

April 21, 1942.

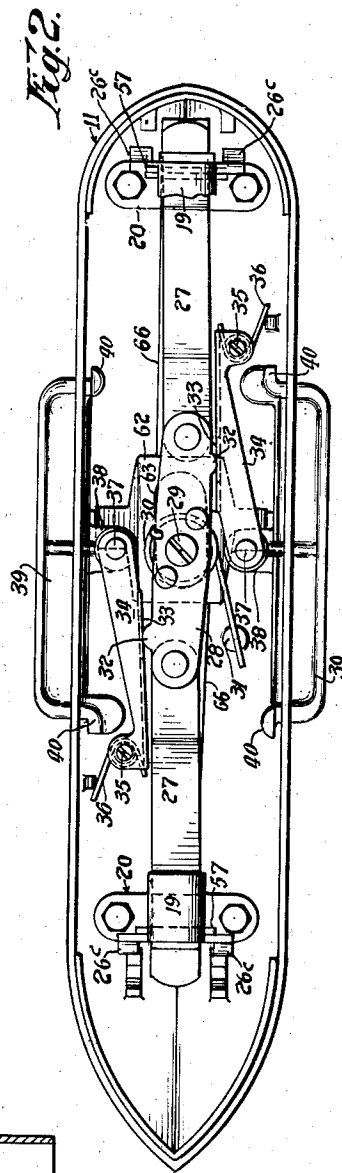
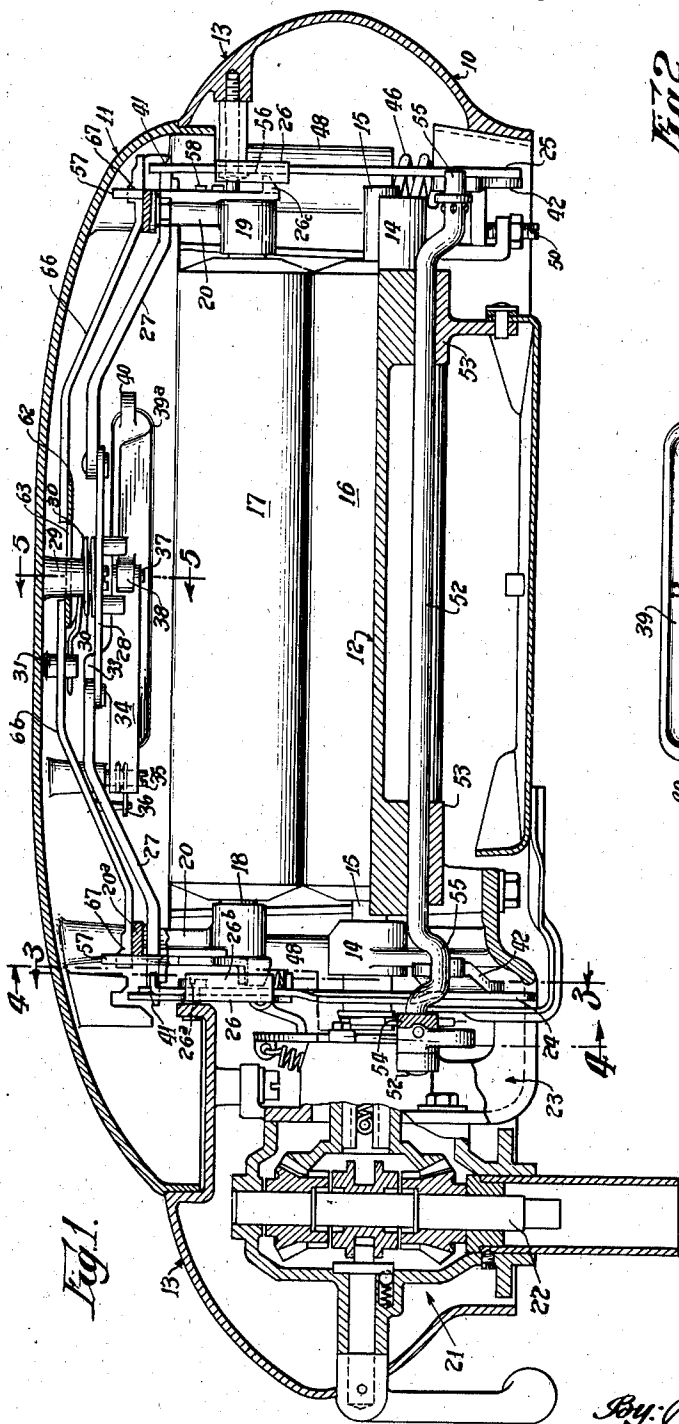
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2,280,313

WRINGER

Filed Aug. 4, 1937

3 Sheets-Sheet 1



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Fig. 4.

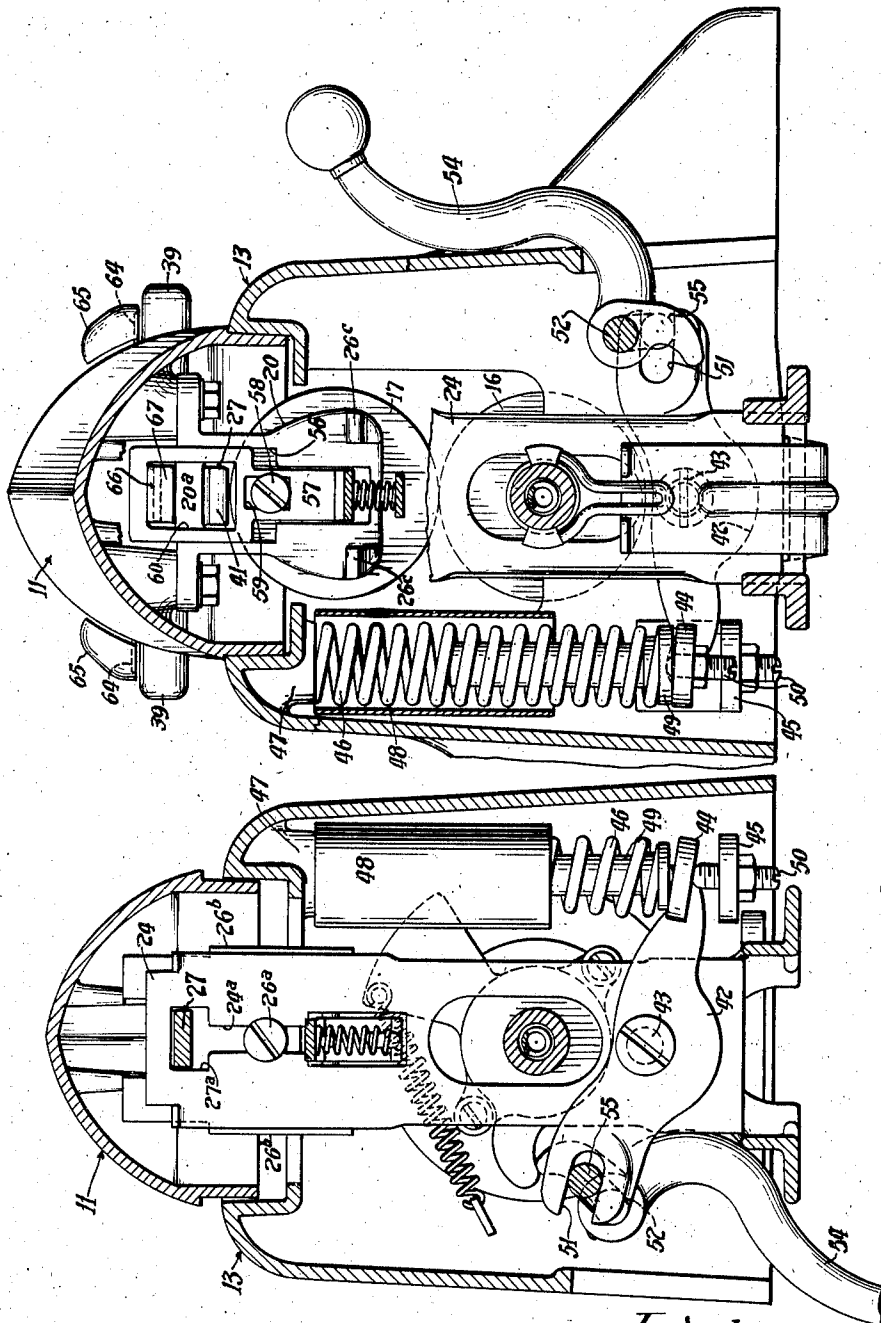


Fig. 3.

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Fig. 7.

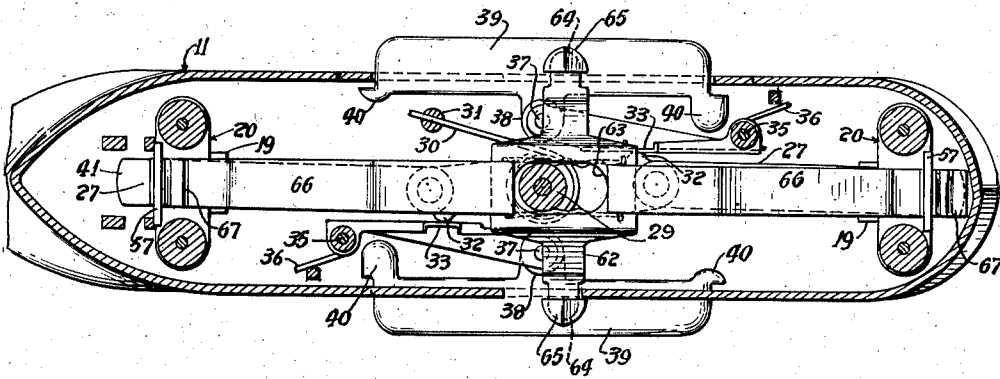


Fig. 6.

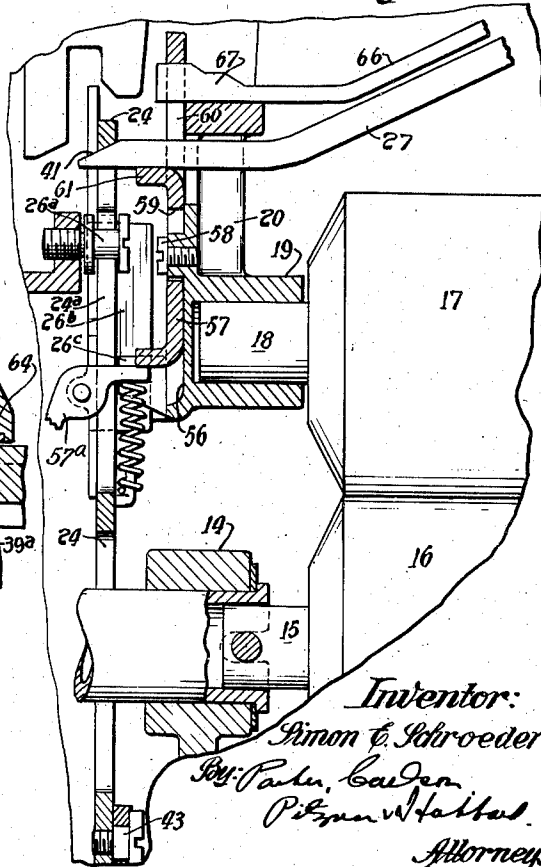
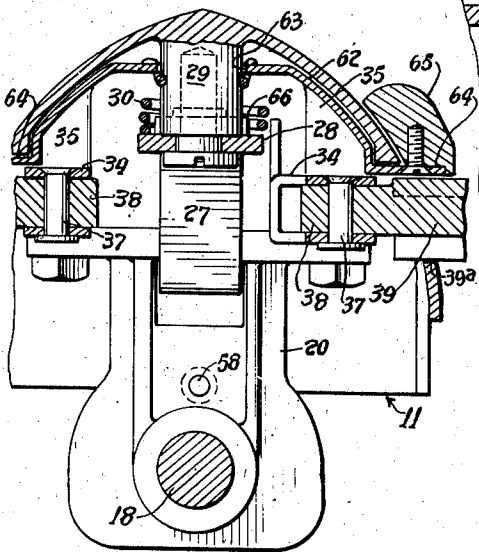


Fig. 5.



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UNITED STATES PATENT OFFICE

2,280,313

WRINGER

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Application August 4, 1937, Serial No. 157,285

12 Claims. (Cl. 63—263)

The invention relates generally to wringers for use in connection with household washing machines and more particularly to the releasable mechanism by which an operative pressure between the wringer rolls is created and maintained.

An object of the invention is to provide a new and improved means of simple construction by which an operative pressure between the wringer rolls may be created and maintained, and in which the effective force of the tension may be simply and conveniently varied.

Another object of the invention is to provide a new and improved wringer construction embodying means for placing the wringer rolls under operative pressure, and including a disengageable latching mechanism for relieving the pressure from said rolls, together with means for varying the tension imposed on the rolls by adjustably shifting the latching mechanism.

More specifically stated, another object of the invention is to provide in a wringer having separable base and head frame sections and cooperative wringer rolls journaled in said frame with one of said rolls being supported by the head section for rotation on an axis fixed relative thereto, improved means for latching said sections together to place the wringer rolls in cooperative relation, including disengageable latching means having associated therewith spring means for imposing an operative pressure on the wringer rolls, and cam means for shifting the position of the disengageable means relative to the fixed axis of the upper roll to vary the effective force exerted by the spring means.

Other objects and advantages will become apparent in the following description and from the accompanying drawings, in which:

Figure 1 is a longitudinal vertical sectional view through a wringer structure embodying the features of the invention.

Fig. 2 is a view looking into the open face of the upper frame section, the upper wringer roll being omitted.

Figs. 3 and 4 are transverse sectional views on an enlarged scale through the wringer assembly taken substantially along the lines 3—3 and 4—4 of Fig. 1.

Fig. 5 is a transverse sectional view on a larger scale through the head of the wringer taken substantially along the line 5—5 of Fig. 1.

Fig. 6 is an enlarged sectional view showing in detail one end of the upper wringer roll assembly, the view being taken on a vertical plane through the axis of the roll.

Fig. 7 is a plan view of the head section of the frame, the outer shell being in section to expose the mechanism housed therein.

While the invention is susceptible of various modifications and alternative constructions, I have shown in the drawings and will herein describe in detail the preferred embodiment, but it is to be understood that I do not thereby intend to limit the invention to the specific form disclosed, but intend to cover all modifications and alternative constructions falling within the spirit and scope of the invention as expressed in the appended claims.

With particular reference to Fig. 1 of the drawings, wherein a preferred embodiment of the invention is shown merely for illustrative purposes, the wringer frame comprises a lower or base section 10 and an upper or head section 11 adapted to fit telescopically into the upper portion of the side stiles of the base. The base section is generally of U-shaped form and includes an elongated lower casting 12 and upright hollow side stiles 13. Bearings 14, fixed with respect to the base, support a shaft 15 on which a lower wringer roll 16 is carried. For cooperation with the lower roll is an upper roll 17 carried by a shaft 18, each end of which is journaled in a bearing 19 supported by a hanger 20 rigid with the head 11. In this arrangement, the upper and lower rolls are respectively supported by the head and base sections and each roll is journaled for rotation on an axis which is fixed with respect to its associated frame section. The detachable operative relationship between the wringer rolls is, therefore, attained by releasably latching the frame sections together.

Driven movement of the wringer rolls may be effected in any suitable manner as by means of a shiftable clutch mechanism 21 (shown at the left-hand side of Fig. 1), whereby power is taken from a vertical drive shaft 22 and transmitted through a reversing clutch mechanism to the lower wringer roll shaft 15. Indicated generally at 23 is mechanism for mechanically effecting disconnection of the driving roll shaft when the operative pressure between the wringer rolls is released. The driving means, including the power disconnection mechanism, forms no part of the present invention and a more particular description thereof is believed to be unnecessary.

The means by which the frame sections are disengageably latched together also includes means whereby an operative pressure is imposed upon the wringer rolls 16, 17. Thus, referring to Figs. 1, 3 and 6, each side stile beyond the ends

of the wringer rolls has a vertically extending slide 24, 25 each carrying a bracket 26. Pins 26^a engaging apertures 24^a in the slides guide the vertical reciprocatory movements of the slides. A guided correlation between the slides and the related parts on the upper frame section is obtained by providing vertical side flanges 25^b for sliding engagement by lugs 26^c on the hangers 20. (See Fig. 1.) The upper ends of the slides 24, 25 are arranged to extend into the head when the frame sections are assembled, and the slides are apertured near their upper ends as at 27^a for engagement by the ends of elongated bars 27 which form a part of a retractable latch mechanism.

The bars 27 extend longitudinally toward the central portion of the head (see Figs. 1 and 2) and the inner ends thereof are pivotally connected to an intermediate bar 23 which is pivotally and centrally supported by a stud 29 depending from the head 11. A coil spring 30, or the like, bearing between a fixed part 31 on the head and the bar 28 exerts a force for rotating the bar in one direction. When the bars 27 and 28 are substantially in longitudinal alinement, the ends of the bars are extended for engagement with the ends of the slides 24, 25. Normally, the spring 30 urges the bar 28 slightly past an exactly alined relationship with the bars 27, as may be seen in Fig. 2. This position of the bars 27, 28 is limited by an engagement between nibs 32 on the bar 28 and upstanding flanges 33 (Fig. 1) formed on actuating levers 34 which are manipulable to effect a release of the bars 27 from the slides 24, 25. The actuating levers 34 are disposed one on either side of the longitudinal line of the bars 27, 28. Each lever has one end located substantially upon the transverse line defined by the stud 29 and the levers extend from said line in opposite directions toward the ends of the head. The outer ends of the levers are pivotally supported upon studs 35 depending from the head and the levers are normally urged away from engagement with the bar 28 by such means as springs 36 bearing between the levers and a fixed part of the head. The inner ends of the levers 34, which are disposed substantially in transverse alinement with the stud 29, are each pivotally secured, as at 37, to an ear 38 intermediately formed on an elongated actuator bar 39 arranged to extend through suitable slot 39^a in the associated side of the head for manipulable engagement by the user. Stops 40 on the ends of each actuator bar are arranged for engagement with the inner side of the head to limit the outward movement of the bar relative to the head.

In assembly, the spring 30 normally maintains the bars 27, 28 substantially in longitudinal alinement with the ends of the bars 27 in engagement with the slides 24, 25. The actuator bars are urged outwardly of the head by the springs 36 acting through the actuating levers 34, and the engagement between the levers and the bar 28 limits the alined relationship of the bars 27, 28 to one in which the connecting pivotal points thereof are slightly past exact alinement. Inward movement of either actuating bar swings the actuating lever 34 associated therewith about its pivotal point 35 to rotate the bar 28 about the stud 29 in a direction (counterclockwise as seen in Fig. 2) which carries the pivotal connection between the bar 28 and bars 27 across the line of exact alinement. Continued inward movement of the actuating bars causes a horizontal retrac-

tion of the ends of the bars 27 out of engagement with the slides 24, 25 and, since the slides are urged downwardly as will hereinafter become apparent, the disengaging movement may be facilitated by providing angular or cam faces 41 (Figs. 1 and 6) on the ends of the bars 27 in opposition to the parts of the slides 24, 25 engaged thereby.

In this embodiment, the slides 24, 25 are vertically reciprocated by means which is effective to extend the slides into an upward position for engagement by the ends of the bars 27 and to retract the slides to a downward position while imposing thereon a downwardly exerted resilient force. With reference to Figs. 1, 3 and 4, each slide has a transversely extending lever 42 near its lower end intermediately pivoted thereto, as at 43. One end of each lever 42 has a horizontal extension 44 arranged to overlie and rest upon the horizontal end of a bracket 45 affixed to the base. In substantially vertical alinement with the extensions 44 are relatively heavy tension applying compression springs 46 having their upper ends seated against lugs 47 in the side stiles of the base and enclosed by guide collars 48. The lower ends of the springs 46 are seated upon the heads of elongated pins 49 which, in turn, rest upon the upper faces of the horizontal lever extensions 44. Such means as set screws 50, interposed between the brackets 45 and the extensions 44, and between the extensions and the pins 49, provide for adjustment of the position of the levers and the tension of the springs.

The opposite end of the lever 42 is provided with a generally longitudinally elongated slot 51. A rock shaft 52 is rotatably supported as at 53 (Fig. 1) to extend longitudinally of the base. An oscillatory movement may be imparted to said shaft by a lever 54 extended through an appropriate slot in a wall of the base. The shaft 52 has a pair of offset portions 55 providing crank arms for engagement with the elongated slots 51 in the levers 42. The arrangement is such that, when the lever 54 is in one position (in this instance in its lowermost position as shown in Fig. 3), the crank arms have moved the associated end of the lever 42 upwardly, during which movement the lever swings about the engagement between the horizontal extension 44 and the bracket 45 to shift the associated slide upwardly due to the pivotal connection thereof with the lever 42. In this position of the slides, the latching bars 27 may be retracted and then released to effect engagement thereof with the slides, thereby latching the head to the base.

When the lever 54 is swung to its opposite position (or to its uppermost position as shown in Fig. 4), the slide is moved downwardly. During such movement, the levers 42 are rocked about their pivotal connections 43 with the slides, which movements elevate the horizontal extensions 44 against the tension of the springs 46. The springs, therefore, impose a downward force on the slides, which force acts through the engagement between the slides and the latch bars 27 to draw the head toward the base and to place the wringer rolls 16, 17 under an operative spring pressure.

According to the present invention, means is provided for adjustably varying the pressure imposed on the wringer rolls by the springs 46 and in this embodiment adjusting means, such as cams, are employed to shift the position of interengagement between the slides and the ratchet bars, whereby when the mechanism is condi-

tioned for operation the springs will be placed under greater or lesser tension according to the position of interengagement. Referring particularly to Figs. 4 and 6 the axially outwardly facing sides of the upper bearing hangers 20 are provided with vertical grooves 56 extending generally radially of the fixed axis of the upper roll shaft 18. Slidably mounted in each groove is an adjustable member 57, herein shown as comprising a flat plate slidably fitting in the groove 56 and guided for vertical sliding movement by such means as a headed pin 58 secured to the hanger and overlying the margins of a slot 59 in the plate.

Each hanger 20 is suitably apertured to permit the end of the latch bar 27 to extend there-through for engagement with the associated slide, and the upper ends of the plates 57 are likewise apertured, as at 60. The lower marginal portions of the apertures 60 are turned outwardly to provide a horizontal flange 61 for supporting the ends of the latch bars 27. Vertical shifting movement of the plates 57 will therefore move the ends of the latch bars 27 vertically. Hence, the position of the latch bars with respect to the fixed axis of the upper wringer roll, and more generally with respect to the frame, is variable. Incidentally one of the plates 57 (herein the left hand plate) has an outturned end which cooperatively engages one leg of a bell crank lever 57^a (Fig. 6) when the plate is depressed. The lever 57^a is a control part of the drive disconnecting mechanism 23.

The adjusted position of the latch bars may be conveniently determined by a simple mechanism which acts simultaneously to effect the same adjustment on both latch bars. Referring particularly to Figs. 1, 5 and 7, the head carries a wide generally U-shaped plate 62 having an elongated slot 63 through which the stud 29 extends. The ends of the plate are outturned, as at 64 (Fig. 5) to overlie the actuator bars 39 and extend through the slots 39^a in the shell of the head. Externally of the head, the outturned ends have small knobs or finger pieces 65 suitably secured thereto.

Rigid with opposite sides of the plate 62, and extending along the longitudinal line of the head, are arms 66 (Fig. 1) dimensioned to extend into the apertures 60 in the adjustment plates 57. Near their outer ends the arms 66 are supported by the cross pieces 20^a on the hangers 20. Cam means 67 is provided at the end of each arm 66 for engagement with the upper margin of the apertures 60. In this instance, the cam means provides three elevations or steps, as shown, to provide three variations of adjustment of spring tension. The cams are so arranged that reciprocation of the plate 62 and arms 66 by manipulation of the finger pieces 65 will position corresponding cam surfaces for operative engagement with the plates 57.

In operation, the ends of the latch bars 27 will usually be operatively extended into the receiving apertures in the upper ends of the slides 24, 25, while the lowest cam surface on the cam means 67 is engaged with the upper margin of the plate 57. The user, prior to movement of the lever 54, shifts the mechanism connected with the finger pieces 65, to place the desired level on the cams in opposition to the plates 57. As the lever 54 is swung to condition the mechanism for operation, the extent of downward movement of the slides 24, 25 will depend upon the position of interengagement between the slides and latching bars

27, and the springs 46 will be tensioned accordingly. It will be evident, therefore, that the pressure exerted between the wringer rolls may be simply and conveniently adjusted as desired by manipulation of means for adjustably determining the position of interengagement between the separable parts of the latching mechanism.

I claim as my invention:

1. In a wringer, the combination of a frame having a base section and a separable head section, upper and lower wringer roll bearings fixed respectively on said head and base sections, co-operative wringer rolls supported by said bearings for operative engagement when said sections are assembled, means for creating tension between said rolls including spring means mounted on said base section, slides at each end of said base frame extending in assembly vertically into said head section, manipulable means connected with said spring means and with said slides for extending said slides into said head section or retracting said slides toward said base section, retractable latch members on said head section engageable with said slides when said slides are in the extended position thereof and when the slides are retracted disengageably transmitting the spring tension exerted on the slides to the wringer rolls, supporting means mounted on the upper bearings for vertical adjustable movement substantially radially of the bearing axes, said supporting means being apertured and having horizontal lips providing rests for said latch members, and a bar mounted in said head for longitudinal movement and having a series of rising cam faces thereon selectively engageable with said supporting means for shifting said latches with respect to the axis of said upper bearings by movement of said supporting means.

2. In a wringer, the combination of a frame including a base and a head adapted to be detachably associated with said base, wringer rolls journaled in said frame and adapted to be placed in contact under operative pressure when said head and base are so assembled, releasable latching means carried by said head at each end thereof, reciprocable means mounted on said base engageable by said latching means to hold said base and head in operative assembly, resilient means connected with said reciprocable means to exert a force through said latching means for holding said head associated with said base and the wringer rolls under operative pressure, and cam means for selectively shifting the position of said latching means relative to said head along the line of reciprocation of said reciprocable means.

3. In a wringer, the combination of a frame having head and base sections, wringer rolls in said frame, and means for imposing an operative pressure on said rolls including interengageable means on said head and base for detachably latching said frame sections together, means for imposing a resilient force on the interengageable means on said base, means for transmitting said force to the wringer rolls, and cam means slidable longitudinally of the wringer for adjustably shifting the position of the interengageable means on said head to vary the force exerted by the force imposing means.

4. In a wringer, the combination of a frame having head and base sections, wringer rolls in said frame, and means for creating an operative pressure between said rolls and including interengageable means on said head and base for detachably latching said frame sections together,

releasable means for imposing a resilient force on one of said interengaging means in a direction which draws said sections together, means for subjecting the wringer rolls to such force, and means independent of said releasable means for relatively shifting said interengageable means to vary the position of interengagement therebetween with respect to the frame.

5. In a wringer, the combination of a frame, wringer rolls supported by said frame for relative movement into and out of cooperative contact, disengageable latching means for holding said rolls in cooperative relation including spring means for operatively tensioning said rolls, manually operable means for disengaging said latching means, and manually operable means independent of said first-mentioned manually operable means for shifting said latching means relative to said rolls to vary the position of interengagement of said latching means and thereby vary the tension exerted by said spring means.

6. In a wringer, the combination of a frame, wringer rolls supported by said frame for relative movement into and out of cooperative contact, a retractable latch mechanism movable with one of said rolls, reciprocable means movable with the other of said rolls and having one position permitting engagement with said mechanism, spring means for imposing tension on said rolls as said reciprocable means is moved from said one position, and means for shifting said latch mechanism variably to adjust the mechanism with respect to said reciprocable means at said one position.

7. In a wringer, the combination of a base, a head, cooperative wringer rolls therein including means for supporting one roll by said head for rotation on a relatively fixed axis, latch means between said base and head, supporting means on said head for said latch means adjustable to vary the engaged position of said latch means on a substantially radial line with respect to the axis of said one roll, manipulable means controlling such adjustment, and means engageable with said latch means to hold said base and head operatively assembled including resilient means for imposing a pressure on said rolls through the engaged parts.

8. In a wringer, the combination of a base, a head, cooperative wringer rolls therein including means for supporting one roll by said head for rotation on a relatively fixed axis, latch means between said base and head, supporting means on said head for said latch means adjustable to vary the engaged position of said latch means on a substantially radial line with respect to the axis of said one roll, manipulable means controlling such adjustment, and means acting through said

latch means for imposing a spring force on said rolls adjustable as to exerted pressure by said adjustment of said latch means.

9. In a wringer, the combination of a frame, a pair of cooperative wringer rolls mounted in said frame, means for latching said rolls in cooperative relation comprising a pair of latch members, resilient means releasably connected to one of said latch members for creating an operative roll pressure, and means for adjustably shifting the other of said latch members to vary the position of interengagement of said latch members and thereby vary the pressure exerted by said resilient means.

10. In a wringer, the combination of a frame having a base and a head, cooperative wringer rolls therein, bearing hangers on said head for supporting one roll on a fixed axis relative to said head, adjustable slides mounted on said hangers for movement generally radially of said axis, a latching member resting its opposite ends on said slides, cam means engaging said slides for concurrently adjusting the positions thereof, and cooperating spring pressed means engaging said latching members and exerting a force thereon for holding the head assembled on the base with the rolls in operative contact.

11. In a wringer, the combination of a frame, wringer rolls supported by said frame for relative movement into and out of cooperative contact, disengageable latching means for holding said rolls in cooperative relation including spring means for operatively tensioning said rolls through said latching means, means for disengaging said latching means, and means adjustable independently of the operation of latching and independent of said latch disengaging means for shifting the position of said latching means relative to said frame to vary the position of interengagement of said latching means to adjust the tension exerted by said spring means.

12. In a wringer, the combination of a base, a head, cooperative wringer rolls one in the base and the other in the head, latch means between said base and head, means for disengaging said latch means including a manually operable member located centrally of said head, adjustable means for shifting said latch means to vary the position of interengagement thereof, a manually operable member for said adjustable means located adjacent to but movable independently of the first-mentioned manually operable member, and means acting through said latch means for imposing a spring force on said rolls adjustable as to exerted pressure by adjustment of the latch means as aforesaid.

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