

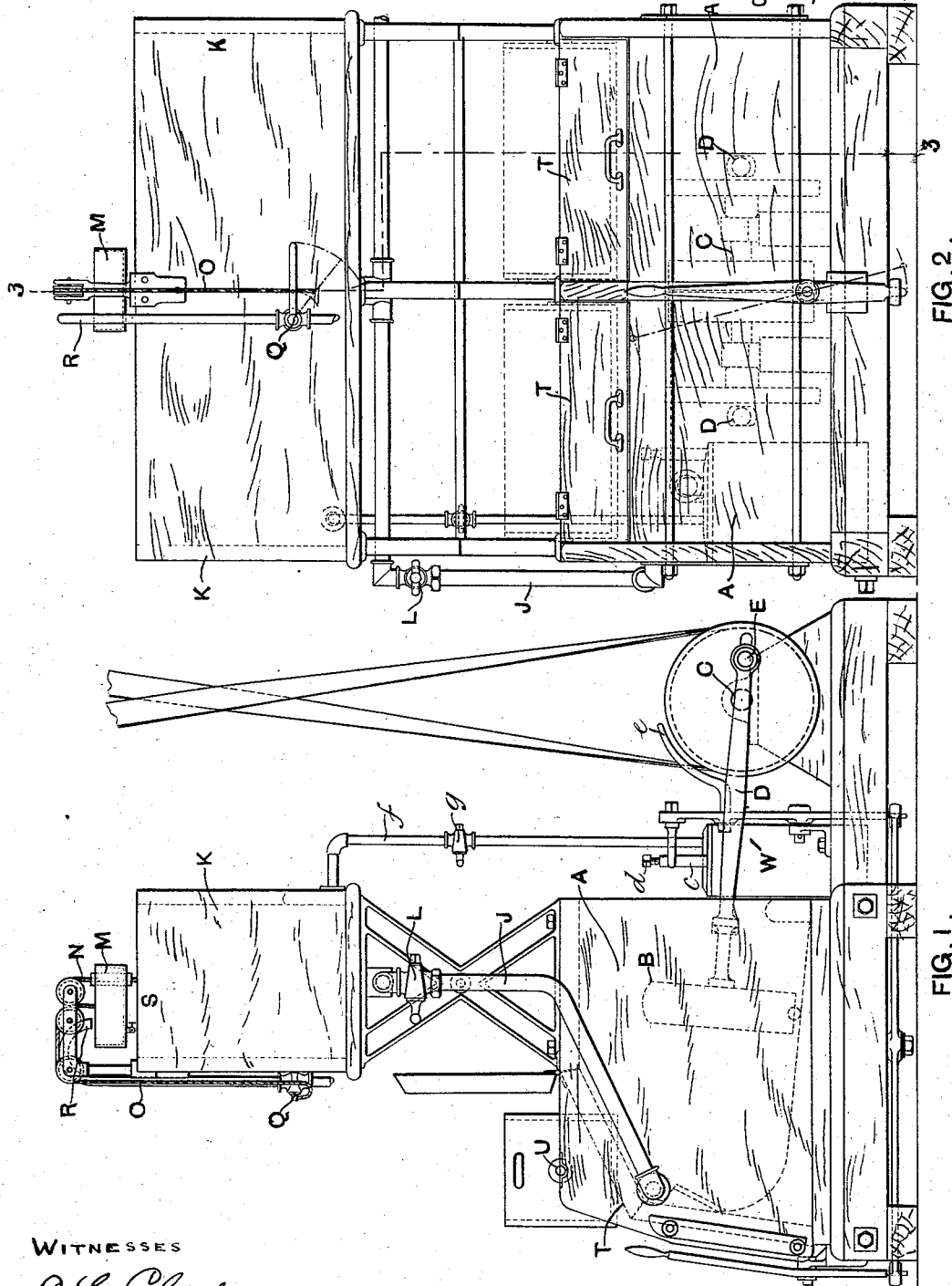
(No Model.)

2 Sheets—Sheet 1.

J. HESELWOOD.  
WASHING MACHINE.

No. 524,204.

Patented Aug. 7, 1894.



WITNESSES

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Giles P. Moore.

INVENTOR

James Heselwood,  
By J. P. Whitney  
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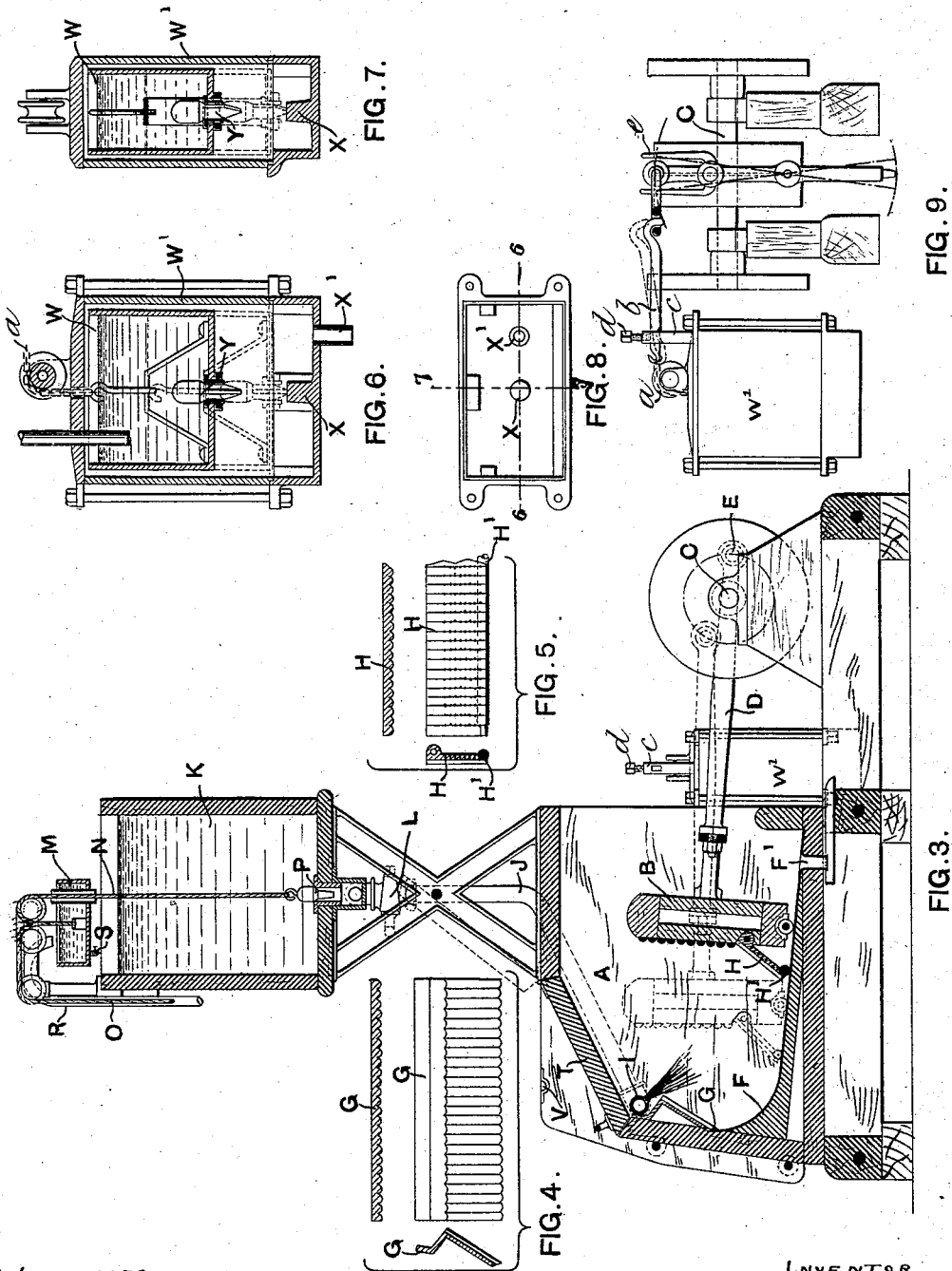
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# UNITED STATES PATENT OFFICE.

JAMES HESELWOOD, OF LEEDS, ENGLAND.

## WASHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 524,204, dated August 7, 1894.

Application filed July 10, 1893. Serial No. 480,080. (No model.) Patented in England July 7, 1892, No. 12,534.

### *To all whom it may concern:*

Be it known that I, JAMES HESELWOOD, a subject of the Queen of Great Britain and Ireland, residing at Leeds, in the county of York, England, have invented certain new and useful Improvements in Washing - Machines, (patented in England July 7, 1892, No. 12,534,) of which the following is a specification.

This invention relates to washing machines in which the clothes or fabrics are subjected to the action of reciprocating beaters or squeezers. In such machines it is desirable to make provision for turning the clothes or fabrics during the operation and thus to present them in an altered position for each stroke of the beater or squeezer. I accomplish this by hinging the lower part of the beater or squeezer and by causing this hinged part to traverse an inclined or curved path during its stroke. This lower part is bent or inclined forward and will lift and partly turn the clothes or fabrics. The part of the containing trough in front of the beater or squeezer is curved to facilitate the rolling action of the clothes or fabrics and it is also preferably corrugated. Above this curved part of the containing trough I arrange a perforated pipe for admission of soapy water or suds, and of clean water if desired, the supply of each being controlled (preferably) automatically with an alternative hand control.

Two or more of the apparatus may be arranged side by side and each of them may be actuated by connecting rods from cranks arranged on one shaft.

Suitable means of known or of a special construction may be employed for the purpose of stopping the apparatus after it has been in action for a predetermined time.

It is preferred to supply the clothes or fabrics to the apparatus in measured quantities in order to secure uniform and more economical treatment. For this purpose boxes may be provided capable of holding the required quantity and of fitting upon the edges of the apparatus or of the containing trough. These boxes are provided with trunnions in suitable bearings. By simply inverting the full box, the clothes or fabrics are dropped into the apparatus in the best position and arrangement for work. The box is then removed.

The apparatus is preferably covered or

cased in, being provided with a hinged lid or removable cover for the purposes of inspection and for the insertion and removal of the fabrics.

The accompanying drawings illustrate in what manner I prefer to carry my invention into practical effect.

In the drawings—Figure 1 is an end elevation, and Fig. 2 a front view. Fig. 3 is a vertical transverse section on line 3—3, Fig. 2. Fig. 4 represents the upper part of the front of the containing trough, removed from the apparatus, in longitudinal, horizontal and vertical cross sections, and in elevation respectively. Fig. 5 shows the hinged lower part of the beater or squeezer separately, in longitudinal, horizontal and vertical cross sections and elevation. Fig. 6 is a vertical longitudinal section on line 6—6, Fig. 8; Fig. 7 a vertical transverse section, on line 7—7, Fig. 8; Fig. 8 a partial plan, and Fig. 9 an elevation illustrating a time stop motion.

In each of the figures in which the parts occur, similar details of construction are indicated by similar letters of reference.

A is the containing trough in which the beater B is reciprocated.

C is the crank or driving shaft from which motion is communicated through the connecting rods D to the beaters, the connecting rods being secured in the usual manner to cranks or crank pins E and to the beaters respectively.

The floor or lower part of the trough may be false, and is inclined upward toward the front where it is curved as shown at F, to the base of the part G which is preferably flat as shown and is inclined inward, the function of this part in conjunction with the curved part F, being to assist in the turning of the fabrics at each stroke as hereinbefore set forth.

I invariably employ at least two of the troughs and beaters side by side and arrange the cranks or crank pins at equal distances apart. Thus with two of the troughs the cranks would be at one hundred and eighty degrees apart; with three one hundred and twenty degrees; and with four ninety degrees. The object of this arrangement is to equalize the driving only, which would be difficult were only one trough employed.

In Fig. 3, the beater B is indicated in two

positions by dotted and full lines respectively, the dotted lines representing it near the forward end of its stroke, and the full lines near the back end. The hinged lower part of the beater preferably takes the form of a plate H which may be perforated and vertically corrugated in front as shown by Fig. 5 and may have a friction bowl H' at the bottom. The beater itself may be of the usual form and horizontally corrugated or otherwise. Above and parallel with the part G there is arranged a perforated or spray pipe I which communicates through the pipe J with the tank K arranged above the troughs or in any suitable relative position. The pipe J is controlled by a tap or valve L which may be opened and closed by hand but I prefer that this tap should be left open while the apparatus is at work and to control the flow of the liquid automatically. This is preferably accomplished by means of the auxiliary tank M which is suspended by the cord O passing over pulleys above the tank. A cord N is attached to the cord O, and passing over a pulley is connected with the plug P which closes the inlet to the pipe J and the cord O is attached at its opposite end to the handle of the tap or valve Q which controls the passage through the pipe R. In the bottom of the small tank M there is an adjustable cock S through which the contents of the tank can escape in a given time.

Assuming the tank K to be nearly filled with the soapy water suds or other liquid, and the tap Q to be opened the liquid will flow into the small tank M and simultaneously escape therefrom through the cock S, but the cock being small, the tank M will fill quickly, and descend, thereby lifting the plug P and closing the tap Q by means of the connecting cords or chains N O. The tank M will remain in its lower position until its contents have nearly all escaped through the cock S, whereupon its weight will be exceeded by its counterweight, the plug and cords, and it will ascend, the plug at the same time descending and closing the pipe J. Hence it will be seen that the liquid will continue to flow through the spray pipe I into the trough A so long as the tank M is in its lower position, and that this time can be accurately regulated by opening or closing more or less the cock S. Although the opening of the tap Q might be automatically effected by weighting its handle, as indicated by dotted lines in Fig. 2, I prefer to arrange for its automatic closing only and to open it by hand on starting the apparatus.

It is preferred to arrange a separate pipe J for each trough although one such pipe might be made to supply both or all the troughs.

The upper part of the trough is preferably cased in and provided with the lifting door T.

When the fabrics are measured into the apparatus as hereinbefore described, the trunnions of the measuring box (which is shown at U Fig. 1 in dotted lines) are rested

on the bearings V, the lid T having previously been opened, and the box is then inverted, dropping its contents upon the inclined bottom and curved part F.

The apparatus should in use be caused to run for a sufficient time while the liquid is running into the trough, and for a short time after the liquid has ceased to run. The stoppage of the apparatus may be effected at the proper time by hand in the usual manner or it may be stopped by an automatic stop motion such as that illustrated by Figs. 6 to 9 inclusive of the accompanying drawings. Referring to these figures, I arrange a vertically sliding bucket W in the tank W'. In the bottom of the tank there are a central projection X and an escape pipe X'. In the bottom of the bucket there is a plug borne in a suitable seating and projecting below the bottom of the bucket as shown at Y. The bucket is suspended by a cord or chain *a* which passes over a pulley and is attached at its other end to the slide *b*, which passes through a slot in the upright *c*. A set screw *d* also passes into the slot through the upright, where it comes into contact with the slide, so that by tightening or loosening the set screw, more or less pressure may be exerted upon the slide and it may thus be more or less easily moved. The opposite end of the slide is connected with the strap fork *e*. A fluid which may be the liquid from the tank K is supplied at a controllable rate to the bucket W, through the pipe *f* and tap *g*.

If the apparatus be in action, and the bucket W empty at the top of its stroke, liquid will enter and add continuously to its weight until this is finally sufficient to overcome the resistance exerted by the pressure of the screw upon the slide *b*, when the bucket will descend to the bottom (as shown by the dotted lines Fig. 6) thus moving the slide horizontally and stopping the apparatus by shifting the driving belt to the loose pulley through the agency of the strap fork to which the slide is attached. Upon the descent of the bucket, its plug is lifted by the projection X and the liquid escapes through the outlet X'. The apparatus upon being re-started by hand brings the stop motion once more into action through the strap fork *e*, the position of which being reversed, restores the slide to its original position and thus lifts the bucket.

It will be clear from the construction of the apparatus that when the beater reaches the forward end of its stroke as shown by dotted lines Fig. 3, the suds will be squeezed out of the clothes which will then be comparatively dry. On the retreat of the beater the clothes will expand and will be again soaked with fresh suds or water from the spray pipe.

The inclined bottom of the trough facilitates the ready escape of the liquid which runs from the trough through the outlet F'. Consequently upon this arrangement, the clothes are treated with fresh and clean suds or liquid at each stroke of the beater and are

not worked and re-worked in the same fluid, and the washing is greatly facilitated and more completely effected.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. In a washing machine, a beater or squeezer, having a plate hinged loosely to its lower part with its foot resting on the bottom of the machine in advance of the beater, substantially as described.

2. In a washing machine, the combination with a trough, of a beater having a corrugated face, and a plate hinged to the lower part of the beater with its foot in advance of the beater, said plate being corrugated and perforated, substantially as described.

3. In a washing machine, the combination with a trough having a bottom curved up-

wardly at one end, with an inward projection above the curve, of a beater having a plate hinged to the lower part, one edge of which rides on said bottom and curved end, substantially as described.

4. In a washing machine, the combination with a trough, of beaters, a belt driven shaft for operating said beaters, a tank for supplying liquid to the trough, a belt shipper, and a device for automatically operating the same controlled by a supply of liquid from said tank, substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 22d day of June, 1893.

JAMES HESELWOOD.

Witnesses:

JOHN WILLIAM BRAMHAUL,  
WILLIAM DIMBLEBY.