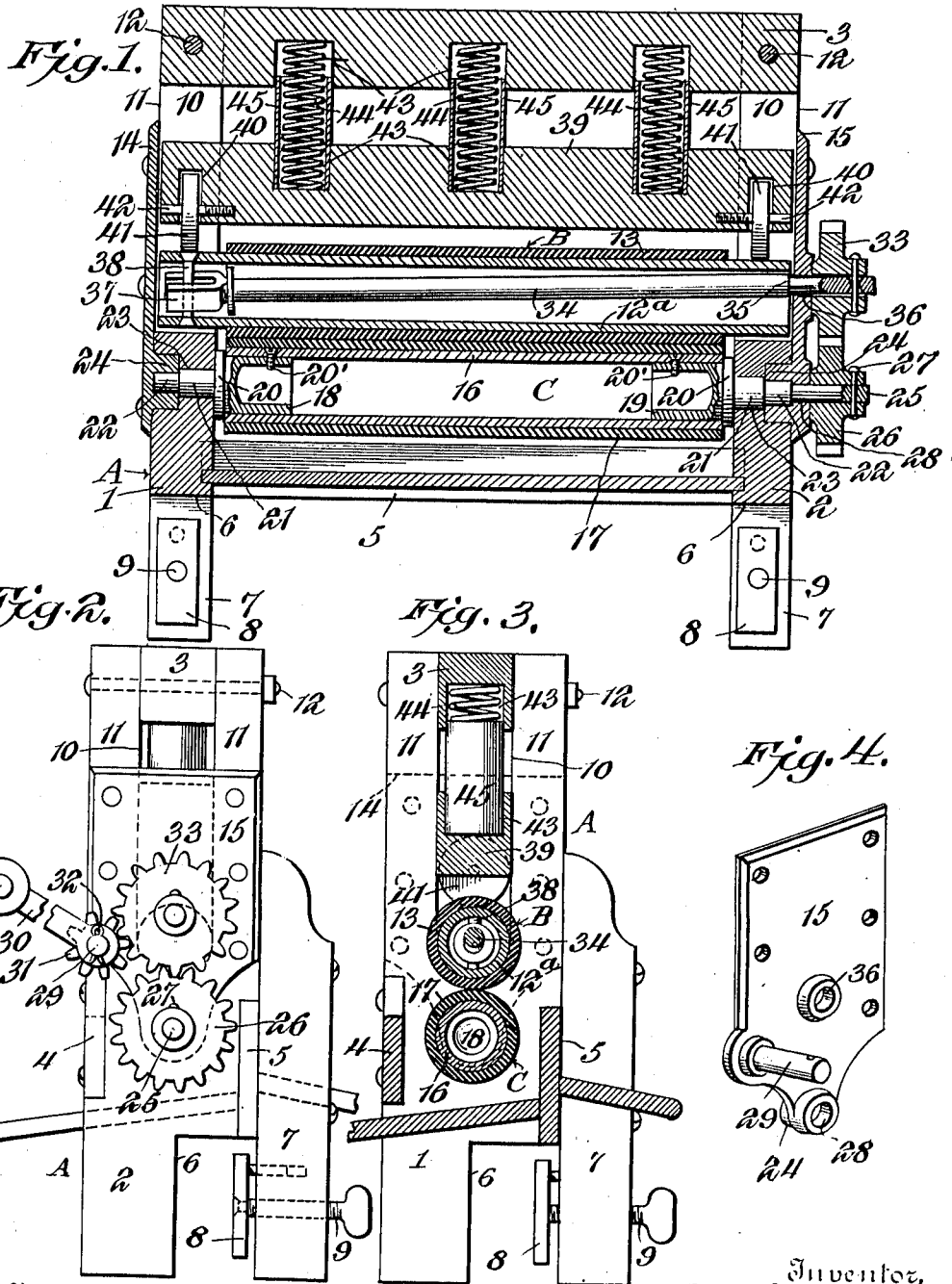


E. FIRTH.
CLOTHES WRINGER.
APPLICATION FILED APR. 7, 1909.

970,317.

Patented Sept. 13, 1910.



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UNITED STATES PATENT OFFICE.

EDWIN FIRTH, OF ATTLEBORO, MASSACHUSETTS.

CLOTHES-WRINGER.

970,317.

Specification of Letters Patent. Patented Sept. 13, 1910.

Application filed April 7, 1909. Serial No. 488,436.

To all whom it may concern:

Be it known that I, EDWIN FIRTH, a citizen of the United States, residing at Attleboro, in the county of Bristol and State of Massachusetts, have invented a new and useful Clothes-Wringer, of which the following is a specification.

This invention relates to a clothes wringer of that type in which the rollers are driven by intermeshing gears which do not materially vary their position with the rollers as they spread apart or move together under the varying thickness of the articles passed between the rollers.

The invention has for one of its objects to improve and simplify the construction and operation of devices of this character so as to be comparatively simple and inexpensive to manufacture, reliable and efficient in use, and of durable and substantial design.

With this and other objects in view, as will appear as the description proceeds, the invention comprises the various novel features of construction and arrangement of parts which will be more fully described herein-after and set forth with particularity in the claims appended hereto.

In the accompanying drawing, which illustrates one embodiment of the invention, Figure 1 is a central vertical section taken longitudinally through the wringer. Fig. 2 is an end view thereof. Fig. 3 is a vertical transverse section of the wringer. Fig. 4 is a perspective view of one of the bearing plates for the rollers.

Similar reference characters are employed to designate corresponding parts throughout the views.

Referring to the drawing, A designates the frame of the wringer which consists of end uprights 1 and 2 which are held apart in spaced relation by a top cross piece 3 and front and rear horizontally-disposed vertical plates 4 and 5 adjacent the bottom of the standards. The lower ends of these standards are recessed at 6, and are provided with vertical members 7 fastened to the standards with their lower ends projecting over the recessed portions of the latter so as to cooperate with the standards to support the wringer on a tub or other support, there being clamping devices 8 disposed in the re-

cesses 6 and operated by screws 9 for clamping the wringer in position. The upper ends of the standards are provided with vertical recesses 10 forming spaced parallel members 11 between the upper ends of which the cross bar 3 is disposed, the parts being secured together by bolts 12. Mounted on the frame thus formed, are the upper and lower rollers B and C disposed in parallel relation and yielding with respect to each other to accommodate themselves to the varying thickness of the articles to be wrung. The upper roller B consists of a metal tube 12^a of such length that the ends thereof will engage in the lower ends of the guideways formed by the slots 10 in the standards, and the portion of the tube or body 12^a of the roller disposed between the standards, is provided with a rubber or other compressible covering 13. The slots or guideways 10 are closed by bearing plates 14 and 15 secured to the standards 1 and 2, respectively, to thereby form retainers for preventing longitudinal movement of the roller B. The roller C is also constructed of a metal tubular body 16 shorter than the tubular body of the upper roller so as to be accommodated between the standards of the frame, and on this body 16 is a rubber or other yielding covering 17 which contacts with the covering of the upper roller.

Fitted in the ends of the tube 16 are heads 18 and 19 having peripheral flanges 20 engaging the ends of the tube 16, and which are prevented from rotating independently of the tube by screws 20' or equivalent fastenings passing through the ends of the tube 16 and engaging in the heads, the heads being of thimble form. The heads are provided with gudgeons 21 centrally disposed and extending through bearing openings 23 in the standards and reduced at their outer ends 22 to engage in bearings 24 in the form of bosses on the inner faces of the plates 14 and 15, which bosses are set into the adjacent standards of the frame. The head 19 of the roller C has its gudgeon 21 provided with an extension or stud 25 for receiving the gear wheel 26 that is fastened thereto by a pin or equivalent means 27. The plate 15 has an opening 28 for the stud 25 to pass through, and at one side and above

the opening 28 is a bearing stud 29 that forms an axle for the operating crank 30 which is equipped with a pinion 31, the operating crank being held in place by a cotter pin 32. The pinion 31 meshes with a gear wheel 33 secured to the shaft 34 that drives the upper roller, and this gear wheel 33 meshes with and drives the pinion 26 for the lower roller. The shaft 34, as shown in Fig. 1, extends through the roller B from one end to the other, and is so connected therewith that the roller is free to move up and down while the gear wheels 26 and 33 are maintained in mesh, the shaft having what may be termed a floating movement to provide for this relative movement of the parts. The outer end of the shaft to which the gear wheel 33 is secured, is reduced to form a shoulder 35 which bears against the inner face of the bearing plate 15, the reduced end of the shaft extending through an opening 36 in the bearing plate. This shoulder 35 co-operates with the gear wheel 33 to prevent longitudinal movement of the floating shaft 34. The inner end of the shaft 34 is formed into a bifurcated head 37 to straddle a transverse pin 38 riveted or otherwise secured in the extremity of the tubular body 12. By means of this connection with the roller B, the same can be rotated by the shaft 34 in all positions of the roller. The shaft 34 is not secured rigidly to the gear wheel 33, but has a slight play about the pin connecting it to the said gear wheel, so that as the roller moves up and down, the shaft may rock upon its bearing 36 so as to follow the movement of the roller without materially changing or affecting the relative position of the gears 26 and 33. The opposite end of the floating shaft 34 is bifurcated, as shown and as hereinbefore stated, and the bifurcation is somewhat wider than the diameter of the transverse member or pin 38 so that while the rotation of the floating shaft will necessarily cause a rotation of the roller through the engagement of the flat sides of the bifurcation or open-ended slot with the said pin, the roller will be free to rock without tending to bend or wear the said pin whether the pin be in a vertical or other position at the time the rising or falling movement of the roller occurs. Furthermore, the floating shaft is inclosed by the roller and its gear so that the wringer is not any wider than wringers now in common use and there are no projecting elongated hubs or shafts adjacent the driving gearing which will necessitate the carrying of the operating crank handle to a point appreciably distant from the side of the frame. The construction of the floating shaft, furthermore, facilitates the assembling and disassembling of the parts, inasmuch as after the side plate 15 has been removed a longitudinal movement of the

shaft will separate the roller from the shaft, as the open extremity of the bifurcated end of the shaft will move readily past the diametrical pin 38. Obviously the parts can be as readily reassembled.

A tensioning device is employed for maintaining the rollers in coöperative relation, and this device comprises, in the present instance, a movable cross-bar 39 having its ends freely movable in the guideways or slots 10 of the standards, and the ends of this cross-bar are recessed at 40 for accommodating the anti-friction wheels 41 mounted on axles 42 in the said bar, with the lower portions of the wheels bearing on the ends of the roller B that project beyond the ends of the rubber covering 13 thereof. The opposed faces of the fixed and movable cross bars 3 and 39 are provided with alining recesses 43 forming seats for the ends of compression springs 44 which, by the combined effect, produce a great tension on the wringer rollers. Each spring 44 is inclosed in a tubular housing or sleeve 45, the ends of which extend into the recesses 43 so as to thereby form guides for the springs, the sleeves being of such length as to permit of unrestricted movement of the cross bar 39 toward the fixed cross bar 3.

The sleeves 45, by engaging in the sockets of both cross bars, prevent the movable cross bar from longitudinal displacement. In the present instance, the bearing plates 14 and 15 extend upwardly far enough to form additional means for preventing longitudinal movement of the bar 39. The springs 44 are so placed as to exert a substantially equal pressure at both ends of the upper roller by means of the wheels 41 which bear directly on the upper roller.

In practice, the crank 30 is operated for simultaneously turning the rollers to wring the articles in the usual manner. As the rollers are turned, they can freely move apart or together to accommodate the thickness of the articles passing between them, and at the same time exert a substantially uniform pressure on the article. As the upper roller moves away from the lower roller, the shaft 34 will tilt and the springs 44 will be compressed, because of the movement of the cross bar 39 with the roller, but the movement of the shaft 34 does not, in any way, affect the intermeshing of the gear wheels 26 and 33, and the same is true when the upper roller moves downwardly to its normal position.

From the foregoing description, taken in connection with the accompanying drawing, the advantages of the construction and of the method of operation will be readily apparent to those skilled in the art to which the invention appertains, and while I have described the principle of operation of the

invention, together with the apparatus which I now consider to be the best embodiment thereof, I desire to have it understood that the apparatus shown is merely illustrative, and that such changes may be made when desired, as are within the scope of the claims appended hereto.

Having thus described the invention, what I claim as new, and desire to secure by Letters Patent, is:—

1. In a wringer, the combination of a frame consisting of rigidly connected side members having slots forming guideways, a roller mounted in the side members at a point below the slots, an upper tubular roller having its ends disposed in the slots, plates secured on the side members for covering the slots to prevent longitudinal movement of the upper roller, a transverse member secured in the upper roller at one end thereof, a shaft extending through the said upper roller and having at one end a bifurcated head loosely spanning the transverse member and having its opposite end mounted in one of the side plates to rock thereon, gearing operatively connected with the rocking end of the said shaft and the lower roller, and tensioning means mounted on the frame to operate on the upper roller.

2. In a wringer, the combination of a frame having vertical guideways, a pair of contacting rollers mounted in the frame one above the other, the upper roller consisting of a member arranged with its ends disposed in the guideways and provided with a yielding cover terminating inwardly from said ends, a cross bar arranged with its ends in the guideways and having transverse recesses in its bottom adjacent its ends and sockets in its upper side intermediate its ends, wheels journaled within the transverse recesses to bear on the projecting end portions of the upper roller within the guideways, and tensioning means seated in the upper recesses and bearing against the frame for urging the cross bar downwardly to maintain the wheels thereof against the upper roller and the upper roller against the lower roller.

3. In a wringer, the combination of a frame consisting of rigidly connected side members having slots forming guideways, a roller mounted in the side members below the slots, an upper roller having its ends disposed in the slots, a cross bar disposed over the upper roller and having its ends disposed in the guideways, plates secured to the side members of the frame to close the guideways and extending across the ends of the upper roller and the cross bar, single wheels mounted in the ends of the cross bar to bear on the upper roller, tensioning means for urging the cross bar toward the upper roller, and means for rotating the rollers.

4. In a wringer, the combination of a frame consisting of connected side members having vertical slots, a lower roller, gudgeons secured to the ends of the roller and projecting outwardly therefrom, bearing plates secured to the side members to cover the slots thereof and provided with bearings in which the gudgeons are journaled, a gear connected with one of the gudgeons, an upper roller resting on the lower roller and having its ends disposed in the slots, said upper roller being tubular and prevented from longitudinal movement on the lower roller by the said plates, a cross member arranged in the upper roller, a shaft journaled at one end on one of the plates and having a head at the opposite end connected with the said member, a gear on the shaft meshing with the first-mentioned gear, driving means for the gears mounted on that plate in which the shaft is journaled, a cross bar having its ends disposed in the slots, a single wheel on each end of the cross bar and extending below the same to ride on the end of the upper roller, and resilient devices pressing on the bar to hold the said wheels against the upper roller and the upper roller against the lower roller.

5. In a wringer, the combination of a frame, upper and lower rollers mounted thereon, a cross bar disposed over the upper roller and having recesses, wheels journaled in the recesses and bearing on the ends of the upper roller, said frame having a fixed cross bar disposed over the first-mentioned cross bar, said cross bars having sockets in opposed surfaces, and springs arranged with their ends seated in the sockets.

6. The combination of a frame comprising standards having slots and cross pieces connecting the standards together, a roller mounted on the standards, a tubular roller having its extremities movably mounted in the slots, gudgeons on the lower roller, bearing plates on the standards and having bearings for receiving the gudgeons, said plates extending across the slots to form retainers for the upper roller, a shaft in the upper roller with one end loosely connected therewith and the other end bearing in one of the plates, a gearing between the said shaft and the lower roller, a cross bar extending between the said plates with its ends mounted in the slots, and tensioning means for urging the cross bar toward the upper roller.

7. The combination of a frame, a roller mounted in fixed bearings therein, a tubular roller mounted in the frame above the first-mentioned roller and in contact therewith, said roller being adapted to move vertically within the frame, means for holding said roller toward the lower roller, a fixed member disposed diametrically in the tubular roller at one end thereof, a shaft within said

roller having one end projecting through
the frame and rockingly mounted therein
and its opposite end bifurcated and loosely
spanning the diametrically disposed mem-
5 ber, and driving gearing engaging the pro-
jecting end of the shaft and connecting the
same with the lower roller.

In testimony, that I claim the foregoing
as my own, I have hereto affixed my signa-
ture in the presence of two witnesses.

EDWIN FIRTH.

Witnesses:

JOHN HOWE,

GEORGE A. ARMSTRONG.