Sept. 15, 1931. L. CHASE 1,823,486

MOP WRINGER

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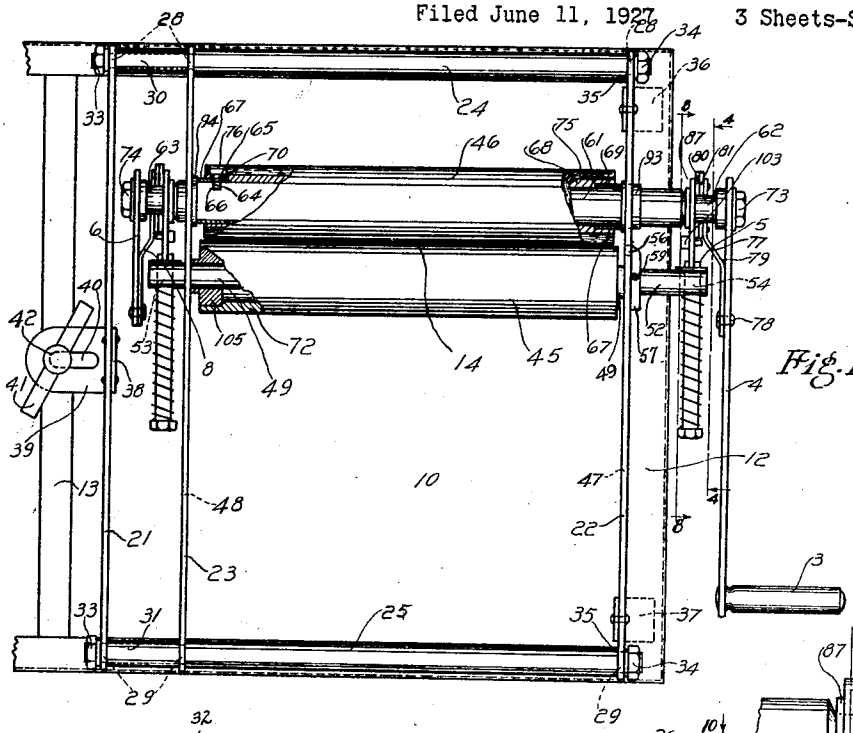

Fig. 1

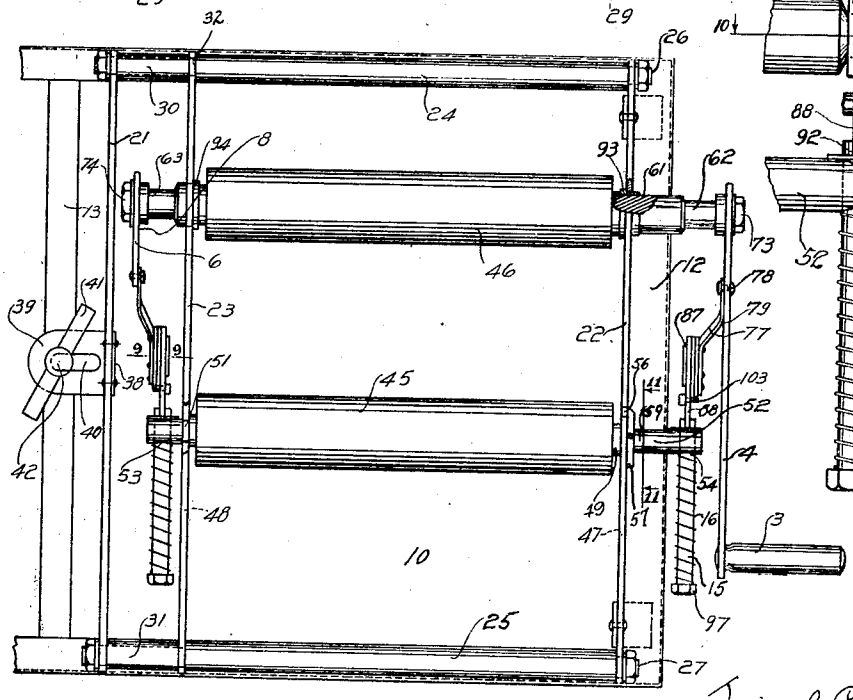

Fig. 2

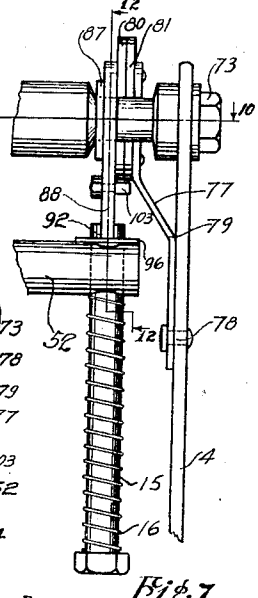

Fig. 7

Inventor
Lionel Chase

By Franklin Sloyer
His Attorney

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MOP WRINGER

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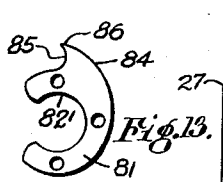

Fig. 13.

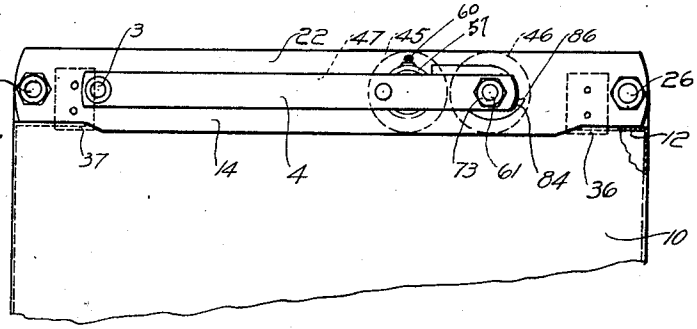

Fig. 3

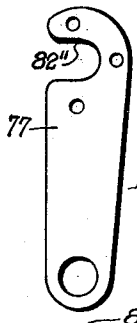

Fig. 15.

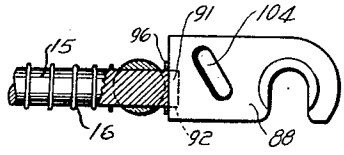

Fig. 12

Fig. 14.

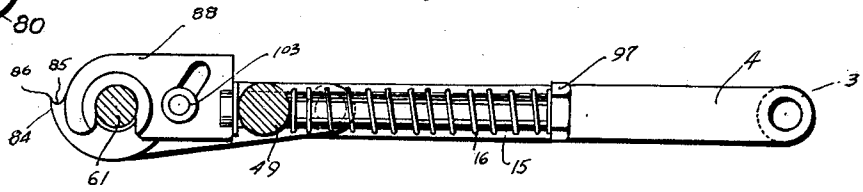

Fig. 8

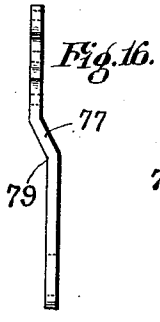

Fig. 16.

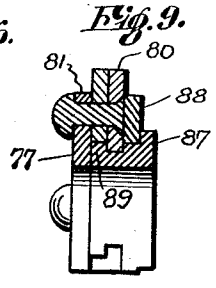

Fig. 9.

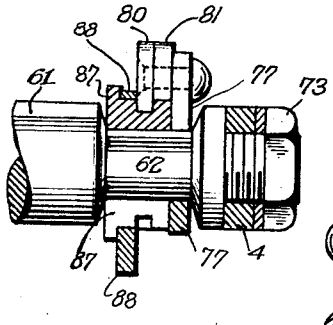

Fig. 10.

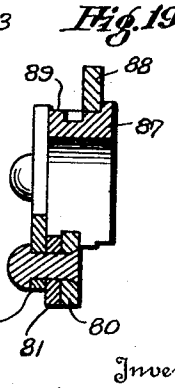

Fig. 19.

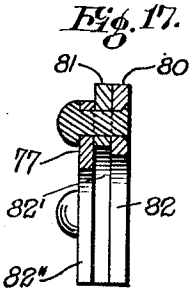

Fig. 17.

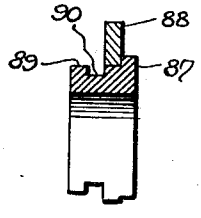

Fig. 18.

Inventor,
Trionel Chase
By Frank L. Slough
His Attorney.

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MOP WRINGER

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Fig. 4.

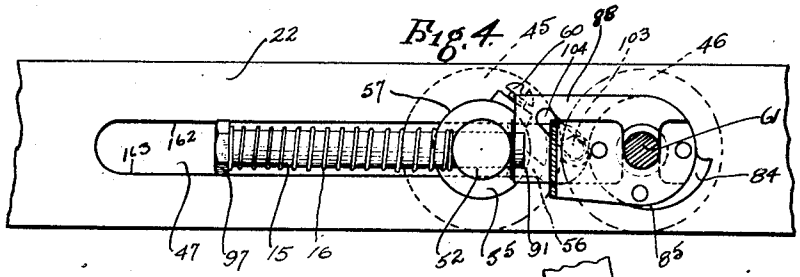


Fig. 5

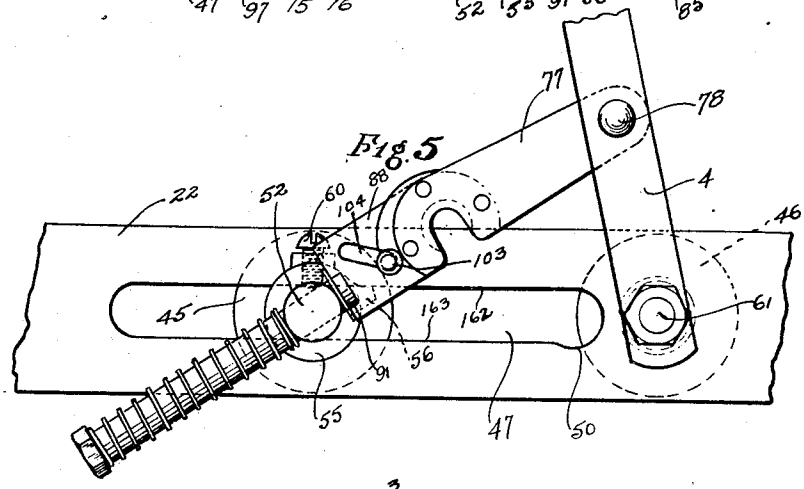


Fig. 6

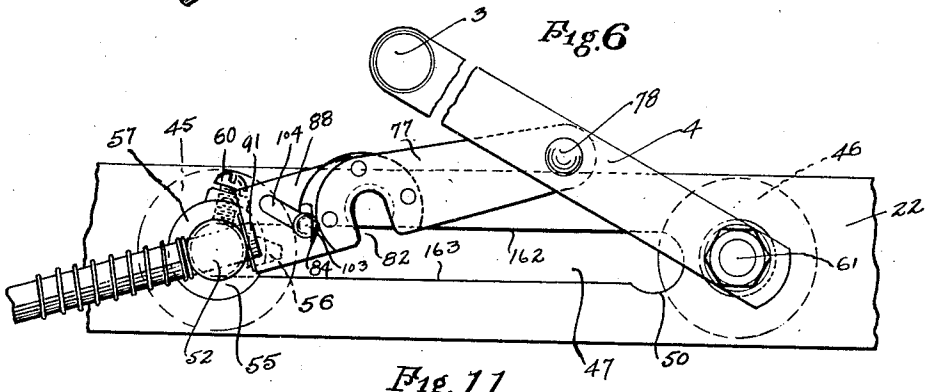
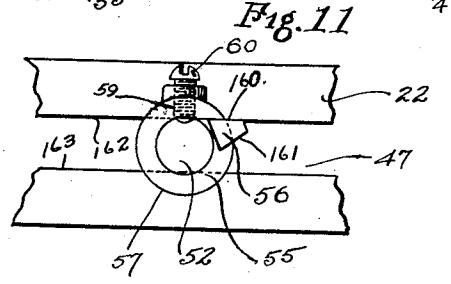


Fig. 11



Lionel Chase,
INVENTOR

BY Franklin Skough
His ATTORNEY

Patented Sept. 15, 1931 1,823,486

UNITED STATES PATENT OFFICE

LIONEL CHASE, OF ELYRIA, OHIO, ASSIGNOR TO THE COLSON COMPANY, OF ELYRIA, OHIO, A CORPORATION OF OHIO

MOP WRINGER

Application filed June 11, 1927. Serial No. 198,267.

My invention relates to an improved wringer and more particularly it relates to a mop wringer adaptable for application to a wheeled scrubbing tank.

An object of my invention is to provide an improved mop wringer capable of effectively wringing a mop by a simple one hand movement of the wringer while the operator holds the mop handle with his free hand.

Another object of my invention resides in the provision of a driving mechanism for the wringer rolls which when rotated clockwise will rotate the rolls and when rotated counter-clockwise will shift one of the rolls relative to the other roll.

Another object of my invention resides in the provision of a mop wringer which is simple and durable in construction, positive in operation and wherein provision is made for replacement of worn parts.

Another object of my invention resides in the provision of an improved mop wringer which is readily operable and economical to manufacture, and which may be attached to and removed from a wheeled scrubbing tank expeditiously.

These and other objects of my invention and the invention itself will become apparent from reference to the following description of an embodiment thereof and in which description reference will be had to the accompanying drawings forming a part of this specification.

Referring to the drawings:

Fig. 1 is a top plan view of an embodiment of my invention attached to a wheeled scrubbing tank;

Fig. 2 is a similar view of the foregoing embodiment illustrating another operative position of the same;

Fig. 3 is an end elevational view of a portable scrubbing tank embodying my invention;

Fig. 4 is a fragmentary side elevational view of one operative position of the wringer rolls, the parts being shown in this view twice the size of the same parts in the foregoing figures, and the view being taken on line 4—4 of Fig. 1, looking in the direction of the arrows;

Fig. 5 is a view like Fig. 4, illustrating another operative position of the wringer rolls;

Fig. 6 is a view like that of Figs. 4 and 5 illustrating the position assumed by the mechanism when the rolls are spaced the greatest distance apart;

Fig. 7 is a fragmentary top plan view of the driving mechanism and the tensioning mechanism the parts being shown twice the size of the same parts in Fig. 1;

Fig. 8 is a transverse sectional view taken on the line 8—8 of Fig. 1;

Fig. 9 is a like view taken on the line 9—9 of Fig. 2;

Fig. 10 is a similar view taken on the line 10—10 of Fig. 7;

Fig. 11 is a fragmentary elevational view of the member for limiting rotative movement of one of the shafts;

Fig. 12 is a sectional view taken on the line 12—12 of Fig. 7;

Figs. 13, 14, and 15 are side elevational plan views of various parts used to form a cam used in my invention;

Fig. 16 is an end elevational view of the line of Fig. 15;

Figs. 17 and 18 are views of parts of Fig. 9, separated to more clearly show the construction;

Fig. 19 is a vertical medial view of the parts of Fig. 9 and with one of the parts rotated 180°, with the shaft removed.

Referring to all the figures of the drawings, in all of which like parts are designated by like reference characters, at 10, I show a tank adapted to be carried on a wheeled scrubbing truck. Inturned flanges 12 are formed on the upper edge of the tank, and a transverse channel iron brace 13 is disposed between the sides of the tank to provide a reenforcement therefor. Said flanges and said channel iron brace are adapted to secure my improved mop wringer, generally indicated by the reference numeral 14, on the upper edge of the tank in a manner which will hereinafter be described in detail.

For purposes of illustration and that a better understanding of my invention may be had I have shown the same applied to a wheeled scrubbing tank; however, it is to

be understood that I do not wish to limit myself to the specific employment of my improved wringer herein illustrated and described, inasmuch as the same may be employed in numerous different ways from the manner herein embodied.

The wringer 14 preferably comprises a frame having a pair of frame end plates 21 and 22 formed of pressed sheet steel, an intermediately disposed pressed sheet steel frame plate 23, disposed more adjacent the end plate 21, and a pair of spacer rods 24 and 25 provided with threaded reduced ends 26 and 27 adapted to project through aligned apertures 28 and 29 in the frame plates 21, 22, and 23. Rod reduced ends 26 and 27 are relatively long and are adapted to receive spacer bushings 30 and 31. Said spacer bushings abut against the frame plate 23, clamping the same between shoulders 32 on the rods and the bushings, when clamping nuts 33 are screwed onto the rods to clamp the frame end plate 21 thereon. Frame clamping nuts 34 retain the frame end plate 22 butted against shoulders 35 on the opposite ends of the rods.

A pair of angular frame clips 36 and 37 are preferably riveted to the frame end plate 22 in spaced relation to each other and are adapted to be projected beneath the flanges 12 of the tank 10. An angular wringer clamp 38 is secured to the other frame end plate 21 intermediate its ends. Said clamp is formed with a laterally disposed portion 39 having a slot 40 therein. A threaded clamping stud is carried by the channel iron brace 13 intermediate the ends thereof and is adapted to project into the slot 40 when the wringer is placed on the edge of the tank with the clips under the flanges 12. A clamping nut 42 having a threaded axial recess in one of its ends is threaded onto the stud to detachably secure the wringer on the tank 10. The nut 42 is provided with a radial bore into which a handle 41 is carried and projects laterally thereof and may be grasped by the hand of an operator to either clamp or release clamp of the wringer on the support.

The driving mechanism and spring tensioning and shifting mechanism for the wringer rolls 45 and 46, the former being shiftable, and the latter being fixed, comprises a pair of mechanisms disposed, one on each side of the frame, and are similar in construction and operation one being right hand and the other left hand, except that a handle 3 and crank 4 are included in the mechanism on one side of the frame generally indicated by the reference numeral 5, while a lever 6 in the mechanism, generally indicated at 8, takes the place of the handle and crank 3 and 4. In view of the similarity of construction and operation of the driving, shifting and tensioning mechanisms 5 and 8 but one of the will be described in detail.

Wringer roll 45 is preferably formed of a metallic sleeve 72 rotatably carried on an idler shaft 49, said sleeve being spaced from the idler shaft by virtue of bushings 105 at each end thereof rotatable on the idler shaft. Idler shaft 49 projects into slots 47 and 48 in the frame end plates 22 and 23 and may be slid longitudinally therein relative to the end plates 22 and 23. The slots 47 and 48 are provided with recesses 50 in the end thereof more adjacent the roll 46, said recesses being large enough to permit the shaft 52 to be inserted therein so that the grooves 51 align with the slots 47 and 48 and allow the shaft to slide longitudinally therein, and provide a bearing support for the shaft. Idler shaft 49 is provided with portions projecting laterally of the slots and are provided with bores 53 and 54 adjacent the ends thereof.

Roll 46 is preferably composite and comprises a rotatable shaft 61 having peripheral grooves 62 and 63 disposed adjacent the ends thereof. Said shaft is journaled in bearings 93 and 94 carried in aligned openings in the plates 22 and 23. A radial recess 64 is provided in the shaft for the reception of a lock pin 65 having a threaded end 66 screwed into a threaded aperture in bushings 67 secured to the shaft adjacent each end thereof. A tubular core 68 having end internal grooves 69 is disposed over the bushings 67 with the bushings abutting the shoulders formed by the grooves. A threaded opening 70 is formed in the core 68 and aligned with apertures 64 and 76, the pin in the apertures preventing relative rotation of the shaft and core. The core is preferably covered with a rubber outer surface 75 vulcanized thereto, and is adapted to provide a non-slipping drive for the roll 45 when a mop or other article is passed between the rolls. The surface 75 is provided with an aperture 76 in alignment with apertures 64 and 70 for the pin 65 by which access may be had to the same to remove the core 68 and surface 75. The ends of the shaft are provided with reduced threaded ends, one of which receives the handle crank 4 non-rotatably secured thereto by a nut 73, while a nut 74 is threaded onto the opposite end of the shaft.

The driving mechanism for the rolls actuated by rotation of the handle crank 4, comprises a cam carrying link 77 pivoted at 78 to the handle crank adjacent its shaft engaging end, and is bent away from the crank at 79 disposing the free end thereof in alignment with a peripheral groove 62 in the shaft. Pawl disks 80 and 81, as best shown in Figs. 13 and 14, are preferably riveted to the ends of the link 77, all of which are provided with centrally disposed slots 82, 82′ and 82″. The cam disks 80 and 81 have cam surfaces 84 relieved at the high point 86 to

form a hook shaped end 85. As best shown in Fig. 17, the link 77 and pawl disks 80 and 81, when riveted together, form a central circular recess, the slot 82′ being larger than the slots 82 and 82″ in the pawl disk 80 and link 77, respectively.

A slotted bushing 87, Fig. 18, carried by one end of a link 88, is provided with a flange 89 and an intermediate groove 90. The inner surfaces of the pawl disks and link cooperate with the external surfaces of the bushing 87, as best shown in Figs. 9 and 19. The outer assembly may be rotated around the bushing, the bushing being held within the slot of the pawl disks and link by the flange 89 in the groove 82′. A pawl 103 is slidably carried in an inclined slot 104 in the link 88 and adapted to be engaged by the cam and elevated in the slot when the handle crank is rotated in one direction, and adapted to be engaged by the hook 85 to move the pin to the base of the slot when the handle crank is rotated in the opposite direction to render the hook 85, link 77 and tension link 88 a rigid lever.

The link 88 is provided with a lug 91, as best shown in Fig. 12, projecting from one end thereof adapted to enter a slot 92 formed in the adjoining end of spring tension rods 15 and are rigidly secured to each other. A washer 96 is carried on the rod adjacent the link 88. Rods 15 are preferably disposed parallel with the frame end plates and the handle crank, the free ends thereof being adapted to project through the radial bores 53 and 54 in the idler shaft 49. A coiled spring 16 is carried by the rod 15 and is compressed between the idler shaft and a nut 97 threaded onto the end of the rod.

A stop member 57 adapted to limit rotative movement of the shaft 49 is provided, preferably comprising a collar 55 around an end of the portion 52 of the shaft 49 and engaging the exterior wall of the frame end plate 22 adjacent to and bridging the slot 47 therein. A threaded transverse bore 59 is provided in the collar for the reception of a set screw 60 adapted to non-rotatably secure the collar on the shaft 49. A radially extending arm preferably formed integral with the collar is provided having a laterally projecting portion 56 disposed into the slot 47. Said portion is formed with flat inclined sides 160 and 161 which may alternately engage the opposed faces 162 and 163 of the slot 47 to limit the rotative movement of the shaft 49 when the same is rotated and thereby prevent accidental disengagement of the links 88 and 77. Thus, when the handle is rotated to move the roller 45 towards the roller 46, the lower flat side 161 of the portion 56 will engage the lower face 163 of the slot, and accordingly provide a stop to limit rotative movement of the shaft 49. Conversely, when the handle is rotated in the opposite direction to space the rollers 45 and 46, the shaft 49 will be rotated into the position in which the upper side wall 160 thereof will engage the upper face 162 of the slot and thus limit rotative movement of the shaft 49 in the opposite direction.

Operation of the above described wringer, assuming the same to be in the position illustrated in Figs. 2 and 5 of the drawings, wherein the rolls 45 and 46 are out of contact with each other, is as follows:

A mop head is elevated from the tank into a position between the rolls by one hand of the operator, and the operator grasps the handle 3 with his free hand rotating the handle clockwise. The levers 4 and 6 and links 77 will be swung to the right drawing the shiftable roll 45 towards the fixed roll 46 and the U-shaped recesses of the links and disks 80 and 81 will engage the peripheral grooves 62 and 63. The shiftable roll will engage the mop head and compress the same between it and the roll 46, the spring tensioning rods 15 permitting the mop head to be so disposed. Continued rotation of the crank clockwise rotates the roll 46 which in turn rotates the roll 45 and forces the mop head from between the rolls wringing the water therefrom. The U-shaped recesses permit free rotation of the shaft 61 and at the same time retain the roll 45 in shifted position against the tension of the springs 16. During rotation of the handle crank, in a clockwise direction the cams 84 will elevate the pin in the slot 104 and thereby permit free rotation of the handle crank.

When it is desired to release the mop, the lever 4 is rotated counter clockwise carrying with it the link 77 until the hook 85 engages the dog 103 which causes the link 77, tension link 88 and rod 15 to form a rigid lever with the shaft 52 as the fulcrum and the point of connection 78 as power, with the slots 82, 81′ and 82″ and the slot in the bushing 87 aligned, and lifts the rigid composite lever so formed out of engagement with the groove 62 on the roller shaft 61 and by an eccentric motion forces the roller 45 away from the roller 46. The movement is continued until a limit is reached by virtue of the shaft 49 engaging the ends of the slots 47 and 48, wherein the wringer is again ready to receive a mop for a second wringing operation.

Having thus described my invention in a specific embodiment, I am aware that numerous and extensive departures may be made from the embodiment herein illustrated and described but without departing from the spirit of my invention.

I claim:

1. In a wringer, a supporting frame, a wringer roll, mounted for rotation on a fixed axis, a shiftable wringer roll mounted for rotation on a laterally shiftable axis, a handle for rotating the fixed roll, power transmit-

ting means between the handle and the shiftable roll operable by movement of the handle for shifting the shiftable roll toward the fixed roll during rotational movement of the fixed roll.

2. In a wringer, a supporting frame, a pair of aligned guideways in the frame, a shaft laterally shiftable in the guideways, a wringer roll on the shaft, a fixed roll on the frame, a crank for rotating the fixed roll, a pair of mutually hinged links, a resilient connection between one link and the said shaft, the other link being connected to the crank whereby when the crank is rotated the shiftable roll may be resiliently forced toward the fixed roll and upon continued rotation of the crank the fixed roll may be rotated.

3. In a wringer, a frame, a roll mounted for rotation on a fixed axis on the frame, a second roll, mounted for rotation on an axis and for bodily lateral movement on the frame, means for rotating the fixed roll, means for moving the bodily movable roll, said last named means including an element rotatable with the fixed roll, a linkage mechanism between said element and the shaft of the bodily movable roll, whereby upon rotation of the fixed roll, the second roll is moved relatively toward the first roll and then, upon continued rotation of the fixed roll, rotational movement of the fixed roll may be communicated to the second roller by an article to be compressed placed between the rollers.

4. In combination, a pair of rolls both adapted for rotation on parallel axes, means for rotating one of the rolls and a linkage comprising a pair of mutually hinged elements and an element rotatable with the rotatable roll interconnecting the rolls and operable by rotational movement of the rotatable roll to draw the rolls together to effect driving engagement between the rolls.

5. In combination, a pair of parallel rolls, means to rotate one of the rolls, means interconnecting the rolls and responsive to rotative movement of the first one of the rolls in one direction to draw the rolls together and responsive to rotative movement of the said roll in the opposite direction to force the rolls apart, said means including an element rotatable with the said first one of the rolls, a pair of hinged links, one of which is connected to said element and the other to the other roll.

6. In a wringer, a supporting frame, a pair of rolls, one of the rolls being mounted for rotation on a fixed axis, the other having a shaft, a guideway on the frame whereby the shaft may be moved to shift the other roll laterally, means for rotating the fixed roll, an element connected with the fixed roll and rotatable therewith, a connection between the said element and the shaft of the other roll including a pair of hinged elements adapted to have hinging movement around a common axis, one of the hinged elements being connected to the element rotatable with the fixed roll, and the other hinged element being connected to the shaft of the other roll, the parts being arranged so that upon rotation of the rotatable roll, the other roll will be shifted toward the fixed roll and the hinge axis will move substantially into coincidence with the axis of the fixed roll, whereby the fixed roll may continue to be rotated after the other roll has been shifted into driven engagement therewith.

7. In a wringer, a supporting frame, a pair of rolls, one of the rolls being mounted for rotation on a fixed axis, the other having a shaft, a guideway on the frame whereby the shaft may be moved to shift the other roll laterally, means for rotating the fixed roll, an element connected with the fixed roll and rotatable therewith, a connection between the said element and the shaft of the other roll including a pair of hinged elements adapted to have hinging movement around a common axis, one of the hinged elements being connected to the element rotatable with the fixed roll, and the other hinged element being resiliently connected to the shaft of the other roll, the parts being arranged so that upon rotation of the rotatable roll, the other roll will be shifted toward the fixed roll and the hinge axis will move substantially into coincidence with the axis of the fixed roll, whereby the fixed roll may continue to be rotated after the other roll has been shifted into driven engagement therewith.

In testimony whereof I hereunto affix my signature this 2d day of June, 1927.

LIONEL CHASE.