S. R. MAXWELL & G. E. HYMER.

WASHING MACHINE.

APPLICATION FILED JULY 15, 1909.

955,181. Patented Apr. 19, 1910.

5 SHEETS—SHEET 1.

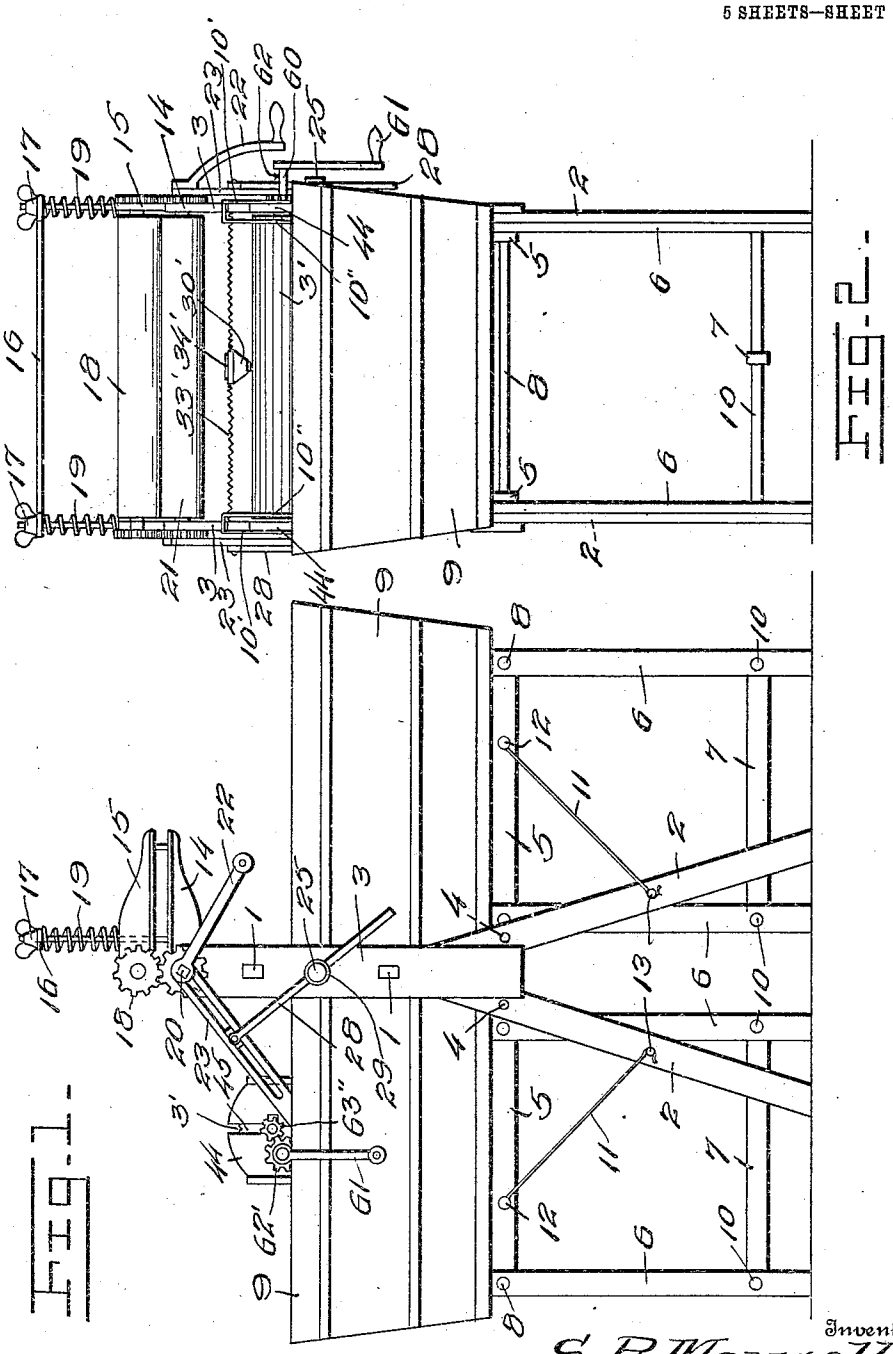

Fig. 2.

Fig. 1.

Witnesses

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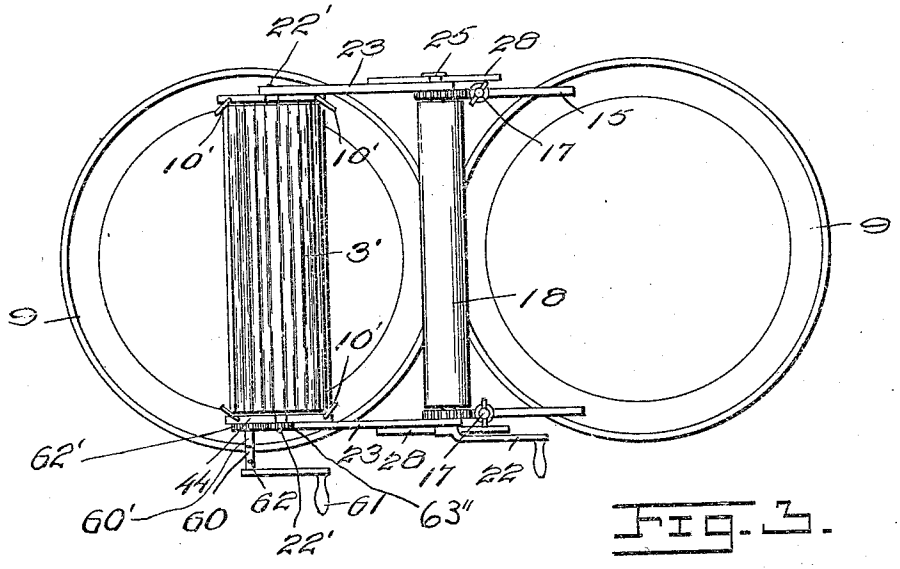

FIG. 3.

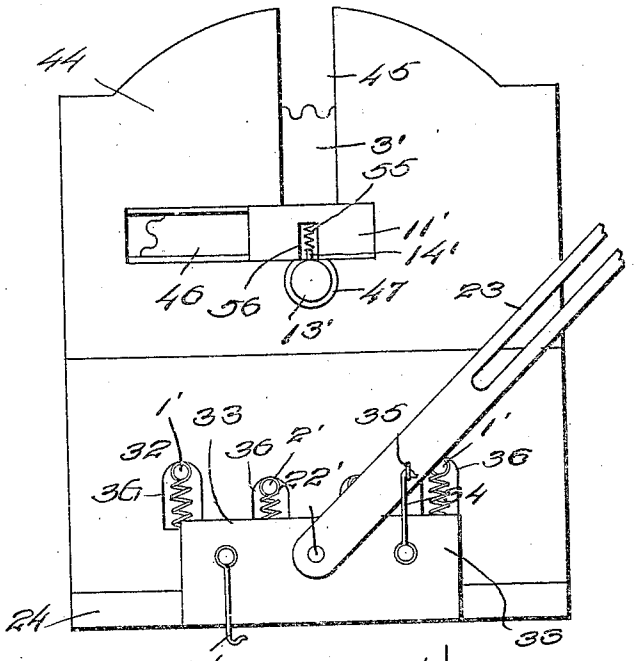

FIG. 4.

Witnesses

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Fig. 6.

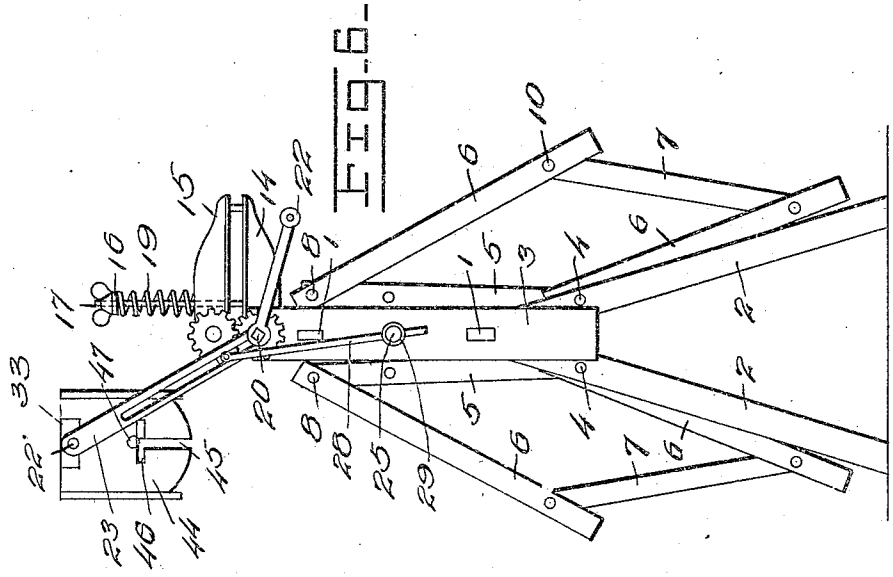
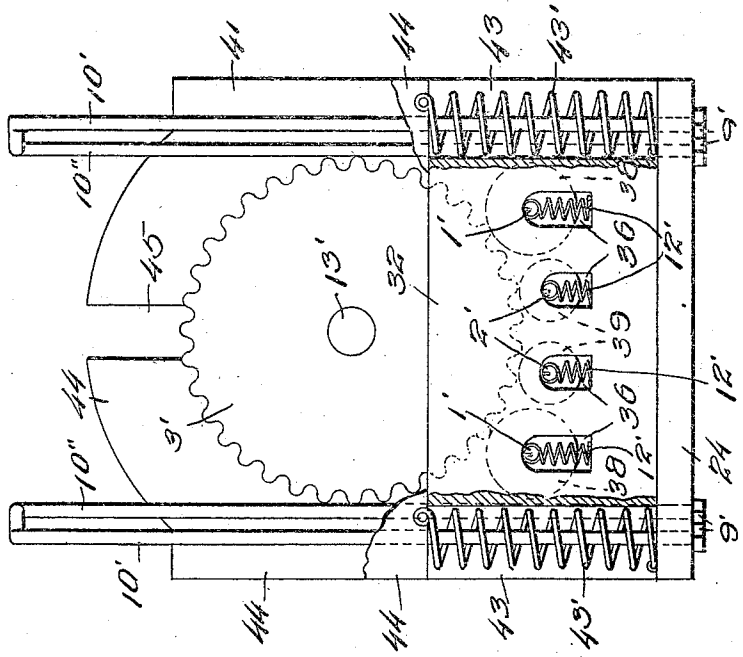


Fig. 5.



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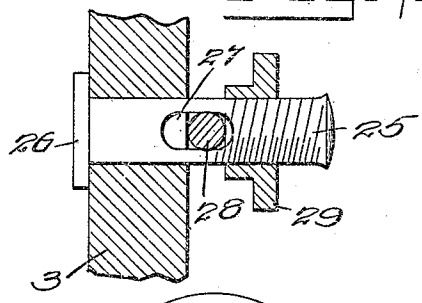
5 SHEETS—SHEET 4.

Fig. 7.



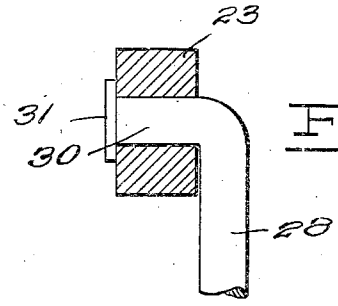


Fig. 8.

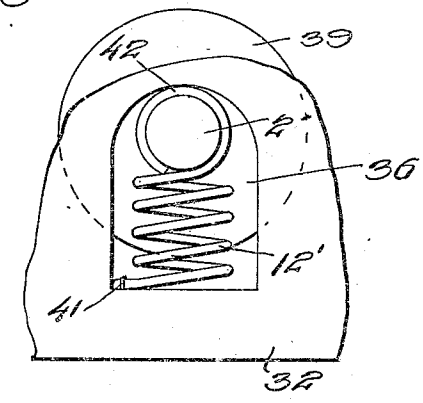


Fig. 9.

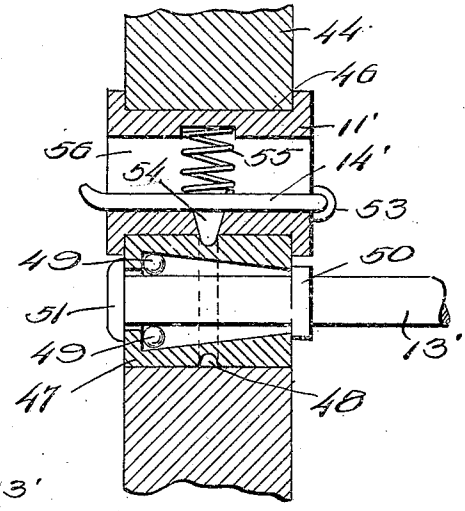


Fig. 10.

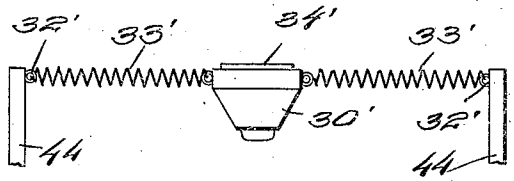


Fig. 11.

Witnesses

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5 SHEETS—SHEET 5.

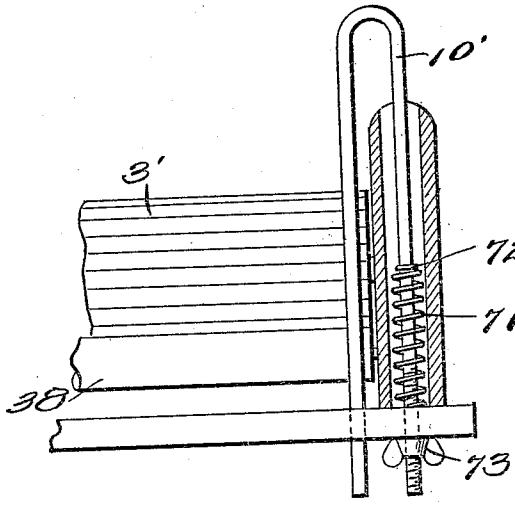


Fig. 12.

Fig. 15.

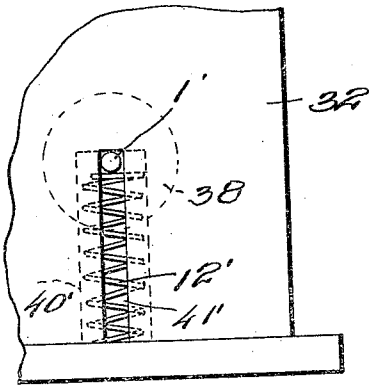


Fig. 13.

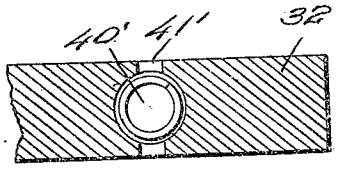
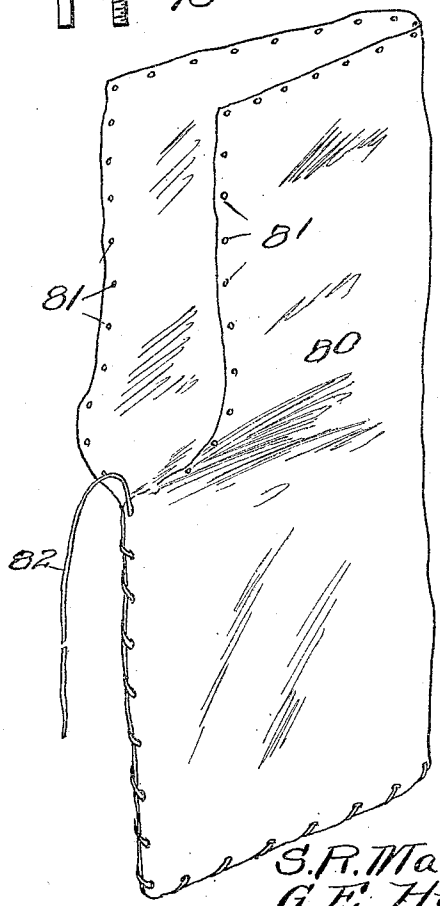


Fig. 14.



Witnesses

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UNITED STATES PATENT OFFICE.

SAMUEL R. MAXWELL, OF ST. LOUIS, AND GEORGE E. HYMER, OF KANSAS CITY, MISSOURI.

WASHING-MACHINE.

955,181. Specification of Letters Patent. **Patented Apr. 19, 1910.**

Application filed July 15, 1909. Serial No. 507,702.

To all whom it may concern:

Be it known that we, SAMUEL R. MAXWELL and GEORGE E. HYMER, citizens of the United States, residing at St. Louis city, Missouri, and Kansas City, Jackson county, Missouri, respectively, have invented certain new and useful Improvements in Washing-Machines, of which the following is a specification.

This invention relates to certain new and useful improvements in washing machines.

The primary object of our invention is to provide a washing machine constructed so that the fabrics may be carried below a large, corrugated, yieldingly held roller and over a plurality of yieldingly held smooth surfaced rollers.

Another object is to provide a washing machine with an adjustable means whereby the washing machine may be removably as well as adjustably held in a suitable wash tub.

A further object is to provide a ball-bearing and a releasing mechanism whereby the main corrugated roller can be readily removed from the supporting standard.

A still further object of our invention is to provide a soap holding receptacle arranged to be held in yielding contact with the main corrugated washing roller.

With these and other objects in view, the present invention consists in the combination and arrangement of parts as will be hereinafter more fully described and particularly pointed out in the appended claims, it being understood that changes in the specific structure shown and described may be made within the scope of the claims without departing from the spirit of the invention.

In the drawings forming a part of this specification, and in which like numerals of reference indicate similar parts in the several views, Figure 1 shows an elevational view disclosing the washing machine, wringer, and supporting wash bench. Fig. 2 is an end view of our washing machine structure. Fig. 3 is a top view. Fig. 4 shows an enlarged end view of the washing mechanism. Fig. 5 shows an enlarged detail of the roller supporting mechanism. Fig. 6 shows the bench and washing machine in a folded condition. Fig. 7 shows an enlarged detail of one of the securing studs. Fig. 8 shows a detail of the tension bar. Fig. 9 shows the arrangement of supporting the lower rollers. Fig. 10 discloses the method of securing the cone bearing. Fig. 11 is a detail of the soap carrier. Fig. 12 shows a modification of the guard rods. Fig. 13 shows a modification of the roller spring. Fig. 14 is a detail of the roller spring. Fig. 15 shows a detached detail of the article carrier.

In our present invention we aim to improve and simplify the construction and operation of washing machines of the class including an operating roller used in connection with a plurality of lower rub-board forming rollers. Such a construction in its operation more nearly approaches the manual operation of rubbing the fabrics over the corrugations of a washboard, an operation highly satisfactory as to its results.

In the accompanying drawings, the numeral 3 designates the two similar side frame bars, as used in our invention, which are provided below with the supporting legs 2, these frame bars 3 being transversely connected by means of suitable transverse members 1 indicated in Fig. 1. Pivotally secured to each supporting leg 2, by means of the pins 4 are the upper frame members 5 each frame member 5 supporting the leg 6, these legs 6 in turn being braced near their lower ends by means of the brace bars 7. The members 5 are further strengthened by means of the upper frame bars 8. The lower members 7 are pivotally held at one end to one of the transverse connecting bars 10 which connect the legs 6 near their lower ends. At one end these members 7 have a hook opening so that these members 7 may be hooked at one end to the members 10. This construction method permits the standards being folded, these members 5 and 6 forming a wash bench by means of which the wash tubs 9 are supported. To rigidly hold the wash bench forming structure in an open condition we employ the hook 11 fastened to the pin 12 and working over a stud 13, as indicated in Fig. 1, to impart rigidity to the structure in its open condition.

Near their upper ends the frame members 3 support the brackets 14 forming the lower members of a wringer, each bracket 14 supporting a bracket 15, these brackets carrying

the bar 16 and adjusting nut 17 by means of which the tension of the upper wringer roller 18 may be regulated, the usual springs 19 being employed. Held within the upper ends of these members 3 is the wringer shaft 20, this shaft 20 being provided with the usual wringer roller 21 and an operating crank 22, as clearly disclosed in Fig. 1. Held to the opposite projecting ends of the wringer shaft 20, are two similar slotted carrier bars 23 which bars at their lower ends are provided with the pins 22′ by means of which they are secured to the transverse frame member 24, as shown in Fig. 4. These carrier bars 23 are pivotally carried upon the shaft 20 so that they may be swung from side to side to carry the base forming member 24 either into the wash tub to the right or left, as disclosed, for instance, in Fig. 1, where the frame member is held within the tub to the left.

Secured to each frame bar 3, is a stud 25 revolubly supported, this stud having a flanged head 26 and an aperture 27, this aperture being arranged to receive the tension bar 28 slidably held within the aperture 27. This stud carries the set nut 29, by means of which the tension bars, two such bars being employed, may be securely clamped to the frame members 3 in adjusting the washing machine. As shown in Fig. 7, the end of the stud is flanged so that the set nut 29 cannot become displaced or removed from the stud. At one end each tension bar 28 has a crank 30 provided with the guide flange 31, this crank portion 30 being held within the slot of a carrier bar, this detail construction being clearly shown in Fig. 8.

Carried at each end of the base forming member 24, are the two similar battens 32 to which battens are secured the plates 33 which plates carry the supporting pins 22′ revolubly held within the lower ends of the slotted carrier bars. As shown in Fig. 4, these plates 33 are provided with two hooks 34, these hooks being arranged to engage within the eyes 35 carried at the lower ends of the carrier bars 23.

As disclosed in Fig. 5, each batten 32 is provided with a plurality of slots 36, 36 within which are slidably held the shafts 1′ and 2′ supporting the smooth surfaced rollers 38 and 39 respectively. These slots give further support to the coil springs 12′ four such coil springs being used within each batten. These coil springs have their lower ends fastened by means of a staple 41 to the battens, while the upper ends of these coil springs 12′ end in the bearing or securing eyes 42 which engage the ends of the roller shafts 1′ and 2′ as disclosed in the detail view, Fig. 9. This construction method insures each of the smooth surfaced rollers 1′ and 2′ being yieldingly supported. As disclosed in Fig. 5, the rollers 2′ are slightly smaller in diameter than the rollers 1′.

Each batten 32 is provided with a vertically positioned slot 43, as disclosed in Fig. 5, and centrally held within these slots is one member of the rebent guard rods 10′ which pass through the base member 24 and are secured by means of the nuts 9′. Springs 43′ at their lower ends are securely fixed to the base member 24 while at their upper ends they are secured to the sliding bearing block 44. Each bearing block has a vertical slot 45 and a horizontally disposed communicating slot 46, a bearing 47 being slidably held within the slot 45. Held within the lower end of the vertical slot 45 and below the transverse slot 46, is the roller shaft 13′ which carries the large corrugated roller 3′ as disclosed. In Fig. 10 we have shown an enlarged fragmentary view disclosing one end of the roller shaft 13′. This shaft at each end is held within a cone bearing 47 having a circumscribing groove 48 and carrying the anti-friction balls 49, as is usual in this class of bearings. This cone bearing 47 is revolubly held to the shaft 13′ by means of the collars 50 and 51, which prevent any lengthwise displacement of the shaft while held within the bearing. This cone bearing 47 is arranged to be held below the sliding member 11′, this member carrying a pivotally held dog 14′ secured by means of the staple 53, this dog having a lug 54 arranged to be held within the circumscribing groove 48, as clearly shown in Fig. 10. The lug 54 is normally held in engagement within the groove 48 by means of the spring 55 held within an opening 56 formed within the member 11′. The operation of the springs 43′ is to normally force the upper large corrugated roller 3′ into contact with the lower smooth surfaced rollers 38 and 39. The second member 10″ of the rebent guard rod 10′ is held adjacent to the forward portion of the outer smooth rollers 38 and serves as a guard to prevent any fabrics passing through the washing machine working over the ends of the rollers. In Fig. 2 we have disclosed the position of the guard bars. The members 10″ are also secured to the base member 24 by means of suitable nuts 9′.

As shown in Fig. 3 the end of the roller shaft 13′ is made to project beyond the end of the bearing blocks 44 so that the upper roller may be actuated by means of a removable crank including the sleeve 60 having the operating handle 61, and carrying the screw 62 by means of which this sleeve crank is secured to the arbor 60′ carrying the gear 62′ meshing with the pinion 63″ upon the end of the shaft 13′. From this it will be seen that the handle is adjustably secured to the shaft. The corrugated roller

carrying mechanism is of such a size that when the base member 24 rests upon a wash tub of ordinary construction, the shaft 13′ will project above the edge of the same as shown in the side view, Fig. 1.

The operation of our device is very simple. The fabrics and clothes are washed in successively carrying the pieces through the rollers in which operation the fabrics are cleansed. The washed pieces can then be carried from one tub through the wringer into the adjacent tub. After all of the pieces have passed through the wringer the operator can release the slotted carrier bars 23 which are securely held to the frame members 3 by means of the tension bars 15 and throw the washing machine into the adjacent tub. In order to prevent the washing machine proper from wabbling in this reversing operation the hooks 34 are engaged with the eyes 35 so that during the swinging operation the washing machine is securely held to the slotted carrier bars. The washing machine is then securely adjusted within the adjacent tub when the washing operation may be repeated if that is found necessary.

In connection with our washing machine we use a soaping device which we have disclosed in detail in Fig. 11. Extending from the slotted bearing blocks 44 are the supporting ears 32′ carrying the yielding or pliable member 33′ which may be in the form of a rubber band or a spring. This spring carries the receptacle 30′ within which the soap is placed, this receptacle being slotted below so that the soap will protrude through the slot. A follower 34′ is held within the receptacle 30′ so that the soap may be forced through the slot. The follower is secured to the receptacle 30′ by suitable means.

Should it be desired at any time to remove the corrugated roller 3′, the operator simply releases the dog 14′ and slides the bearing member 11′ to one side so that the shaft 13′ as well as the cone bearing may be carried upward through the vertical slot 45.

While not in use the wash bench is folded between the standards while the slotted carrier bars are carried upward so as to provide a folded structure occupying but a small space.

The manner of attaching the washing machine to the wringer may be effected in any suitable workmanlike manner.

This machine is simple and inexpensive in construction, durable and efficient in operation, and the adjustments may be made with ease, accuracy, and despatch.

The sliding bearing blocks 44 are carried upon the stems 10′ of the guard rods, as shown in Fig. 5.

In the modification as shown in Fig. 12, the recurved rod 10″ is provided with the thumb nut 73, working against the spring 71, held against the shoulder 72 upon the rod.

In Fig. 13, the lower member 32 is provided with the openings 40′ shown in Fig. 14, having the slots 41′ through which the shafts 1″ and 2″ extend.

In Fig. 15, we show a belt 80, made of a suitable fabric, which is in the form of a bag. The fabrics to be carried through the wringer, are placed in this bag, which is in the form of a sheet having the edge eyelets 81, through which the cord 82 is carried to form the sheet into a bag. This device is of especial value, where the machine is run by power.

And having thus described our said invention, what we claim as new and desire to secure by United States Letters Patent is:

1. The combination in a washing machine, of a supporting frame, a shaft carried by said frame, two slotted carrier bars held to the opposite ends of said shaft, two tension rods having cranked ends held within said slots, two studs secured to said frame each having an aperture said tension rods extending through said apertures, a nut upon each stud to clamp said tension rods, a base member connecting the lower ends of said carrier bars, a batten secured to each end of said base member having a plurality of slots, a plurality of smooth surfaced rollers within said slots, springs below said rollers and held within said slots, two recurved guard rods secured to each end of said base member and extending through one of said batten slots one member of said guard rods being located inward of the ends of said rollers, a spring coiled about the stem of each recurved guard rod held within said slot, a bearing block slidably held upon said guard rods and secured to said coiled springs, and a corrugated roller removably carried by said bearing blocks to co-act with said smooth surfaced rollers.

2. A washing machine having in combination a supporting frame, a shaft carried by said frame, two slotted carrier bars held to the opposite ends of said shaft, two tension rods having cranked ends held within said slots, two studs secured to said frame each having an aperture said tension rods extending through said apertures, a nut upon each stud to clamp said tension rods, a base member connecting the lower ends of said carrier bars, a batten secured to each end of said base member having a plurality of slots, a plurality of smooth surfaced rollers within said slots, springs below said rollers and held within said slots, two recurved guard rods secured to each end of said base member and extending through one of said batten slots, one member of said guard rods being located inward of the ends of said rollers, a spring coiled about the stem of each recurved guard rod held

within said slots, a bearing block slidably held upon said guard rods and secured to said coiled springs, each of said bearing blocks having a vertical and a transverse bearing slot, said vertical slots extending below said transverse bearing slots, a sliding member held within each transverse slot, a bearing within each vertical slot and held below the sliding members, a shaft carried within said bearings last mentioned, and a corrugated roller secured to said last mentioned shaft to co-act with said smooth surfaced rollers.

3. In a washing machine, the combination with a supporting frame, of slotted carrier bars pivotally secured to said frame, a washing machine structure carried at the ends of said carrier bars, a stud having an aperture secured to said supporting frame, a tension rod slidably carried within the slots of each carrier bar and held within the aperture of one of said studs, and nuts to clamp said tension rods to said studs.

In testimony whereof we affix our signatures, in presence of two witnesses.

SAMUEL R. MAXWELL.
GEORGE E. HYMER.

Witnesses:
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H. C. KNIPPENBERG.