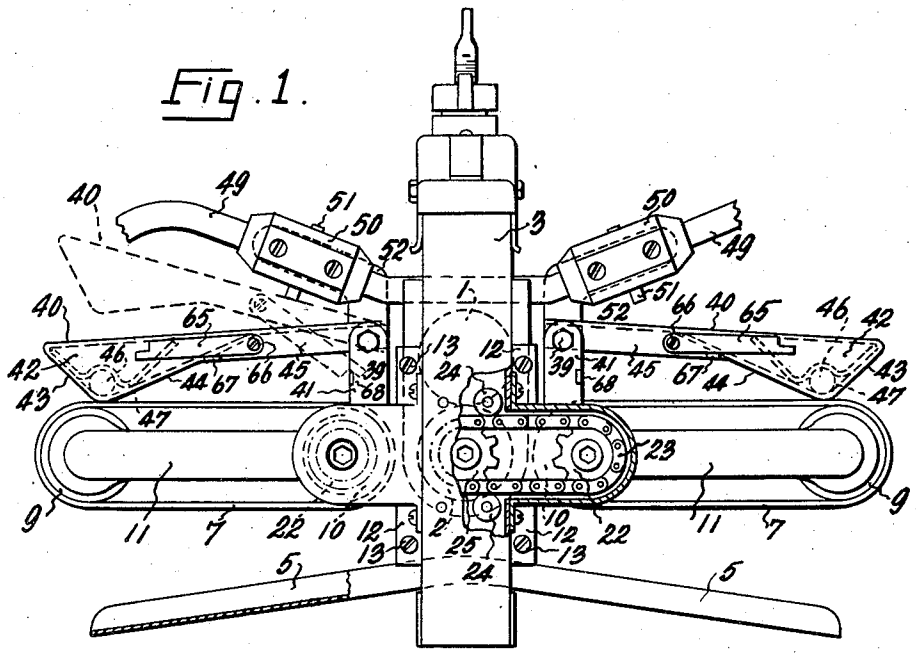
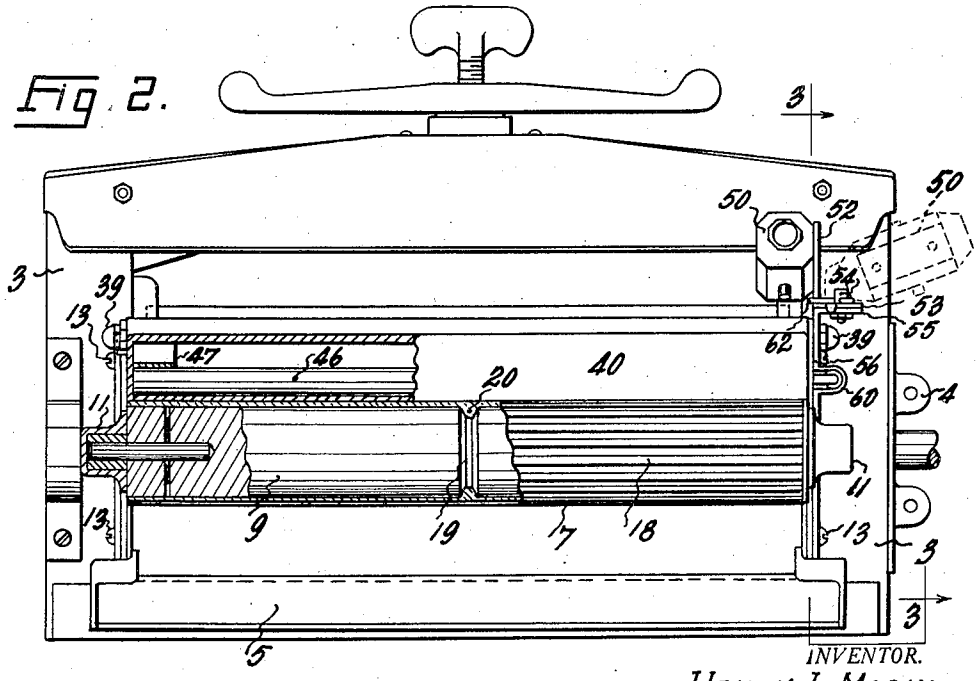


Fig. 2.



INVENTOR.
HENRY L. MORIN
BY Chapin & Neal.
ATTORNEYS.

Feb. 4, 1936. H. L. MORIN 2,029,936

SAFETY FEEDING DEVICE FOR WRINGERS

Filed July 17, 1931 2 Sheets-Sheet 2

Fig. 3.

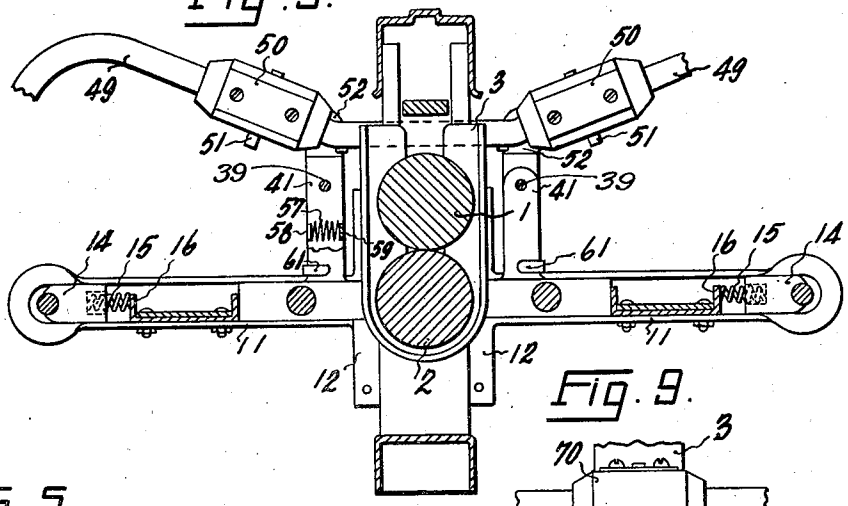


Fig. 9.

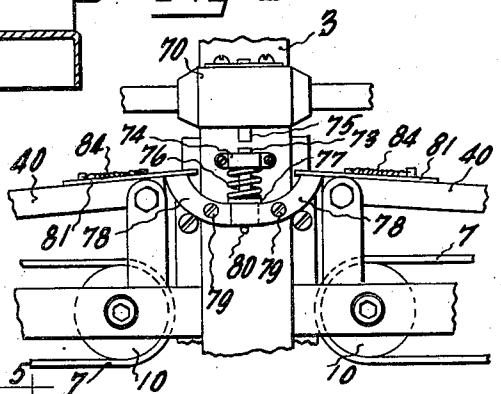


Fig. 5.

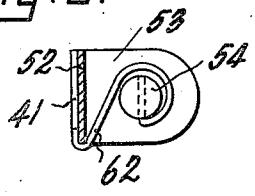


Fig. 4.

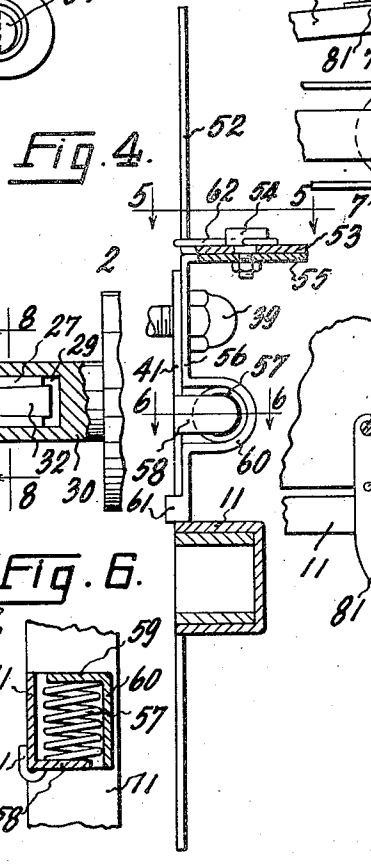


Fig. 7.

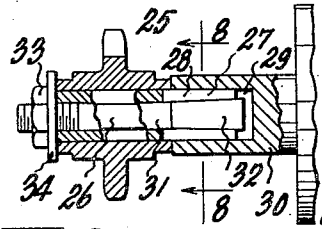


Fig. 10.

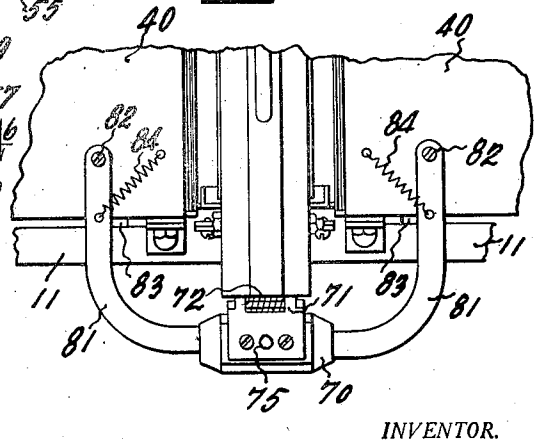


Fig. 8.

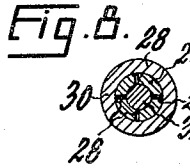


Fig. 6.

INVENTOR.
HENRY L. MORIN
BY Chapin & Neal
ATTORNEYS.

Patented Feb. 4, 1936 2,029,936

UNITED STATES PATENT OFFICE

2,029,936

SAFETY FEEDING DEVICE FOR WRINGERS

Henry L. Morin, Holyoke, Mass.

Application July 17, 1931, Serial No. 551,423

13 Claims. (Cl. 68—32)

This invention relates to means for safely feeding clothes to or from a power-driven wringer.

It has for its principal object the provision of improvements in the feeding mechanism and safety devices and in the mechanism which coordinates the two with each other and with the wringing mechanism.

Further objects and advantages of the invention will be more specifically pointed out in the following specification and claims.

In the accompanying drawings which illustrate an embodiment of the invention:

Fig. 1 is a side view of a wringer provided with a feeding device according to my invention;

Fig. 2 is a sectional view looking from the right of Fig. 1, parts being broken away;

Fig. 3 is a sectional view substantially on line 3—3 of Fig. 2;

Fig. 4 is an end elevation, partly in section and on a larger scale, of the switch support;

Fig. 5 is a detail section on line 5—5 of Fig. 4;

Fig. 6 is a section substantially on line 6—6 of Fig. 4;

Fig. 7 is a detail sectional view showing the preferred manner in which the driving sprocket is secured to the wringer roll;

Fig. 8 is a section on line 8—8 of Fig. 7;

Fig. 9 is a side view showing a modified construction using a single switch; and

Fig. 10 is a plan view of the structure shown in Fig. 8.

Referring to the drawings, the metal frame which supports the wringer rolls 1 and 2 is shown generally at 3. This frame may be of conventional construction and is provided with brackets 4 (see Fig. 2) by which it is secured to the post of the washing machine (not shown) through which the wringer is driven in the usual manner. The usual drain boards are shown at 5.

To feed the clothes to or from the wringer rolls, I provide belts 7, one on each side of the bite of the wringer rolls. The parts on each side of the wringer are alike except that they are reversed in position and the same reference characters are used to designate the similar parts. Belts 7 are supported by pulleys 9 and 10 journaled in side members 11 having flanges 12 by which they are secured as by bolts 13 to the wringer frame. The bearings 14 of pulleys 9 are loose and are urged outwardly as shown in Fig. 3 to maintain the belts taut by springs 15 positioned between the bearings 14 and flanges 16 bolted to the side members. The belts are preferably of rubber and are provided on their outer surfaces with transverse corrugations 18 for a purpose later described. The pulleys 9 and 10 are provided intermediate their ends with grooves 19 adapted to receive a longitudinal rib 20 formed on the under surface of the belts. The ribs 20 cooperate with the grooves 19 to keep the belts properly centered on the pulleys and obviate the necessity of using flanged pulleys or other exposed guiding means upon which the clothes may catch as they are fed to the wringer rolls. The pulleys 10 which are positioned closely adjacent the wringer rolls are provided on their ends opposite brackets 4 with sprockets 22 which are connected by a sprocket chain 23. The chain 23 meshes with a sprocket 25 secured to the shaft of wringer roll 2 whereby both belts are driven in unison from the wringer roll. A plurality of small rolls 24 journaled in the side of the wringer frame maintain the sprocket chain in driving relation with the sprocket 25.

In order that roll 2 may be removed, sprocket 25 is made removable, and to accomplish this I mount sprocket 25 on one end 26 of a hollow stub shaft. End 26 is hexagonal (as shown in Fig. 7) to prevent the sprocket turning on the stub shaft. End 27 of the stub shaft, which is round and split as at 28, fits into a recess 29 formed in the end of shaft 30 of the wringer roll. A bolt 31 having an enlarged end 32 is positioned within the stub shaft and is provided on its outer end with a nut 33, a washer 34 being positioned between the nut and the end of the stub shaft. As will be clear from Fig. 7, tightening of nut 33 causes the enlarged end 32 to expand the split end 27 of the stub shaft and bind the stub shaft to the shaft of the wringer roll. This manner of releasably connecting the sprockets to the shaft of the wringer roll has the advantage that the latter need not be lengthened to accommodate the sprocket or its connecting means, and the connection or disconnection of the sprocket is easily made.

Overlying each belt 7 is a guard plate 40 hinged or pivoted at 39 to uprights 41 secured to or formed integral with the side members 11. The free edges of plates 40 are bent downwardly and inwardly to form hollow wedge-shaped members 42 having outer faces 43 and inner faces 44, the inclination of the outer faces being steeper than that of the inner faces. The sides of the guard plates are bent downwardly to form side flanges 45. The wedge members 42 are provided with weights 46 held in place by spring clips 47. The wedge-shaped members 42 ride on the belts and maintain the remaining portions of the plates spaced from the belt. Aside from their function as part of the guard, which function is later more

fully described, the wedge members prepare the clothes for passage through the wringer rolls, particularly with respect to garments having buttons. The feeding motion is imparted to the clothes entirely by the belts 7, the corrugations 18 serving to grip the clothes and draw them under the weighted wedge members which exert an ironing or smoothing action, pressing the buttons into the clothes instead of tending to turn them up as is the case where the guard is in the form of a roll or an overlying belt. Furthermore, after passing the wedge members, the clothes pass undisturbed beneath the remaining portion of the guard plate to the wringer rolls. In practice it has been found that my device substantially eliminates the breakage of buttons in the wringer rolls.

In furtherance of the function of plates 40 as guards to prevent the hands of the operator from being caught in the wringer rolls, I provide means whereby the plates operate to shut off the power from the wringer rolls when the plates are swung upwardly a predetermined distance. For this purpose, I mount pin-operated switches 50 above the plates 40 in position so that switch-operating pins 51 are engaged by the upper surface of the plates to shut off the current, passing through the conductor 49 to the motor, when the plates are raised to an extent to admit of dangerous access to the bite of the wringer rolls. The switches are mounted on arms 52, having their lower ends bent at right angles to form ears 53 which are pivotally secured by bolts 54 to similar ears 55 formed on members 56, which in turn are pivoted to the uprights 41, at one side of the device, on the pivots 39 of the guard plates. Members 56 are normally held in alignment with uprights 41, as best shown in Figs. 4 and 6, by springs 57 positioned between ears 58 bent outwardly from the uprights 41 and ears 59 carried by members 56 which are offset at 60 to enclose the springs. Springs 57 permit members 56 and arms 52 to yield around pivots 39 if the guards 40 are forced upwardly beyond switch-operating position, preventing possible damage to the switches. Lugs 61 formed on the end of members 56 and bent around uprights 41 prevent pivotal movement of member 56 in the opposite direction.

In some instances it may be desirable to raise the plates 40, beyond the limit permitted by the switches, without stopping the wringer rolls. This may be done by swinging arms 52 horizontally around pivots 54 (to the position shown in dotted lines in Fig. 2) against the action of springs 62 engaged between arms 52 and pivot 54 as shown in Figs. 4 and 5. Springs 62 return the switches to operative position when released by the operator, avoiding any danger that the switches may be inadvertently left in inoperative position.

It is sometimes desirable, as when heavy blankets are being passed through the wringer, to hold the guard plate on one or both sides of the wringer raised in a position just short of the point where the switch will be operated. To permit this, I provide props 65 pivoted at 66 to the side flanges 45 and normally resting against lugs 67, as shown in full lines in Fig. 1. When it is desired to hold the guard in raised position, the props are swung into engagement with lugs 68, formed on the uprights 41 (as shown in dotted lines in Fig. 1).

It will be seen that the feeding device above described, in addition to the advantages previously pointed out, is flexible in operation, being adaptable to substantially all conditions to be met in the operation of the wringer, provides protection to both sides of the bite of the wringer rolls in both directions of operation, and delivers the clothes beyond the drain board of the wringer.

In Figs. 9 and 10, I show a modified arrangement in which a single switch is provided in the motor cable with means to operate it by the movement of either of the guard plates. The arrangement and operation of the belts and guard plates may be the same as above described. In the arrangement shown I mount the single switch 70 to the side of the wringer frame 1 by means of a spring hinge 71, the spring 72 normally holding the switch in the position shown in the drawings. A plunger 73 is mounted in a bracket 74 in alignment with the pin 75 of the switch but normally held out of contact therewith by a spring 76 positioned between the bracket and a head 77 formed on the lower end of plunger 73. The head 77 rests against the ends of two curved levers 78 pivoted to the wringer frame at 79. The ends of the levers in engagement with the head 77 overlap and are held against the downward action of spring 76 by a stop pin 80. The upper ends of levers 78 are normally engaged by the free ends of arms 81 pivoted at 82 to the upper surface of the guard plates 40 and held in position against lugs 83, carried by the side flanges 45, by springs 84. It will thus be seen that when either of the guard plates is raised a predetermined amount, the arm 81 carried by the raised guard will depress the contacting lever 78 to raise plunger 73 and operate the switch. When it is desired to raise one of the guard plates beyond the safety position without stopping the wringer, the operator may manually swing the arm 81 horizontally out of contact with its lever 78, or the movement of both guard plates may be rendered inoperative to actuate the switch by swinging the switch upwardly about its hinge against the action of spring 72, thus moving pin 75 out of the path of plunger 73. In either case, the safety position is automatically reestablished by spring action. If desired, arms 81 may be rigidly secured to the guard plates and spring hinge 71 alone used to render the safety mechanism inoperative. Conversely, the switch may be rigidly mounted and the spring-actuated arms 81 used alone.

What I claim is:

1. A feeding device for a power-driven clothes wringer which comprises a belt for feeding clothes to or from the wringer rolls, means to drive the belt, a pivotally mounted guard overlying the belt, the free edge of the guard being provided with a rigid, downwardly extending blunt edged, weighted smoothing member normally contacting with the belt and beneath which the clothes are drawn by the belt in their passage to the wringer rolls.

2. A feeding device for power-driven clothes wringers which comprises, a belt having a transversely corrugated surface for feeding the clothes to or from the wringer rolls, means to drive the belt, a pivotally mounted guard overlying the belt, the free edge of the guard being provided with a rigid, weighted smoothing member normally contacting with the belt and beneath which the clothes are drawn by the belt in their passage to the wringer rolls, the remaining portion of the guard being spaced from the belt.

3. A feeding device for power-driven clothes wringers which comprises, a belt having a transversely corrugated surface for feeding the clothes to or from the wringer rolls, pulleys around which the belt passes, means for driving one of

the pulleys, aligned grooves formed in the surface of the pulleys, a rib formed on the under surface of the belt and riding in said grooves to maintain the belt in position on the pulleys, a pivotally mounted guard overlying the belt, the free edge of the guard being provided with a smoothing member normally contacting with the belt and beneath which the clothes are drawn by the belt in their passage to the wringer rolls.

4. A feeding device for power-driven clothes wringers which comprises, a belt for feeding clothes to or from the wringer rolls, means to drive the belt, a guard plate overlying the belt and pivoted at one edge adjacent the wringer rolls, a wedge-shaped smoothing member formed on the free edge of the guard plate normally contacting with the belt and beneath which the clothes are drawn by the belt in their passage to the wringer rolls.

5. A feeding device for power-driven clothes wringers which comprises, a belt for feeding clothes into the bite of the wringer rolls, a belt for feeding clothes from the bite of the wringer rolls, a common means for simultaneously driving said belts from the wringer rolls and in the same direction, pivotally mounted guards respectively overlying each of said belts, the free edge of each of said guards being provided with a rigid, downwardly extending, blunt edged, weighted smoothing member normally contacting with the belt and beneath which the clothes are drawn by the belts in the passage of the clothes to and from the wringer rolls.

6. A feeding device for power-driven clothes wringers which comprises, a belt for feeding clothes to or from the wringer rolls, means for driving the belt, a pivotally mounted guard plate overlying the belt, a smoothing member integrally formed on the free edge of the guard plate normally contacting with the belt and beneath which the clothes are drawn by the belt in their passage to the wringer rolls, and means carried by the guard plate to shut off the power to the wringer rolls when the guard plate is raised a predetermined distance from the belt.

7. A feeding device for power-driven clothes wringers which comprises, a belt for feeding clothes to or from the wringer rolls, means for driving the belt, a pivotally mounted guard plate overlying the belt, a switch controlling the operation of the wringer rolls, said switch being normally positioned to be actuated by contact with the guard plate when the latter is raised a predetermined distance from the belt to cut off the power to the wringer rolls, a pivotal mounting for the switch permitting the switch to be manually swung from the path of movement of the guard plate, and a spring automatically returning the switch to normal position.

8. A feeding device for power-driven clothes wringers which comprises, a belt for feeding clothes into the bite of the wringer rolls, a belt for feeding the clothes from the bite of the wringer rolls, means for simultaneously driving the belts in the same direction, pivotally mounted guard plates respectively overlying each of said belts, two switches, each controlling the operation of the wringer rolls, respectively mounted in the paths of upward movement of the guard plates and adapted to be actuated by contact with the associated guard plate when the latter is raised a predetermined distance from its belt, pivotal mountings for the switches permitting the switches to be manually swung from the paths of movement of the guard plates and springs automatically returning the switches to normal position.

9. A feeding device for power-driven clothes wringers which comprises, a belt for feeding clothes into the bite of the wringer rolls, a belt for feeding the clothes from the bite of the wringer rolls, means for simultaneously driving said belts in the same direction, pivotally mounted guard plates respectively overlying each of said belts, a single switch controlling the operation of the wringer rolls, means associated with each guard plate to actuate the switch, when one of the guard plates is raised a predetermined distance above its belt, to cut off the power to the wringer rolls, manually operated means to render the upward movement of the guard plates ineffective to operate the switch, and means to automatically return the parts to operative position upon the release of the manual restraint.

10. A feeding device for power-operated clothes wringers which comprises, a belt for feeding clothes into the bite of the wringer rolls, a belt for feeding the clothes from the bite of the wringer rolls, pivotally mounted guard plates respectively overlying each of said belts, a single switch controlling the operation of the wringer rolls, and means operable to actuate the switch upon excessive upward movement of either of the guard plates.

11. A feeding device for power-driven clothes wringers which comprises a belt for feeding clothes to the bite of the wringer rolls, a belt for feeding clothes from the bite of the wringer rolls, pivotally mounted guard plates respectively overlying each of said belts, switch means operable, upon the elevation of either guard plate a predetermined distance, to shut off the power to the wringer rolls, and means carried by each guard plate to releasably hold the guard plate in a raised position just short of the elevation at which the switch means is operated.

12. A feeding device for power-driven clothes wringers which comprises a belt for feeding clothes to the bite of the wringer rolls, a belt for feeding clothes from the bite of the wringer rolls, pivotally mounted guard plates respectively overlying each of said belts, smoothing members formed on the free edge of each of the guard plates and beneath which the clothes are drawn by the belts, switch means operable upon the elevation of either guard plate a predetermined distance to shut off the power from the wringer rolls, and means carried by each guard plate to releasably hold the guard plate raised sufficiently to position the smoothing member out of operative contact with the clothes being carried by the belt but below the elevation at which the switch means is operated.

13. A feeding device for power-driven clothes wringers which comprises a belt for feeding clothes to or from the wringer rolls, pulleys about which the belt passes, a sprocket secured to the shaft of one of the pulleys, a sprocket secured to a hollow stub shaft having a split end fitting in a recess formed in the end of the shaft of one of the wringer rolls, an expansion bolt mounted in the stub shaft to releasably expand the split end of the stub shaft to thereby clamp the latter to the shaft of the wringer roll and a sprocket chain passing around the sprockets.

HENRY L. MORIN.