Jan. 19, 1926. 1,569,859

A. J. FISHER

WASHING MACHINE WRINGER

Filed May 7, 1921 4 Sheets-Sheet 1

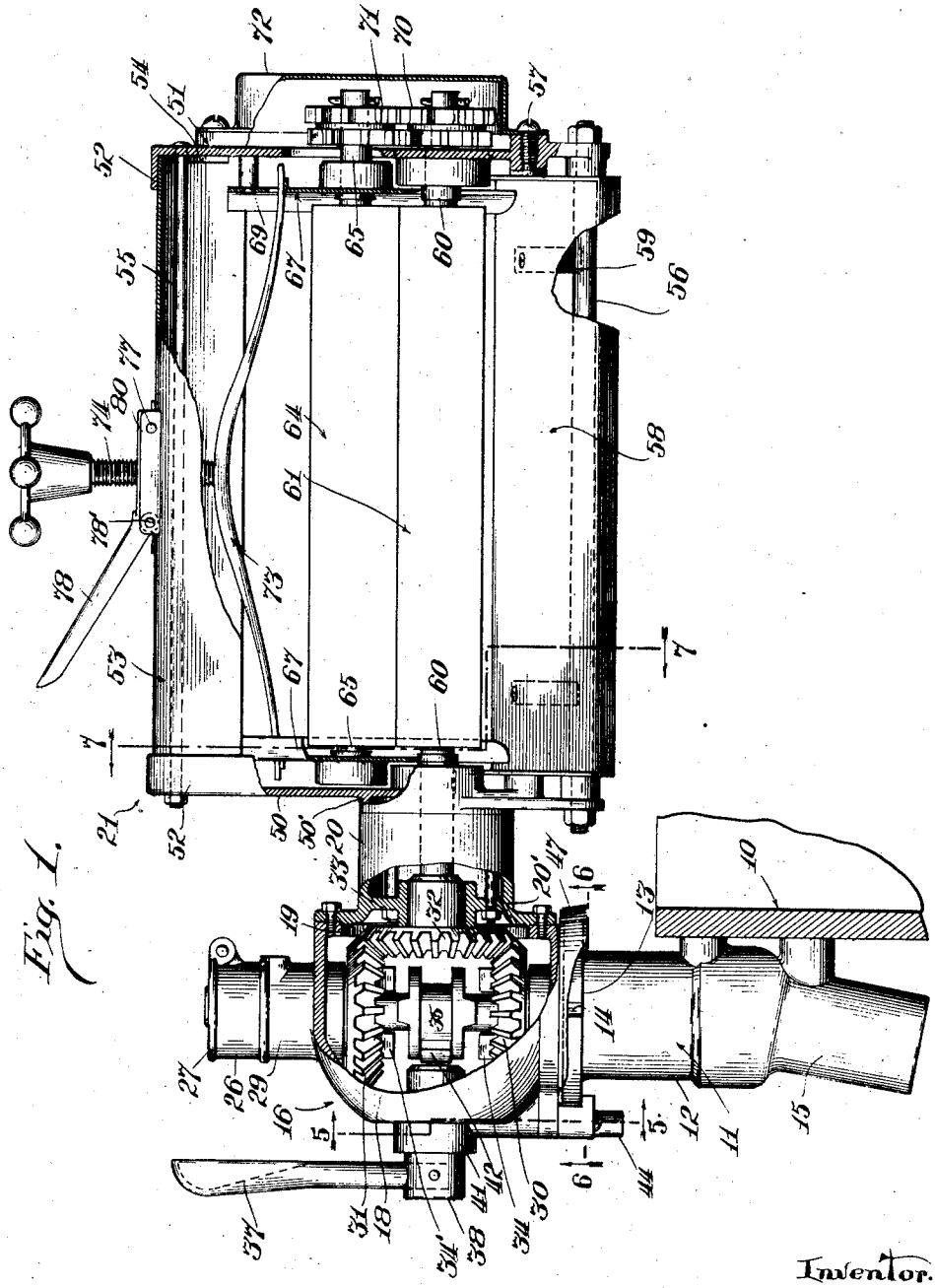


Fig. 1.

Inventor.
Alva J. Fisher
By Robert Gibbon & Wirthlacauley
Attorneys.

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A. J. FISHER

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Fig. 2.

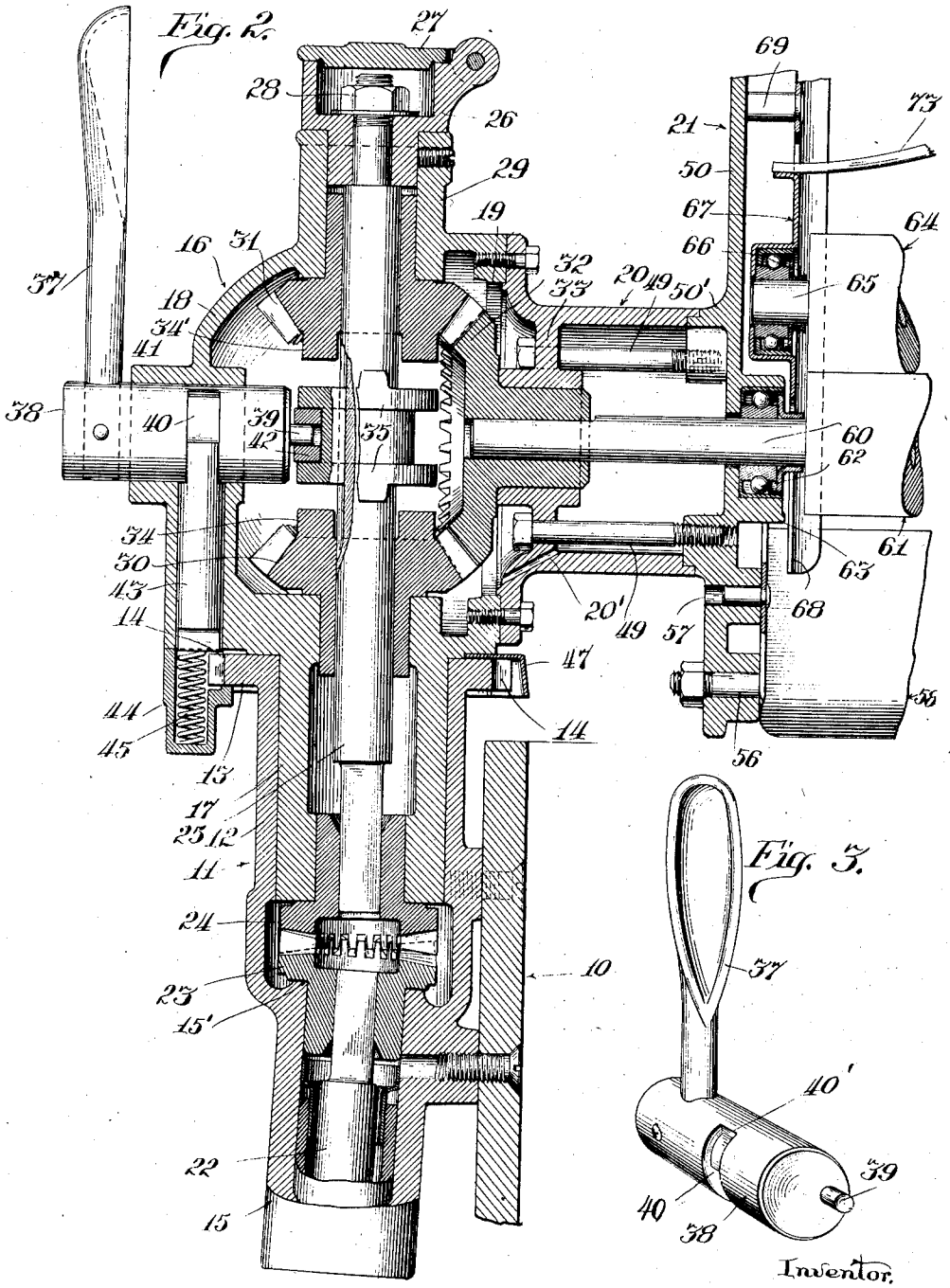


Fig. 3.

Inventor.

Alva J. Fisher

By Peter Arbenz Lewis & Macauley

Attorneys.

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A. J. FISHER

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Fig. 4.

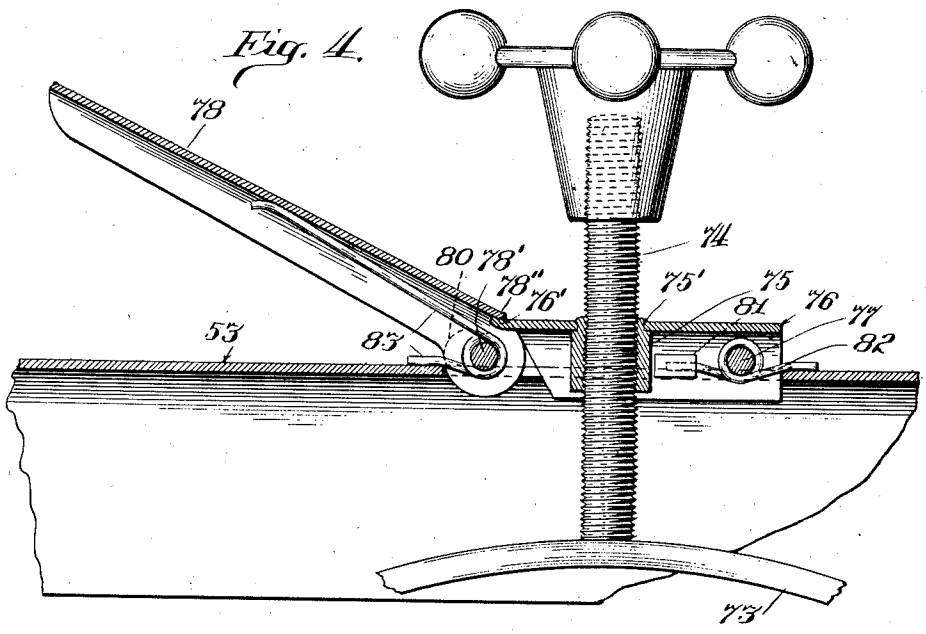


Fig. 6.

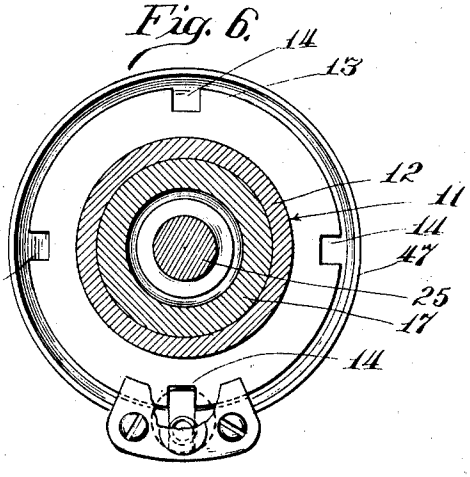
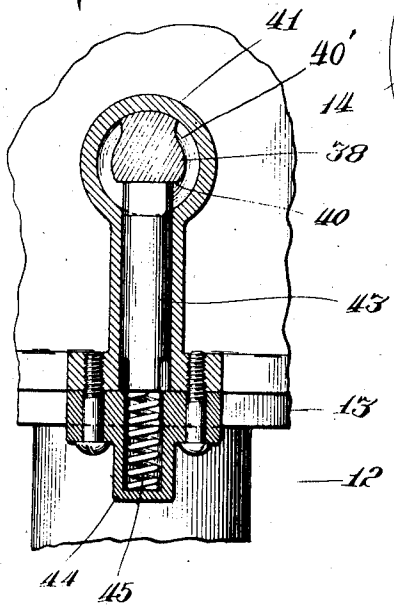


Fig. 5.



Inventor.
Alva J. Fisher
By Rector & Gilbert & Davis & Macauley
Attorneys.

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A. J. FISHER

WASHING MACHINE WRINGER

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Fig. 7.

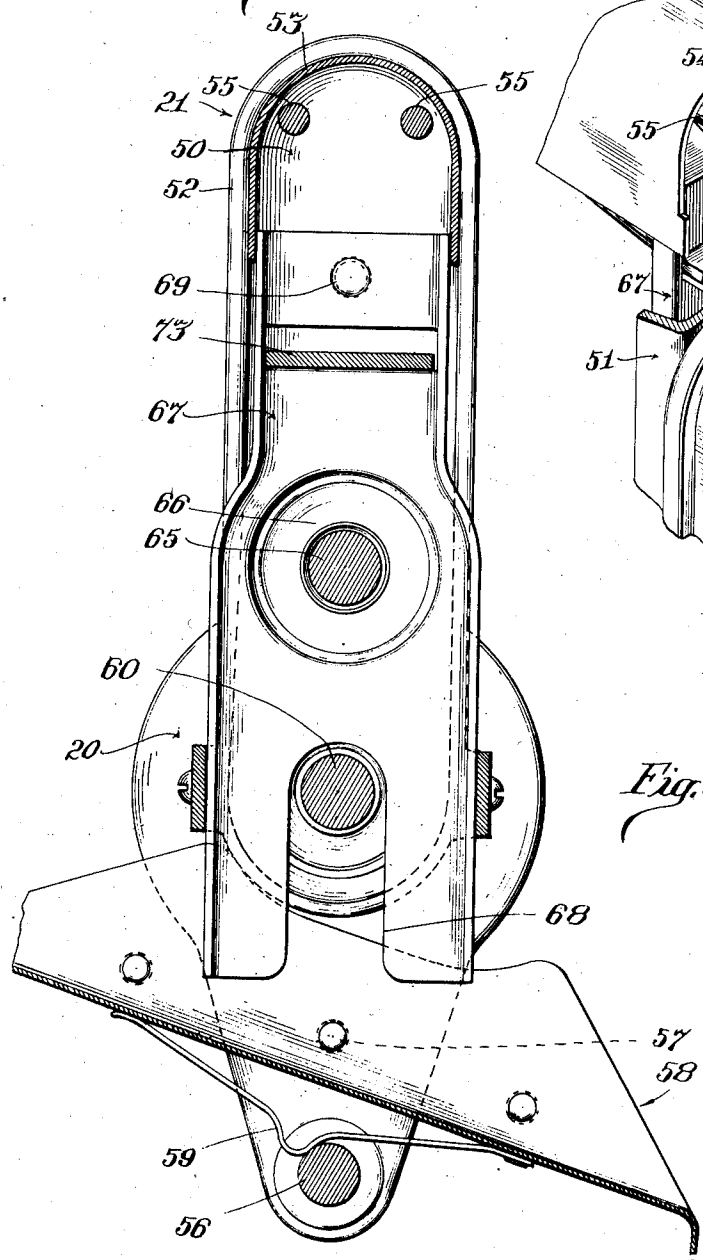


Fig. 8.

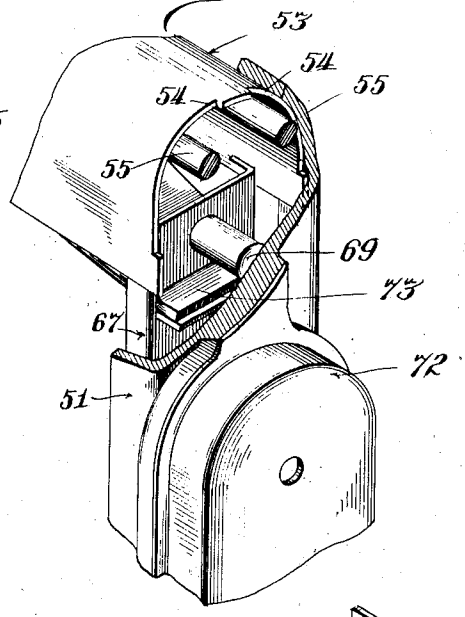
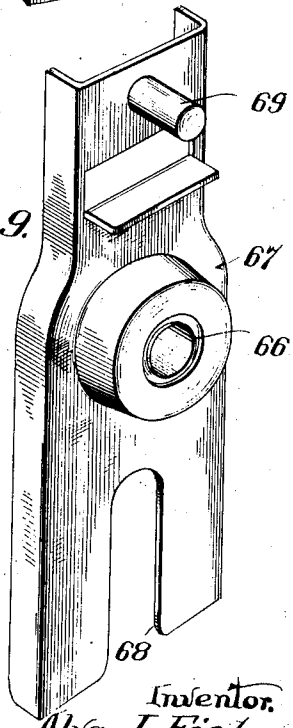


Fig. 9.



Inventor.
Alva J. Fisher
By Peters Richardson Davis & Macauley
Attorneys

Patented Jan. 19, 1926. 1,569,859

UNITED STATES PATENT OFFICE.

ALVA J. FISHER, OF EVANSTON, ILLINOIS, ASSIGNOR TO HURLEY MACHINE COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

WASHING-MACHINE WRINGER.

Application filed May 7, 1921. Serial No. 467,546.

To all whom it may concern:

Be it known that I, ALVA J. FISHER, a citizen of the United States, residing at Evanston, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Washing-Machine Wringers, of which the following is a specification.

My invention relates to improvements in washing machine wringers, and in some of its features more particularly to wringers that may be rotated in a horizontal plane, relative to a vertical support which is carried on a washing machine frame, and that may be power-driven by gearing actuated from the washing machine motor.

Among the objects of my invention are to provide a wringer structure that is simple, efficient, suitable for quantity production at low expense, durable, and equipped for maximum insurance of safety to the operator. Further objects of my invention are to provide advantageous structure for the mounting of the wringer to enable its parts to be assembled and knocked down readily with minimum use of tools (as for roll replacement); to provide for suitable segregation of the lubricated and non-lubricated parts to prevent injury to fabrics wrung; to insure efficient and safe control of the power-operation of the swingable wringer; to provide strong and simple structure for the overhanging wringer; to generally improve the wringer construction and to provide a suitable and desirable roll-tension release. Other and further objects and advantages will become apparent to those skilled in the art from the following description taken in conjunction with the accompanying drawings wherein Fig. 1 is a side elevation showing the mounted wringer, in connection with portions of its gearing; Fig. 2 is an enlarged central vertical section, with parts broken away; Fig. 3 is a perspective detail of a controlling handle; Fig. 4 is a fragmentary section showing a safety-release construction; Fig. 5 is a fragmentary section on line 5—5 of Fig. 1; Fig. 6 is a fragmentary section on line 6—6 of Fig. 1; Fig. 7 is a section on line 7—7 of Fig. 1; Fig. 8 is a fragmentary detail of wringer-construction and Fig. 9 shows a guide plate, detached.

To an appropriate frame member 10 of the washing machine the tubular standar 11 is bolted, presenting at its top a vertical cylinder 12 having a horizontal bearing flange or table 13 provided with indexing notches 14, the bottom of said cylindrical portion 12 opening to a shaft-casing or extension 15 that is disposed at a slight angle (if necessary) to the portion 12 to lead the power shaft to a convenient point of power-derivation that need not necessarily align with the axis of cylinder 12.

A wringer-carrying head, 16 is mounted to turn in the vertical cylinder 12 of the standard 11 and carries latching means for cooperation with the notched flange or turn-table 13 so that the wringer, extending horizontally from the head, may be positioned in any one of several selective positions of rotation about the axis of the cylinder.

The hollow stem 17 of the wringer-carrying head 16 slipped endwise into and confined in the cylinder 12, extends almost to the angle of the extension 15, and above the table 13 the head is enlarged into a shell 18 that bears on the table and accommodates the wringer-reversing gearing. One side of the head has a flanged opening 19 to which is bolted the spacer collar 20 that receives, at its outer end, the framework of the wringer 21.

In the specific construction shown a power transmission shaft 22 extending up through the inclined casing 15 makes squared engagement with, and rotates with, a frusto-conoidal crown gear 23 the toothed head of which receives support from an annular shoulder 15′. This gear meshes with a complemental crown gear 24 the up-thrust of which is taken against the end of the head-stem 17, and the stem of which is apertured to receive the squared end of the vertical drive shaft 25, which extends axially through the shell 16. At its reduced upper end this shaft 25 enters and bears in the bottom of an oil-cup bearing 26, the latter being normally closed by hinged dust cap 27. A nut 28 is screwed on the end of the shaft to suspend the latter from the oil cup which in turn is mounted in a hollow hub 29 of the shell 18. Through this cup lubricant may be supplied to the whole gearing system in the head 16.

Opposed bevel gears 30 and 31 at the bottom and top of the shell are loose on the shaft 25 and both thereof constantly mesh with a bevel gear 32 the hub of which bears

in bearing-web 33 of the member 20, this gear 32 being engaged with the driving shaft of one of the wringer rolls, that has a D-shaped or other non-circular end for non-rotatable, slip connection with the gear.

Each of the gears 30, 30′ has a clutch crown, as shown at 34, 34′ for cooperation with the clutch member 35 slidable axially on but non-rotatable with respect to the power shaft 25, so that by throwing the clutch 35 into engagement with the appropriate gear 30 or 31 the gear 32 and the wringer shaft may be driven in either direction, selectively.

I make provision to insure that whenever the clutch 35 engages one of the gears 30 or 31 the rotatable head 18 shall be locked against rotation. In the absence of such safety provision the clutch of either loose gear to the shaft 25 while the latter is in rotation might cause the head 18 to swing around with the shaft and the consequent power-impelled swing of the laterally-projecting or overhanging wringer is dangerous to the operator. To obviate this danger I provide a single control handle 37 to govern both the head-latching operation and the clutch-shifting operation, the organization being such that the head 18 must be latched against rotation before the shiftable clutch member 35 can possibly engage either of the loose gears 30 or 31. Thus the handle 37 is attached to a controlling shaft 38, preferably a large, generally-cylindrical block, that has at one end a clutch-shifting crank pin 39 and between its ends a latch-controlling portion or flat cam 40, these being preferably set at right angles or in quadrant cranking relation so that, as shown in Figs. 2 and 3, when the flat face of cam 40 is directly centered above the axis of the shaft, crank 39 horizontally aligns with the axis of the shaft. This dual-control shaft, extending through a suitable hub 41 of the shell, has its crank pin 39 engaging a shipper block 42 riding in grooved belt of the clutch member 35. The cam 40 may be merely a "flat" in the shaft, flanked by short guide-and-stop grooves 40′ for coaction with the flattened end of a depressible latch finger 43, such finger sliding in a pocket formed in shell 18, and having its lower end squarred and arranged, when the finger is cam-pressed to enter a selected one of the notches 14 of the indexing table 13. A spring cap or clip 44 is bolted to the bottom of the shell, outside of the periphery of plate 13, and reaches under the edge to the plate and a spring 45 is mounted in said cap and works past the edge of plate 13 so tending to hold the latch at its upper level, where the latch nose rides just above the surfaces of the notched plate or table 13. Thus, when the control shaft 38 is turned it first forces the latch down into engagement with a table-notch, and until this has been done the clutch cannot be thrown, by pin 39, to connect the power-shaft and wringer-shaft. Further, it will be noted, the clip 44 acts as a detachable retainer for holding the head on the standard, and by detaching this clip the whole head and wringer mechanism may be lifted off bodily, the shaft 25 slipping out of gear 24 without disturbing the gear.

It will be observed that oil or grease introduced into the cup 26 may distribute itself throughout the gearing parts, without danger of getting over into the wringer rolls or bearings, since the spacing collar 20 forms a cylindrical receptacle of considerable diameter and length, into which any oil working out around the gear 32 may pass, and whence such oil will be returned into the gearing shell through the duct 20′ leading through the bearing web of the collar 20. To guard the joint between the head 18 and standard 12, a drip-shield 47 47 with a down-turned flange may be provided in the joint. Bolts 49 extending through the bearing web 33 of the collar 20 engage the adjacent side frame 50 of the wringer 21, and hold the wringer with its frame boss 50′ snugly engaging the end of the collar 20.

The wringer frame is preferably composed of two end members 50, 51, each in the form of a casting formed as a vertical plate somewhat wider than the diameter of the wringer rolls, with the upper portion of the plate bordered by an inwardly facing flange 52 affording parallel vertical legs and a rounded top. I provide a sheet-metal top piece 53 of channel-formation to enter under the flanges 52 and be retained in position with its ends, notched as at 54 to give only 3-point bearing, abutting against the plate surfaces, by suitable tie-rods 55, of which two are provided on opposite sides of the longitudinal center of the top bar. By this construction, among its other advantages, it is unnecessary to machine the bar-receiving surfaces of the castings 50, 50′. The bottom of the frame is provided by a shouldered tie-rod 56 above which there is pivoted as at 57 a tiltable table 58 carrying a spring or spring 59 which cooperate with the tie-rod to hold the table tilted to one side or the other of horizontal position.

The shaft 60 for the lower roll 61 is mounted in suitable ball bearings 62 fixedly located in recessed bosses 63 of the end frame members, the upper, bodily displaceable roll 64 having its shaft 65 mounted in ball bearings 66 which are mounted in cup-recesses in a pair of vertically slidable members 67 that act as combined guide-plates, bearing plates and shields. These members 67 have their upper ends guidedly extending into the channel of the top frame member 53 and

their bottom portions slotted as at 68 for sliding guidance upon bearing portions of the shaft 60, an outwardly projecting stud 69 being provided on the upper portion of each said plate to rest against the contiguous end frame member 50 or 51 to keep the top of the plate from tilting outwardly. Of course the two shafts 60 and 65 are equipped with suitable gears 70 and 71 on their outer ends, beyond their respective bearings, for rotating the shafts oppositely in unison when in mesh, and this gearing may be covered with a demountable housing 72 secured on the exterior of plate 51.

To remove a wringer roll, one has merely to remove the gear housing and the gears and take off the outer end casting 51 whereupon the shaft 60 may be withdrawn from engagement with gear 32 without disturbing the latter.

A semi-elliptic leaf spring 73 bears on the upper portion of the two slide plates 67 and extends up into the channel of the top plate to receive centrally the pressure of a tensioning screw 74 which is carried by the top plate. For quick-release, to safe-guard the operator against injury, screw 74 is made to engage with a nut 75 carried by a gate 76 that is pivoted as at 77 to the top member 53 so as to be capable of swinging upwardly, the free end of said gate being normally latched down by a latch lever 78. In this provision the construction may economically and satisfactorily be made as follows: The sheet-metal channel-formed top-member 53 has a central portion cut and struck outwardly to provide two parallel ears 80 affording support to the horizontal pivot 77 for the gate and to the pivot 78′ for the latch 78. Gate 76 is formed of sheet-metal, channel-shaped in cross-section, and in the side walls of its channel are formed integral lugs 81 to receive the tension spring 82, wrapped around the pivot 77 and engaging the top member of the frame, so as to tend to swing the gate downwardly towards latched position. Centrally of its length the channel of the gate snugly receives the squared nut 75 secured in position in any suitable fashion, as by being formed with a tubular extension 75′ swaged in a suitable opening in the gate. The latch lever 78 may be of sheet-metal, of channel form in cross-section, having a nose 78′ to coact with the nose 76′ of the gate to latch the latter in normal position, the lever being normally held by a spring 83 in latching position.

When the screw 76 has been turned down to put a tension on the roll-spring 73, quick release of the tension may be accomplished by knocking the release lever 78 downward, so freeing the nose of the gate 76, permitting spring 73 to force the gate upward against the tension of light spring 82, the latter merely preventing forceful overthrowing of the gate and making easier the operation of restoring the parts to latched and tensioned condition.

While I have herein described in some detail a particular embodiment of my invention it will be apparent that changes might be made therein without departure from the spirit of my invention within the scope of the appended claims.

I claim:

1. In a power driven wringer structure, an upper vertical standard portion, a lower inclined standard-portion, a shaft in the lower standard portion, a conoidal crown gear on its end, a head having a stem slip connected with and rotatable in the upper standard portion, a vertical shaft in said head having on its lower end a conoidal crown gear engaging that on the first said shaft, and wringer means, carried by the head and having gear connection with the head-carried shaft.

2. In a power driven swinging wringer-structure, the combination of a vertically bored standard having a notched flange, a head bearing on said flange and having a stem entering said bore, a vertical shaft member carried by said head, a wringer structure carried by said head and having a horizontal shaft, reversible gearing between said head-shaft and wringer shaft, latch-means for engaging the standard-flange notches to position the wringer-structure, a spring-receptive cap detachably carried by the head and engaging under the flange, and a spring in said cap for normally pressing the latch toward releasing position.

ALVA J. FISHER.