Feb. 22, 1944. N. L. ETTEN 2,342,259

WRINGER

Filed May 21, 1941

Fig. 1.

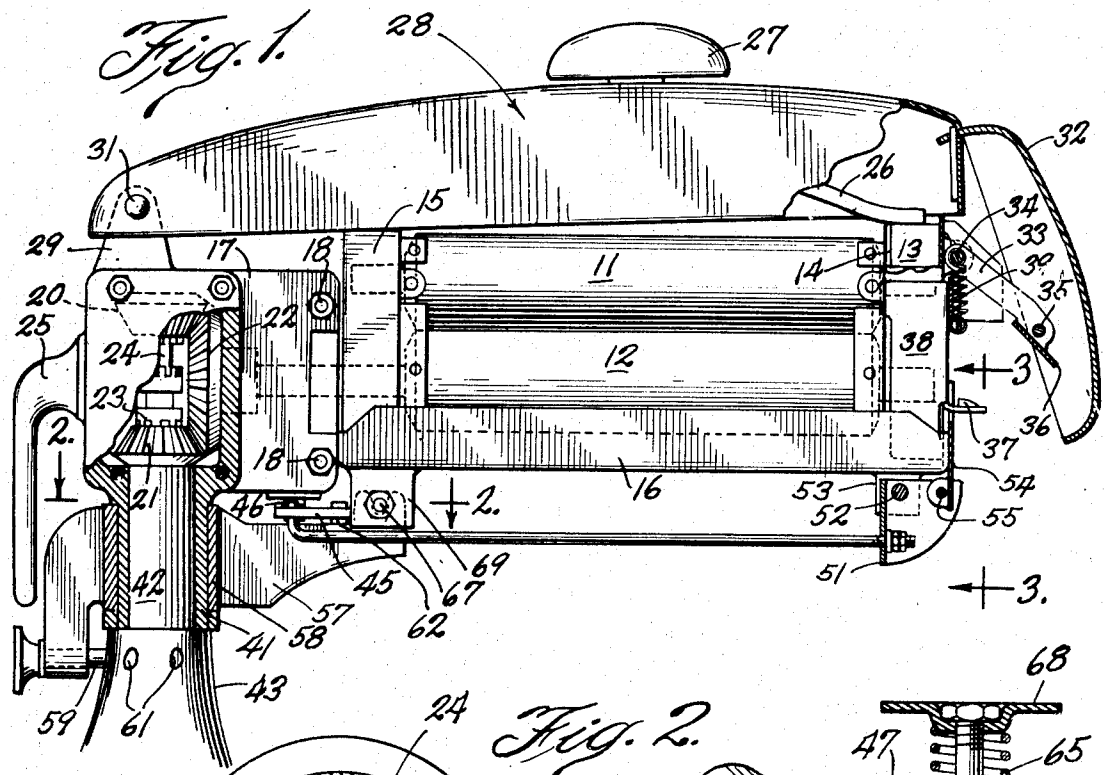


Fig. 2.

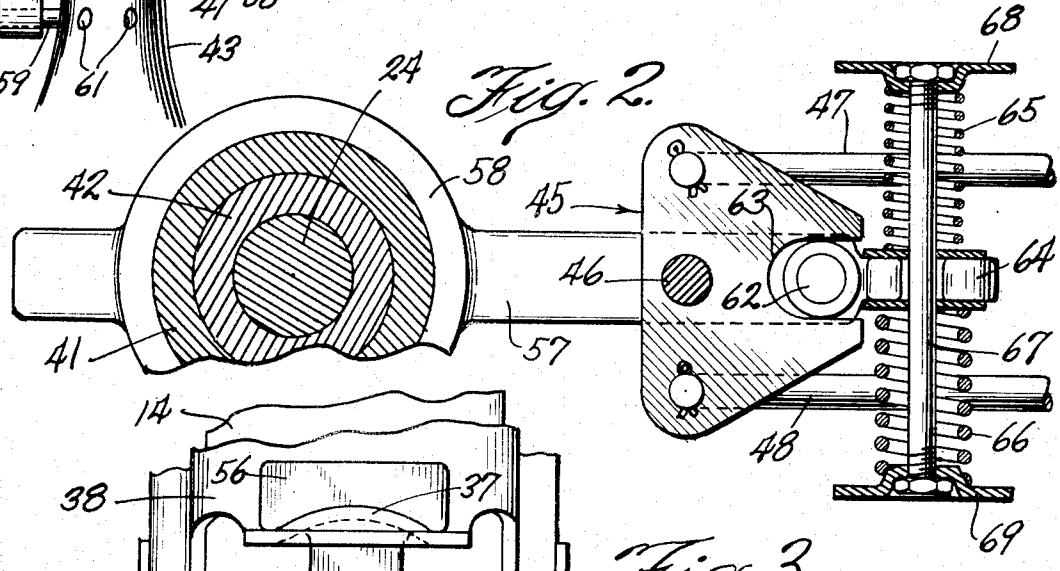
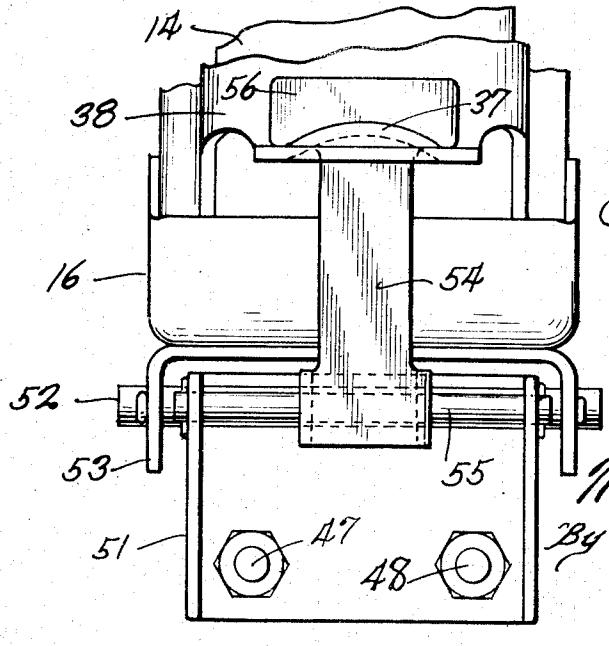


Fig. 3.



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2,342,259

WRINGER

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7 Claims. (Cl. 68—263)

This invention relates to wringers and more particularly to a wringer release mechanism whereby the pressure between the rolls may be released by pivotal movement of the complete frame either manually or by roll drive torque as contrasted with movement of specific release controls such as release bars or buttons.

Before describing the detailed structure and operation of the present disclosure, it is believed advisable to point out that in the prior art numerous attempts have been made to devise release mechanisms of this character, but insofar as is known to this applicant none of these have ever been sufficiently successful to be marketed commercially or put to any practical use.

It is believed by the applicant that one of the deficiencies of the prior devices has arisen from the fact that they have been not only somewhat unsatisfactory in operation but have been unduly complicated and have thus been extremely expensive to build and incapable of successfully competing with the present commercial structures.

For example, in most, if not all, of the prior art devices the inventors have attempted to reach their objective by providing a gear frame positively fixed to a wringer column and then enclosing this frame in a secondary frame or housing adapted to support the rolls and to move with respect to the gear frame. This type of construction has required the use of universal joints between the driving gears and the roll shafts and has, of course, required two separate and distinct frames, which obviously increased manufacturing costs and detract from the usefulness of the device.

In addition to the disadvantages arising by reason of the manufacturing costs of the devices, the applicant has found that in any of the articulated frames disclosed in the prior art the mechanism can be released only by a manual push and pull on the frame or roll structure itself, and even in the event that the mechanism becomes overloaded to such a point as to stop rotation of the rolls and stall the motor, the release is incapable of actuating itself automatically.

It is therefore the principal object of this invention to provide a wringer wherein the pressure may be released by pivotal movement of the wringer frame, and wherein the construction is characterized by a single unitary conventional frame structure as contrasted with any type of articulated frame or frame surrounded by a shiftable housing.

A further object of the invention is to provide a wringer mechanism adapted to be mounted on a relatively stationary wringer column wherein the pressure between the wringer rolls may be released by shifting movement of the gear frame relative to the wringer column as contrasted with shifting movement of roll frame or external housing in relation to a stationary gear frame.

A further object of the invention is to provide a wringer frame mounted for relative movement with respect to a stationary wringer column, wherein a balance spring is provided to prevent motion of the wringer frame in response to the normal torque of the wringer drive shaft, and wherein shiftable release devices are provided to permit the wringer pressure to be released in response to the abnormal torque strains such as are encountered whenever the wringer reaches an extremely overloaded condition.

A further object of the invention is to provide a wringer mechanism including a wringer mounted in shiftable relationship with a stationary wringer column, a release lever mounted on said wringer, and indexing mechanisms associated with said release lever to establish a normal wringer location in any one of several angular positions around the wringer columns.

These and other important objects are accomplished in the present invention by the structure disclosed in the drawing accompanying and forming a part of this specification, in which

Fig. 1 is a side elevation of a preferred embodiment of the present invention showing certain parts of the wringer frame structure broken away.

Fig. 2 is an enlarged detailed plan sectional view taken substantially on the plane of the line 2—2 in Fig. 1.

Fig. 3 is an enlarged detailed end elevational view taken substantially on the plane of the line 3—3 in Fig. 1.

In the wringer chosen as illustrative of the principles of this invention and disclosed in the drawing, the upper roll 11 and lower roll 12 are mounted for rotation in bearings such as 13 provided in the end stiles 14 and 15 extending upwardly from the opposite ends of the horizontal lower channel 16. The entire structure thus far described is mounted in fixed relationship with a gear housing 17 by a plurality of bolts 18 and the gear housing 17 is arranged to enclose forward and reverse driving pinions 20 and 21, a driving gear 22 and a selective clutch 23 keyed to the drive shaft 24 and arranged to be moved into forward or reverse driving positions by a manually operable control handle 25.

A roll stop mechanism such as shown in applicant's Patent 2,307,368 is also enclosed within the gear housing 17 so that the drive to the rolls is automatically interrupted when the pressure between the rolls is released.

The operating pressure between the rolls 11 and 12 is maintained by a flat leaf pressure spring 26 extending between the upper roll bearings 13 and adapted to be flexed downwardly by a pressure adjusting screw 27 mounted on the top frame or cover 28. The cover 28 is pivot-

ally secured to a bracket 29 on the gear case 17 by the rivet 31.

At the opposite end of the top frame 28 a toggle reset mechanism is provided which consists of a manually operable reset lever 32 pivotally connected with the top frame 28 and arranged to cooperate with a compression link 33 extending between an anchor pin 34 affixed to suitable brackets on the end stile 14 and a pin 35 mounted between the side walls of the lever 32. From the above structure it will be seen that in order to apply the initial operating pressure between rolls 11 and 12 it is only necessary to move the lever 32 inwardly so that it will cooperate with the link 33 and draw the top frame downwardly to compress the spring 26 and apply a downward force to the bearings of the upper roll 11.

Shortly before the toggle mechanism reaches its dead center position the tip 36 of the link 33 will be engaged by the latch 37 carried on the vertical slide plate 38. The slide plate 38 is arranged for vertical shifting movement and is urged yieldingly upwardly by the coil spring 39.

The wringer mechanisms as thus far described are quite conventional and therefore will not be described in greater detail. It is to be particularly noted, however, that the end stiles 14 and 15 and channel 16 are rigidly bolted to the gear housing 17 so that all of these elements comprise, in effect, a single unitary frame which moves as a unit as contrasted with any of the double frame works or articulated frame of prior art wringers of this general class.

The entire frame work of the wringer is supported by a sleeve 41 mounted in telescopic relationship with a reduced cylindrical portion 42 at the upper end of the wringer supporting column 43. It will be understood by those skilled in the art that the column 43 represents any typical stationary wringer column such as is ordinarily provided on a washing machine, and which ordinarily houses a rotatable vertical driving shaft such as the shaft 24 illustrated in the drawing. By this arrangement the entire wringer structure is free to swing about the wriner column 43.

It is, however, the purpose of the present invention to provide a normal position for the wringer and to provide a mechanism such that any deviation from the normal position will cause the latch 37 to operate and release the pressure between the rolls 11 and 12. To accomplish this result a lever 45 is mounted on a stud 46 extending downwardly from the lower surface of the gear housing 17, which upon pivotal movement of the housing, actuates associated mechanism to cause the latch 37 to release. To accomplish this result a pair of operating rods 47 and 48 are pivotally connected to the lever 45 and are arranged to extend to a bell crank 51 pivoted on a cross pin 52 attached to suitable lugs 53 on the lower surface of the horizontal channel member 16 of the wringer. The bell crank 51 is in turn pivotally connected with the latch 37 and slide plate 38 by a link 54 mounted on the cross pin 55 and having an enlarged head portion 56 adapted to engage the latch 37 in such a manner as to draw the latch downwardly when the bell crank 51 is pivoted about the cross pin 52 in response to movement of the lever 45. The rods 47 and 48 extend loosely through suitable apertures in the vertical arm of the lever 51 and have abutting nuts secured on the threaded ends of said rods, as shown in Fig. 1.

It is to be particularly noted that since the lever 45 has one of the links 47 or 48 on either side of the center 46, movement of the lever 45 in either direction will cause the latch 47 to release.

In order to operate the lever 45 in response to swinging movements of the wringer frame about the wringer column 43, an anchor arm 57 is provided. The arm 57 is mounted on a sleeve 58 in telescopic relationship with the hub 41, but is arranged to be held in any one of several predetermined angular positions with respect to the wringer column 43 by an indexing pin 59 adapted to engage any one of a plurality of indexing holes 61.

At the outer end of the anchor arm 57 an actuating roller 62 is mounted. This roller 62 extends upwardly from the arm 57 to engage a slot 63 in the lever 45, the arrangement being such that when the anchor arm 57 is held stationary with respect to the wringer column by means of the index pin 59, any movement of the wringer frame will cause the stud 46 and lever 45 to shift with respect to the roller 62 and will thus cause the lever 45 to swing in one direction or the other around the stud 46 so that one of the links 47 or 48 will move the bell crank 51 and release the latch 37.

As thus far described, it will be obvious that any external force operating on the frame of the wringer or on the wringer rolls will cause the wringer structure to shift with respect to the wringer column 43 and will release the pressure of the spring 26. It is not desirable, however, that this releasing action take place in response to extremely small forces such as may be exerted accidentally in the normal operation of the wringer, and for this reason I provide a center boss 64 at the external end of the anchor arm 57 which is adapted to be engaged by a pair of centering springs 65 and 66 mounted on a pilot rod 67 and extending between the boss 64 and one of a pair of lugs 68 or 69 formed on the lower surface of the horizontal channel member 16 of the wringer frame.

It will be seen from examination of Fig. 2 that since the boss 64 is normally maintained in a stationary position, springs 65 and 66 will act on the wringer frame and keep it in a normally centered position, but whenever external forces are exerted on the wringer frame in either direction, one of the springs 65 or 66 will flex to permit the frame to shift and release the pressure on the wringer rolls by the operation of the lever 45.

In the operation of the wringer, the shaft 24 rotates in a counter-clockwise direction, as viewed in Fig. 2, so that the torque of the drive shaft tends to move the wringer frame upwardly or in a counter-clockwise direction, as also viewed in Fig. 2. For this reason it has been found that it is preferable to make the spring 66 somewhat larger than the spring 65 so that the normal torque of the drive shaft will be adequately balanced, and the pressure required to release the wringer from either side will be approximately the same.

It is to be particularly noted, however, that in the event the wringer rolls are overloaded in an extreme degree or in such a manner as to stop their rotation, the torque from the drive shaft 24 will build up to such an extent that it will

be capable of compressing the spring 66, moving the wringer frame bodily against the action of this spring and releasing the spring pressure by the action of the lever 45, as hereinbefore described.

While I have shown and described the preferred embodiment of this invention in compliance with the patent statutes, I am aware that it is subject to numerous modifications and alterations, and therefore I wish to be limited only by the scope of the appended claims.

I claim:

1. In a wringer, a frame, a plurality of resilient rolls mounted for rotation within said frame, a spring arranged to urge said resilient pressure rolls into pressure relationship with each other, and a latch to retain said spring in pressure applying position, the combination of a drive shaft for said rolls, forward and reverse driving gears for said rolls and means for selectively engaging said gears, shiftable devices responsive to the torque of said drive shaft, means responsive to shifting movement of said devices to actuate the aforementioned latch, and spring devices adapted to balance the normal torque of said shaft to prevent said latch from releasing responsive to normal torque and to permit release responsive to extreme torque.

2. In a wringer structure of the releasable roll type having a frame, a column on which the frame is selectively adjustably mounted, rolls in the frame, reversible drive means for the rolls, and means for releasably applying pressure on said rolls including a reset mechanism; a release mechanism comprising an anchor member connected to the column, resilient means between the frame and the anchor member for normally holding the frame in selected position, lever means pivotally connected to the frame and to the anchor member and to said reset mechanism and which is movable by an abnormal movement of the frame relative to said anchor member to release said reset mechanism.

3. In a wringer structure of the releasable roll type having a frame, a column on which the frame is selectively adjustably mounted, rolls in the frame, reversible drive means for the rolls, and means for releasably applying pressure on said rolls including reset mechanism; a release mechanism comprising an anchor member connected to the column, resilient means between the frame and the anchor member for normally holding the frame in selected position, lever means pivotally connected to the frame and to the anchor member and to said reset mechanism and which is movable by an abnormal movement of the frame relative to said anchor member to release said reset mechanism, said resilient means comprising springs carried by the frame, and a boss on said anchor member and located between said springs.

4. In a wringer structure of the releasable roll type having a frame, a column on which the frame is selectively adjustably mounted, rolls in the frame, reversible drive means for the rolls, and means for releasably applying pressure on said rolls including reset mechanism; a release mechanism comprising an anchor member connected to the column, resilient means between the frame and the anchor member for normally holding the frame in selected position, lever means pivotally connected to the frame and to the anchor member and to said reset mechanism and which is movable by an abnormal movement of the frame relative to said anchor member to release said reset mechanism, said resilient means comprising springs carried by the frame, and a boss on said anchor member and located between said springs, one of said springs being stronger than the other of said springs to compensate for the force imposed by the drive means in the normal direction of driving the wringer.

5. In a wringer structure of the releasable roll type having a frame, a column on which the frame is selectively adjustably mounted, rolls in the frame, reversible drive means for the rolls, and means for releasably applying pressure on said rolls including reset mechanism; a release mechanism comprising an anchor member connected to the column, resilient means between the frame and the anchor member for normally holding the frame in selected position, lever means pivotally connected to the frame and to the anchor member and to said reset mechanism and which is movable by an abnormal movement of the frame relative to said anchor member to release said reset mechanism, said lever means comprising a pivot stud carried by the frame, and an actuating pivot stud carried by said anchor member.

6. In a wringer structure of the releasable roll type having a frame, a column on which the frame is selectively adjustably mounted, rolls in the frame, reversible drive means for the rolls, and means for releasably applying pressure on said rolls including reset mechanism; a release mechanism comprising an anchor member connected to the column, resilient means between the frame and the anchor member for normally holding the frame in selected position, lever means pivotally connected to the frame and to the anchor member and to said reset mechanism and which is movable by an abnormal movement of the frame relative to said anchor member to release said reset mechanism, said lever means comprising a lever element pivotally connected to the frame and having a slot, and an actuating pivot stud on said anchor member and extending into said slot.

7. In a wringer structure of the releasable roll type having a frame, a column on which the frame is selectively adjustably mounted, rolls in the frame, reversible drive means for the rolls, and means for releasably applying pressure on said rolls including reset mechanism; a release mechanism comprising an anchor member connected to the column, resilient means between the frame and the anchor member for normally holding the frame in selected position, lever means pivotally connected to the frame and to the anchor member and to said reset mechanism and which is movable by an abnormal movement of the frame relative to said anchor member to release said reset mechanism, said lever means comprising a lever element pivotally connected to the frame and having a slot, an actuating pivot stud on said anchor member and extending into said slot, and connecting links pivotally connected to said lever element and to said reset mechanism.

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