

May 19, 1953

N. L. ETTEN
CLOTHES WRINGER

2,638,768

Filed Feb. 2, 1949

6 Sheets-Sheet 1

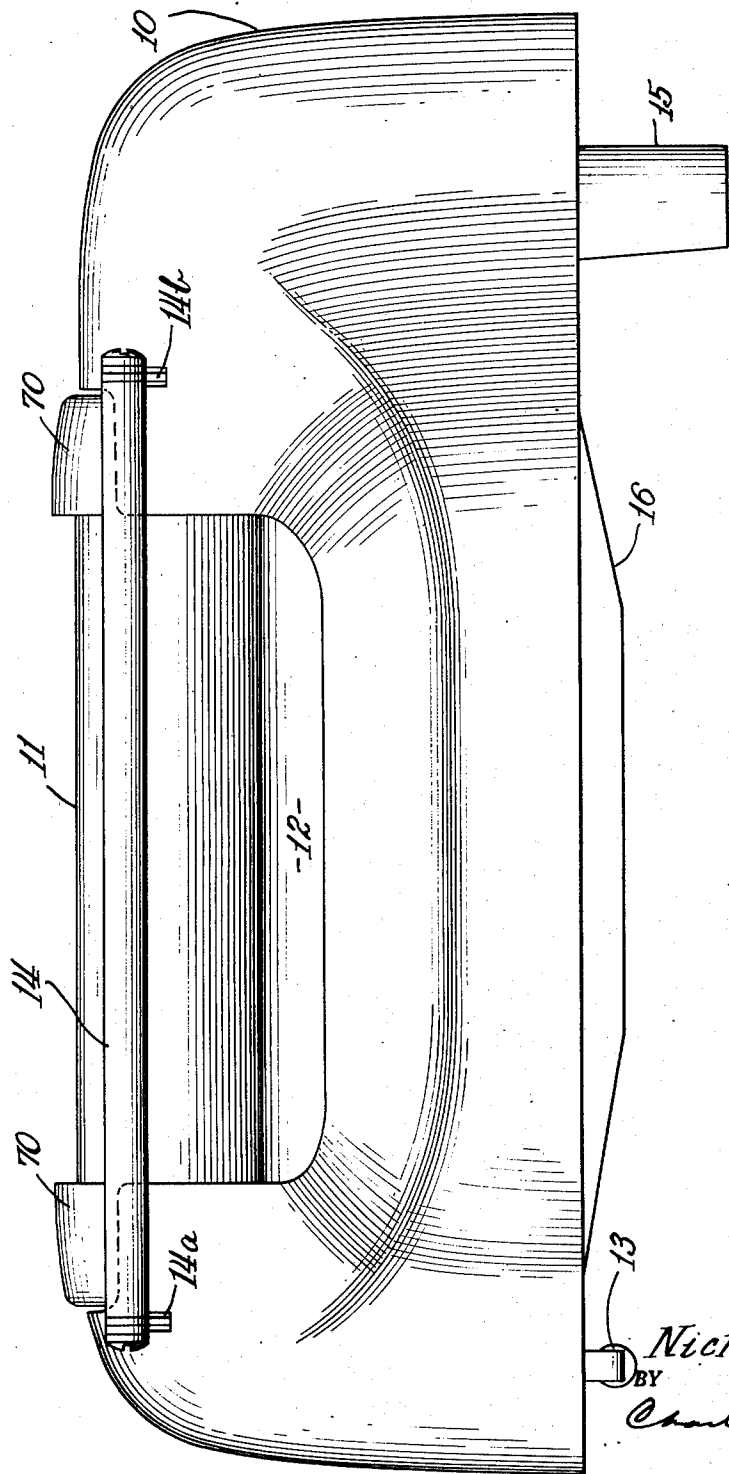


Fig. 1.

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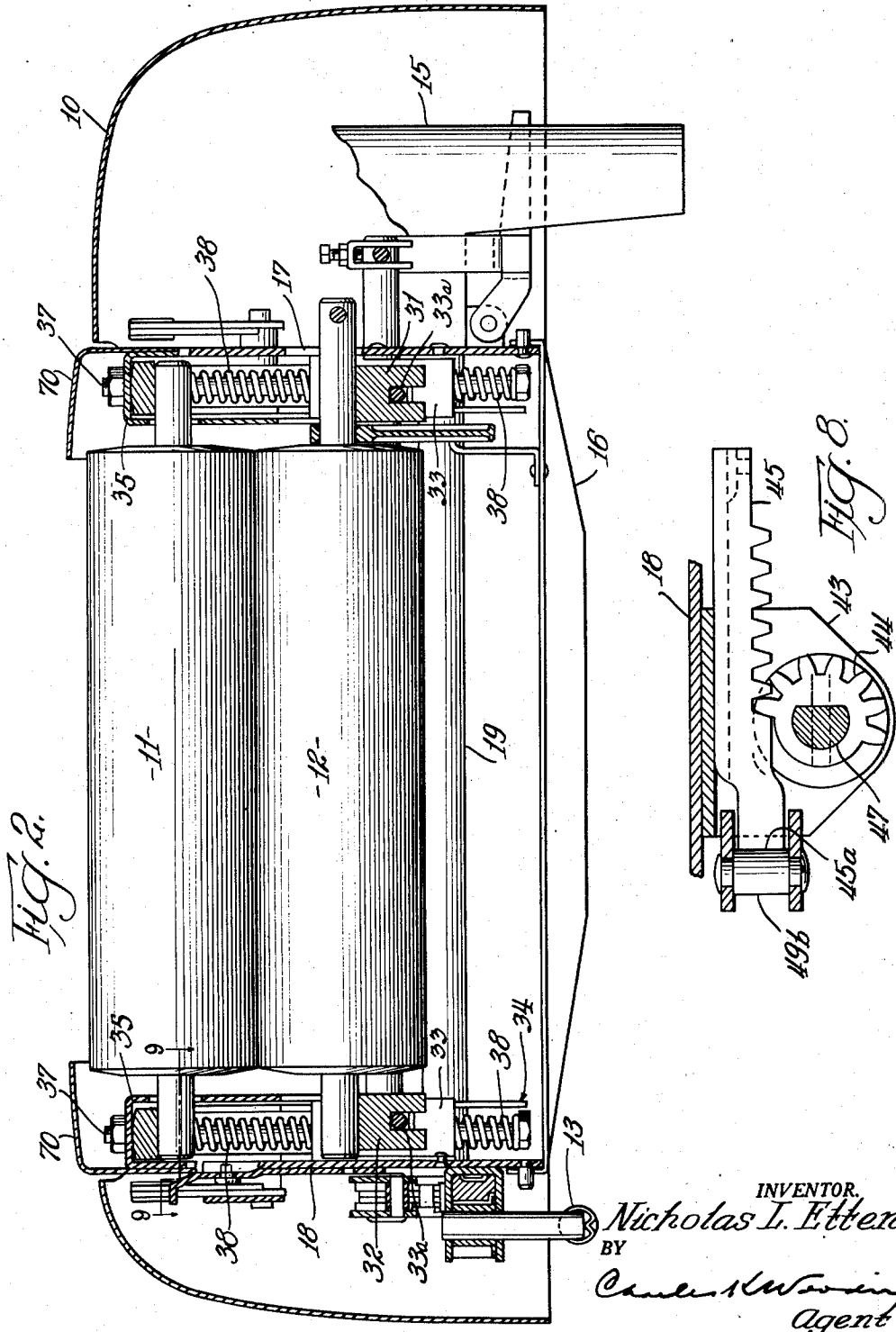
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6 Sheets-Sheet 2



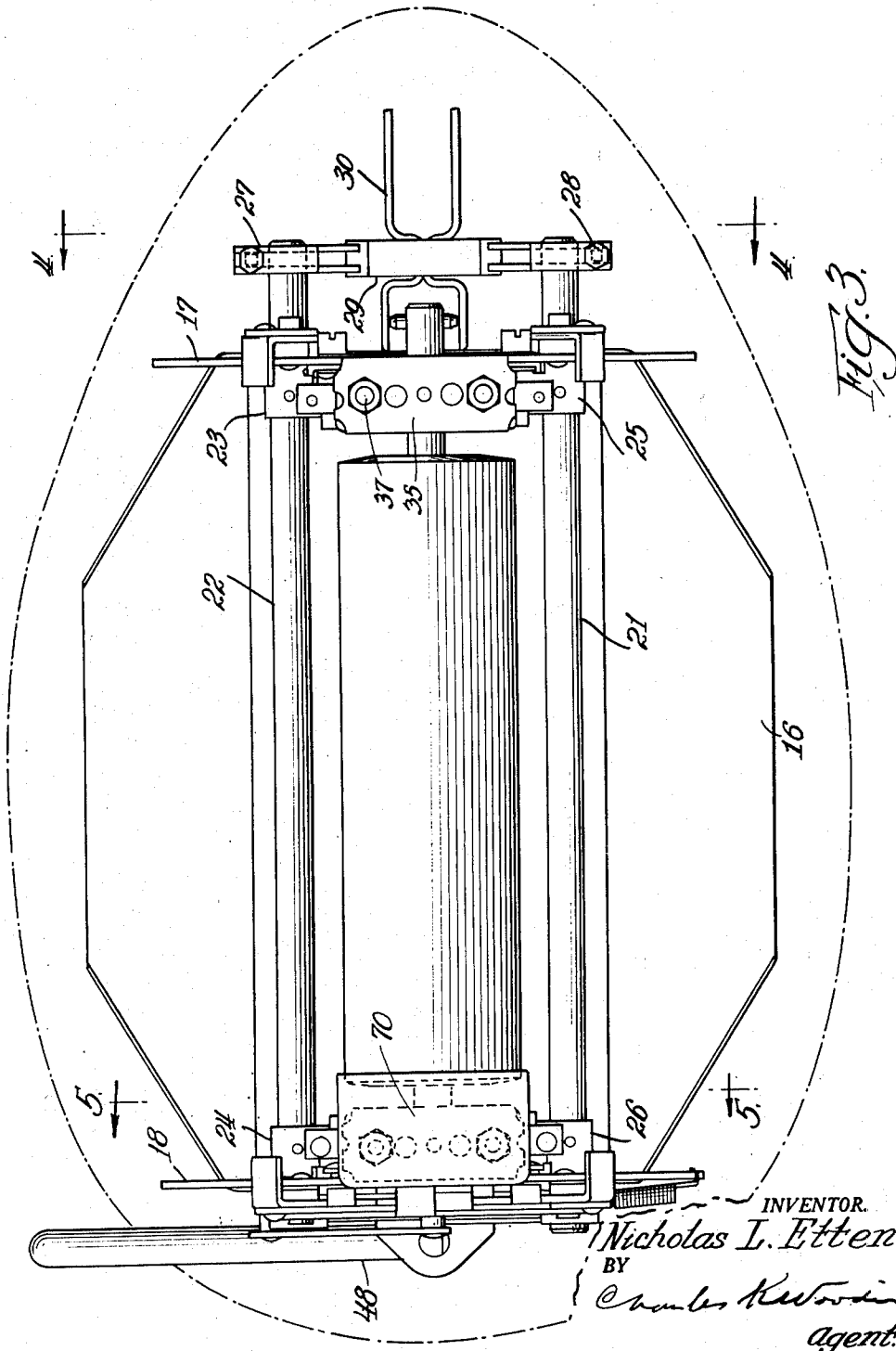
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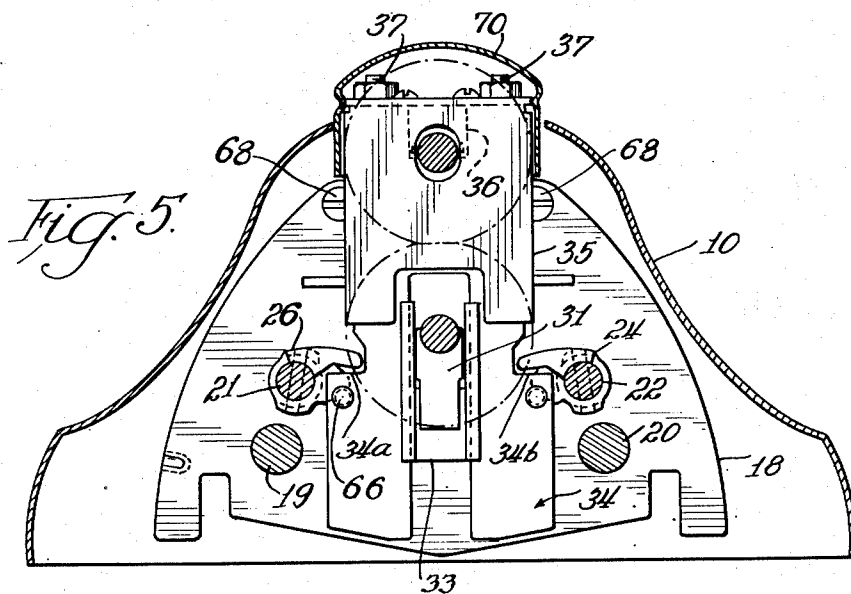
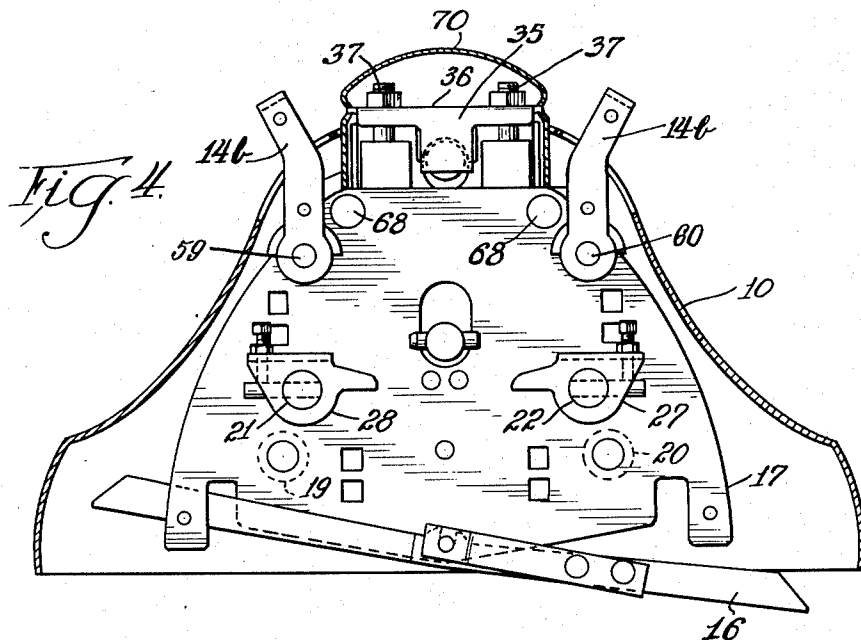
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6 Sheets-Sheet 4



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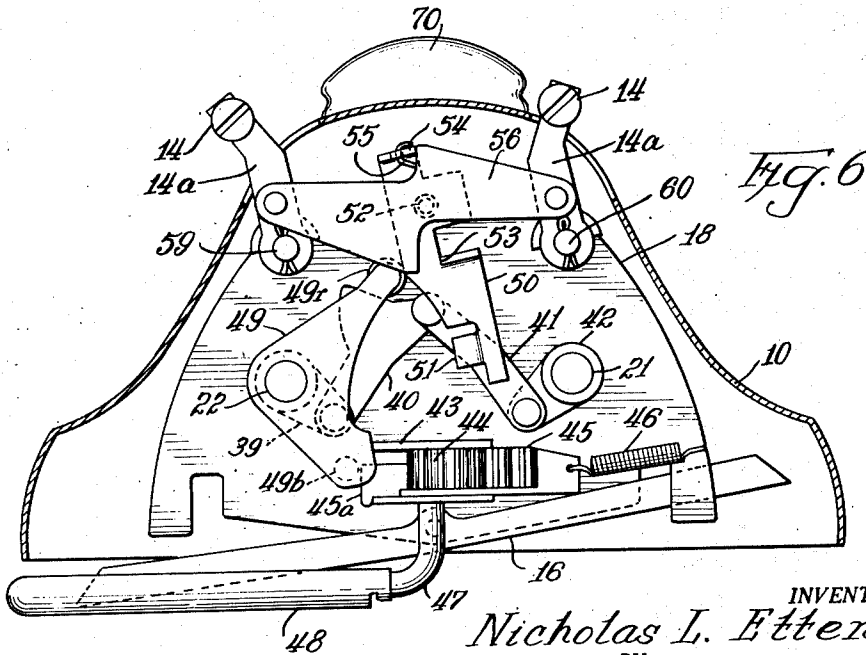
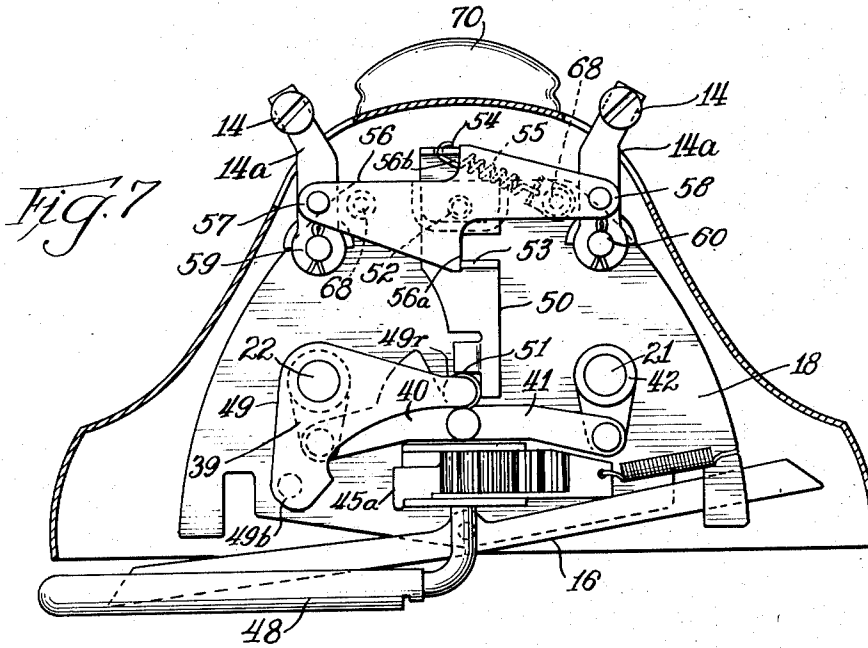
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6 Sheets-Sheet 5



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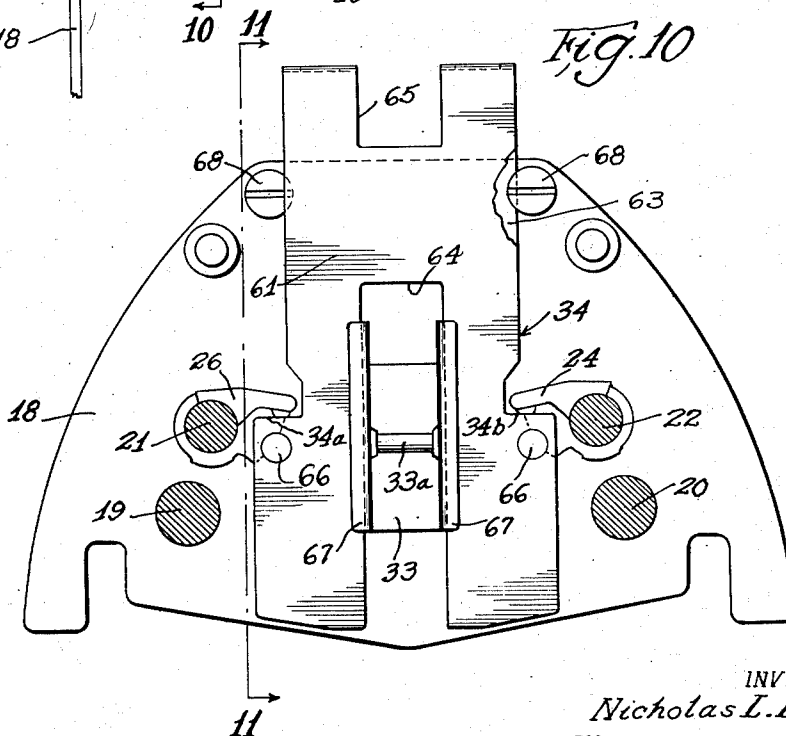
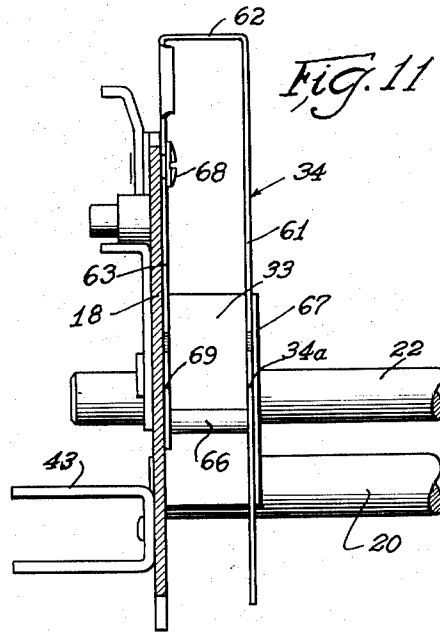
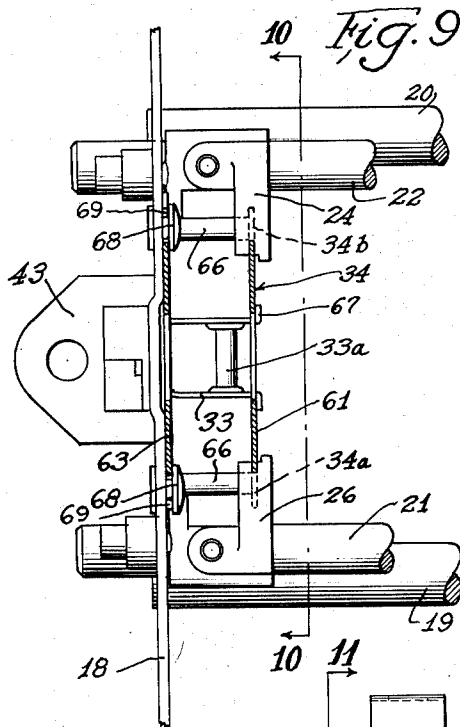
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N. L. ETTEN
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6 Sheets-Sheet 6



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UNITED STATES PATENT OFFICE

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CLOTHES WRINGER

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6 Claims. (Cl. 68—257)

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This invention relates to a wringer release and reset mechanism in a new wringer structure wherein the wringer mechanism is mounted on two oppositely positioned steel end plates with the wringer rolls and the release and reset mechanism supported on the separated end plates which also support the wringer frame, drain boards, wringer head and accessory apparatus in co-action with each other.

This general structure is rather new in the art, and although the basic idea of using the separated end plates is entirely feasible and economical from the manufacturing viewpoint, heretofore such structures have not been popular because torsional stresses induced out-of-balance loads, particularly when the wringer rolls were reset.

It is, therefore, the principal object of the present invention to provide a wringer release and reset mechanism wherein the stresses of resetting are centrally applied and there is a minimum of out-of-balance loading by a central application of forces and with a minimum of torsional forces which would twist and distort the wringer frame.

Another object is to provide a wringer and release and reset mechanism wherein the roll pressures are exerted by spaced balanced rotating shafts oppositely positioned along substantially the center line of the wringer and rotated by connected levers actuated by a central gear and rack mechanism.

Other objects and benefits will be disclosed in the following descriptions and drawings in which:

Fig. 1 is an elevation view of my wringer complete with the shroud and wringer release bars mounted thereon;

Fig. 2 is a broken cross sectional elevational view of the wringer shown in Fig. 1 to show the interior arrangements;

Fig. 3 is a top plan view of the wringer with the wringer shroud removed to show the plan of the interior parts;

Fig. 4 is an end elevational view of the wringer mechanism as it would appear on the section lines 4—4 of Fig. 3;

Fig. 5 is a similar end elevational view of the wringer as it would appear on the section lines 5—5 of Fig. 3 with the lever 30 omitted;

Fig. 6 is an end elevational view of the wringer from its outside operating end showing the wringer reset mechanism as it would appear before the reset mechanism is actuated;

Fig. 7 is a similar end elevational view to Fig. 6 after the reset mechanism has been actuated and the wringer has been reset in pressure relationship;

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Fig. 8 is a plan view of the pinion and rack mechanism for resetting the wringer as will later be explained;

Fig. 9 is a fragmentary plan sectional view taken substantially as indicated by the staggered section line 9—9 of Fig. 2, with parts omitted, to illustrate the slidable mounting of the spring cages and their connection to the respective end frame plates;

Fig. 10 is a transverse vertical sectional view, with parts omitted, taken substantially as indicated by the line 10—10 of Fig. 9; and

Fig. 11 is a longitudinal vertical sectional view, fragmentary in character, taken substantially as indicated by the line 11—11 of Fig. 10.

Now referring to Fig. 1, I show my wringer complete housed in a shroud 10 which covers both the wringer and wringer head. The rolls 11 and 12 are mounted within the shroud with the release levers 14 extending outwardly for easy access to the operator. The drain board 16 is exposed below the lower edge of the shroud 10 as shown. The shroud 10 is mounted in a conventional manner, which will not be described, on the end or frame plates 17 and 18. Also, the drain board 16 is preferably mounted on the end plates 17 and 18 in a conventional manner as clearly shown in Fig. 2.

Now referring to Fig. 2, the basic structure of my wringer consists of two end or frame plates 17 and 18 riveted in fixed separate position by stabilizing bars 19 and 20 as best shown in Figs. 4 and 5.

Journaled in and extending between the plates 17 and 18 are two rotating bars 21 and 22 and substantially abutting the inside faces of the plates 17 and 18 are cam arms 23 and 24 on the rod 22 and the cam elements 25 and 26 on the rod 21. Thus the stabilizing bars 19 and 20 are further assisted by the rotating pressure bars 21 and 22 as will be well understood from the drawings. It will be noted from Fig. 3 that the bars 21 and 22 extend through and beyond the end plate 17 and thereon are supported a pair of adjustable pressure levers 27 and 28 contacting a connecting bar 29 which engages another lever 30 extending to the wringer head. This part of the mechanism has to do with an automatic release from the wringer head and does not have any pertinency in the present invention and will not be described in any further detail.

Now referring to Fig. 2, it will be noted that the lower roll 12 is supported in fixed position by bearings 31 and 32 seated on cross pins 33a carried by supporting brackets 33 welded or equiva-

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lently secured to the frame plates 17 and 18, which bearings support the lower roll 12 in a uniform fixed position from which it may be driven by the wringer head 15 in a conventional manner as illustrated.

With reference to Figs. 2 and 5, it will be seen that a slidable spring cage and bearing cage assembly is mounted on each of the frame plates 17 and 18. These assemblies are identical, so only one need be described herein. Such an assembly includes an inverted U-shaped spring cage, generally indicated by numeral 34, and a bearing cage 35 superposed thereon and which contains a bearing 36 (Fig. 4) for the upper roll. The bearing cage 35 is also substantially in the shape of an inverted U, and the bight portions of the cages 34 and 35 are maintained in relative relationship by means of a pair of elongated bolts 37 extending upwardly through the bights of the cages. Around the shank of each of the bolts 37 is precompressed spring 38 which is disposed between the head of the bolt, at the bottom, and the bight of the spring cage at the top, thus permitting a slight separation between the bight of the spring cage and the bight of the bearing cage when pressure is exerted on the springs to provide the necessary roll pressure for a wringing operation.

With this structure, when the spring cages are moved downwardly, the springs are compressed, tending to force the bolts 37 downwardly and thus by means of the nuts at the upper ends of these bolts applying pressure downwardly upon the bearing cage 35, and consequently, on the upper roll. Roll pressure may be applied by the cam arms 23, 24, 25 and 26 on the aforesaid rods 21 and 22, and the pressure held by a latching mechanism to be later described. During use, when garments are fed between the wringer rolls, the upper roll may move upwardly by further compressing the springs. The specific structure of the spring cages and their particular slidable mounting on the respective frame plates 17 and 18, will be more fully later described herein in connection with the showing in Figs. 9, 10, and 11.

Although I have chosen to illustrate and describe a roll springing device wherein the upper roll is sprung upwardly when garments are fed between the rolls, it will be well understood that an opposite form of structure may be adapted wherein the upper roll may be held stationary and the lower roll may be moved downwardly. It is optional in the structure as to which form of springing may be desired and it will be understood that for the purposes of this invention, one of the rolls may be moved for the purpose of permitting clothes to pass between the rolls.

Now referring to Figs. 6 and 7, I will now explain my release and reset mechanism comprising the gist of this invention.

On the rotating pressure rod 22 is affixed a crank lever 39 hingedly connected with coaxing levers 40 and 41, the latter which is then connected to the lever 42 fixed on the rotating pressure rod 21. Affixed to the end plate 18 is a bracket 43 housing a rotating pinion 44 in mesh with a slidable rack 45 as best shown in Fig. 8. The rack is retracted into inactive position by a spring 46 as shown. Fixed in the pinion 44 is a rotating crank arm 47 having a telescopic adjustable handle 48 attached thereto. The purpose of the adjustable handle is to permit the operator to slide the handle out and permit greater leverage if desired. The operator, by grasping the handle 48, may rotate the pinion 44 thereupon sliding the

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rack 45 into contact by its end 45a with a roller 49b of a bell crank 49 pivotally mounted on the shaft 22. Thereupon a roller 49r on the other arm of the bell crank contacts the upper cam surface on the link 40 depressing this link and its connecting links into a position as clearly shown in Fig. 7. By this action it will be understood that the rotating pressure rods 21 and 22 are rotated counterclockwise as for 21 and clockwise as for 22, bringing the cams 24 and 25 into contact with the spring cages 34 as clearly shown in Figs. 5 and 10 in order to exert pressure on the rolls.

Now I will explain how the pressure levers heretofore described will be locked in pressure sustaining position. A lock lever 50 pivoted on the end plate 18 by the pin 52 is urged into clockwise rotation by a spring 55 as clearly shown in Fig. 7. Thus, the latch member 51 on the lock 50 will be engaged over the roller 49r on the bell crank 49 and thus the lever system will be held in pressure sustaining position.

The mechanism for releasing the rolls includes a release link 56 which has oppositely disposed abutments 56a and 56b for engaging shoulders 53 and 54 on the pivotal lock plate 50. The release link 56 is pivotally connected at its ends by pivots 57 and 58 to rock levers 14a which are pivoted at their lower ends upon studs 59 and 60 on the side plate 18. Each rock lever 14a is preferably connected by one of the forementioned release lever handles 14 to a similar arm 14b upon the side plate 17 shown in Fig. 4. This construction allows the release mechanism to be operated from both sides of the wringer by either a pull or a push upon a handle bar 14.

According to this invention, the spring and bearing cages are locked in pressure applying positions at both ends and upon opposite sides by the cam arms 23, 24, 25 and 26 so that the cages will be held in balanced position against any tendency to twist and distort the end plates 17 and 18. It is due to this balanced pressure that it becomes possible to use thin end plates and connect the same by the anchor rods 19 and 20 in co-operation with the rotatable pressure resisting rods 21 and 22.

With reference now to Figs. 9, 10 and 11, it will be seen that each spring cage 34 embodies an inner plate 61, an upper bight portion 62, and a rear plate 63. The front and rear plates are split or divided as indicated at 64 in Fig. 10 to accommodate the aforesaid bearing bracket 33, and the cage is also divided at the top as indicated at 65 to accommodate the shaft of the upper wringer roll. In this illustrated assembly, the front and rear plates 61 and 63 are maintained in proper spaced relationship at their lower portions by means of supporting bolts or rods 66—66, against which portions of the cam arms 24 and 26 act, as well as against the shoulders 34a and 34b formed in the inside plate, when pressure is applied to the rolls.

The slidable spring cage 34 is maintained in positive association with the frame plate 18 by means in engagement with both the inside plate 61 and the outside plate 63. These means embody oppositely disposed flanges or wings 67—67 on the bearing bracket 33 inside which wings the inner plate 61 is vertically slidable. Near the top of the frame plate 18 are a pair of spaced bolts 68—68 secured in the frame plate and having enlarged heads which heads overlie the marginal portion of the outside plate 63, and this plate is slidable vertically between the bolt heads, as clearly seen in Figs. 9 and 10.

As seen in Figs. 9 and 11, the outer plate 63 is also provided with a pair of shoulders 63a—63b corresponding to the shoulders 34a and 34b on the inner plate, which shoulders 69 engage the shanks of the bolts 68—68 to limit the elevation of the upper roll upon pressure release.

In order to improve the decorative appearance of the entire wringer, a cage shroud 70 (Figs. 1 and 2), is mounted over the top of each of the spring and bearing cage assemblies and is movable therewith.

From the foregoing, it is apparent that the entire wringer structure is, therefore, carried and supported by the frame plates 17 and 18, and by virtue of the stabilizing bars 19 and 20, as well as the disposition of the pressure setting rods 21 and 22, permit these plates to be of relatively light material without adverse effect from torsional stresses. The pressure reset mechanism actuated by two rotating rods balanced on the center line of the wringer applies balanced roll pressure to divide and minimize the stresses while providing a sturdy, durable and effective mechanism that represents a distinct advance in the art.

Having thus described the invention, I now claim as new:

1. In a clothes wringer, a pair of spaced separate end plates, a pair of spaced tie bars connecting said plates, a pair of spaced rotary bars mounted in bracing relation between said plates, spring and bearing cage assemblies slidably mounted on said plates between said rotary bars and having shoulders upon opposite sides, cam arms on said rotary bars to engage said shoulders, crank arms upon said rotary bars, toggle links connecting said crank arms, a bell crank lever for operating said toggle links and means for operating said bell crank lever, said crank arms, toggle links, lever and means being carried by one of said end plates.

2. In a clothes wringer, a pair of spaced separate end plates, a pair of spaced tie bars connecting said plates, a pair of spaced rotary bars bracingly connecting said plates, spaced cam arms upon said rotary bars, spring and bearing cage assemblies slidably mounted on said plates between said rotary bars and having shoulders upon opposite sides adapted for engagement by said cam arms, means for simultaneously rotating said rotary bars in opposite directions for causing said cam arms to engage said shoulders, means for locking said rotary bars in cam arm engaging positions and mechanism for releasing said locking means by a push or pull movement.

3. In a clothes wringer, a pair of spaced separate end plates, a pair of spaced tie bars connecting said plates, a pair of spaced rotary bars bracingly mounted between said plates, a pair of spaced cam arms on each said rotary bar, a spring and bearing cage assembly extending between said rotary bars and having shoulders upon opposite sides for engagement by said cam arms, said assembly being slidably mounted on one of said plates, and pressure applying and holding mechanism carried by said one plate and including crank arms upon said rotary bars in opposed relation, a toggle link linkage connected to said crank arms, a bell crank lever having a roller for

engaging said toggle linkage and operating the same for causing the same to simultaneously rotate said rotary bars in opposite directions for applying said cam arms to said shoulders, a pivoted locking lever having means for locking said bell crank lever in set position, and a release member having engagement with said locking lever at spaced points, and means extending from one plate to the other for operating said release member by a push or pull movement for shifting said locking lever to unlocking position.

4. In a clothes wringer, a pair of spaced separate end plates, a pair of spaced tie bars connecting said plates, a pair of spaced rotary pressure bars bracingly mounted between said plates, a pair of spaced cam arms on each said rotary bar, a spring and bearing cage assembly slidably mounted on one of said plates between said rotary bars and having shoulders upon opposite sides adapted for engagement by said cam arms for locking said cage in pressure applying position, means for simultaneously rotating said bars in opposite directions for applying said cam arms to said shoulders, and means for locking and releasing said cam arms.

5. In a clothes wringer, a frame including a pair of rigidly connected spaced end plates, a pair of spaced rotary pressure bars bracingly mounted in and having a portion thereof between said plates, a pair of spaced cam arms on each of said rotary bars, a spring and bearing cage assembly slidably mounted on one of said plates and extending between said rotary bars and having shoulders upon opposite sides adapted for engagement by said cam arms for locking said cage in pressure applying position, means for simultaneously rotating said bars in opposite directions for applying said cam arms to said shoulders, and means for locking and releasing said cam arms.

6. In a clothes wringer, a frame including a pair of rigidly connected spaced end plates, a pair of spaced rotary pressure bars bracingly mounted in and having a portion thereof between said plates, a spring and bearing cage assembly slidably mounted on each end plate, cam means operatively associated with each rotary pressure bar and engaging said bearing cage to hold said cage in a pressure applying position, means for rotating said bars in opposite directions about the axes thereof, and means for locking and releasing said rotary pressure bars.

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