

May 25, 1926.

1,586,403

C. L. BRALEY

WASHING MACHINE

Filed Feb. 1, 1922

4 Sheets-Sheet 1

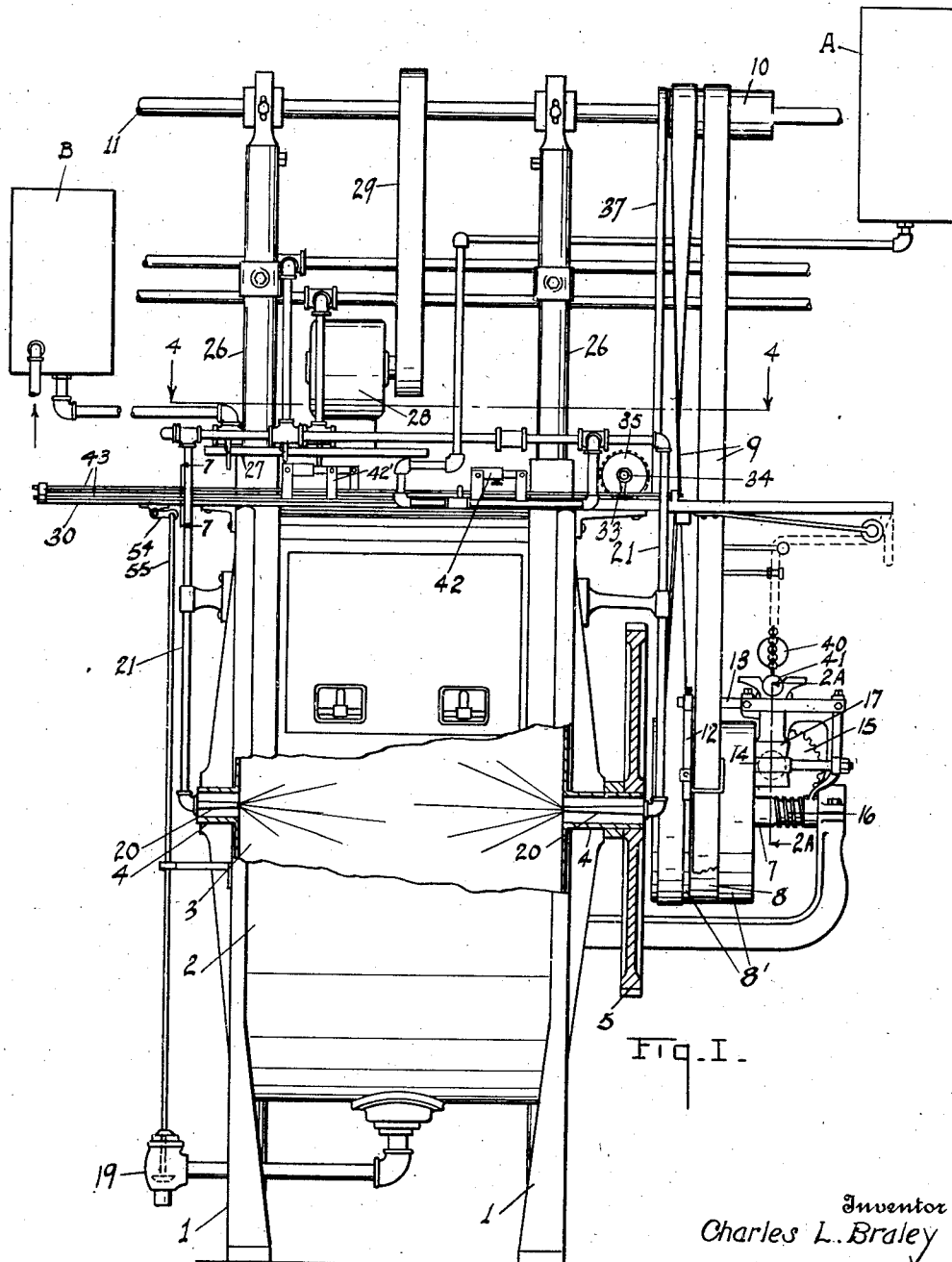


Fig. I.

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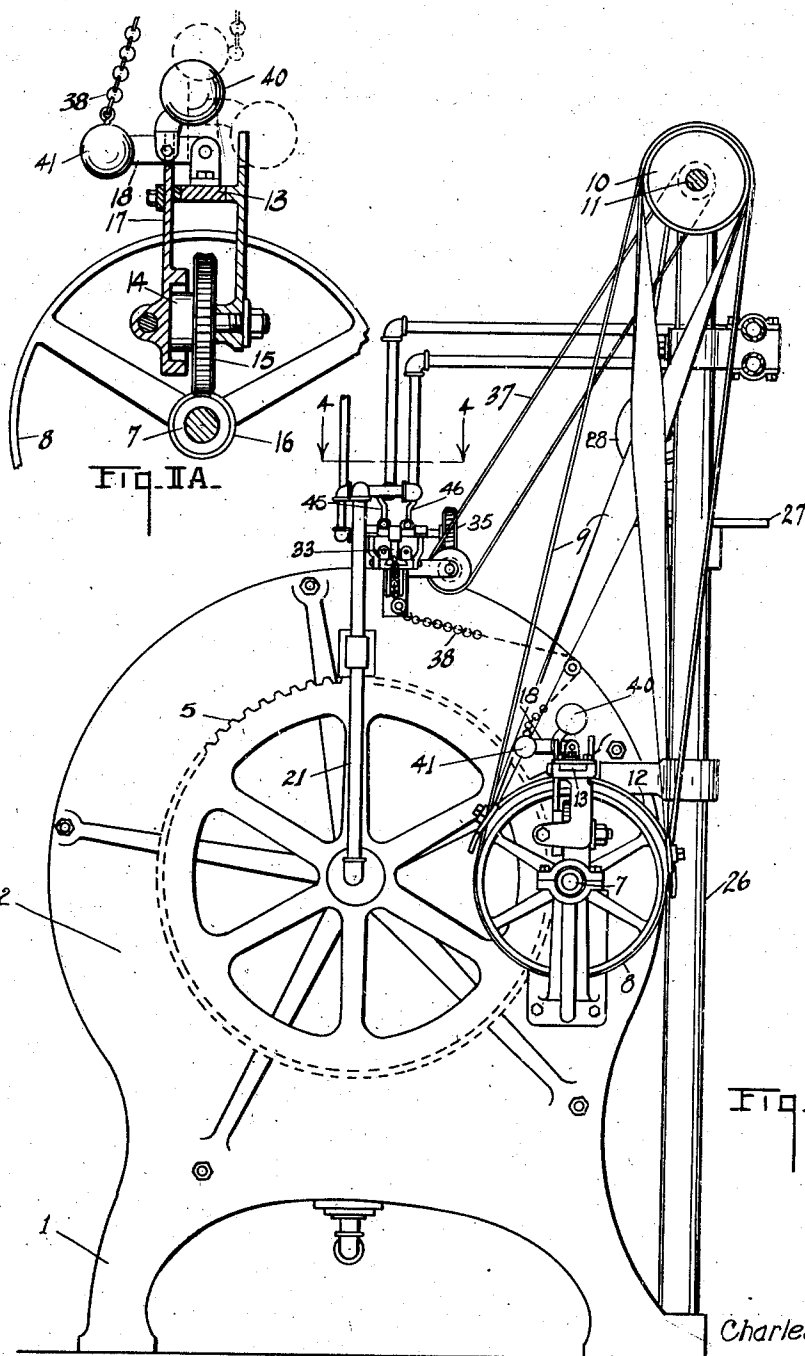


FIG. II.

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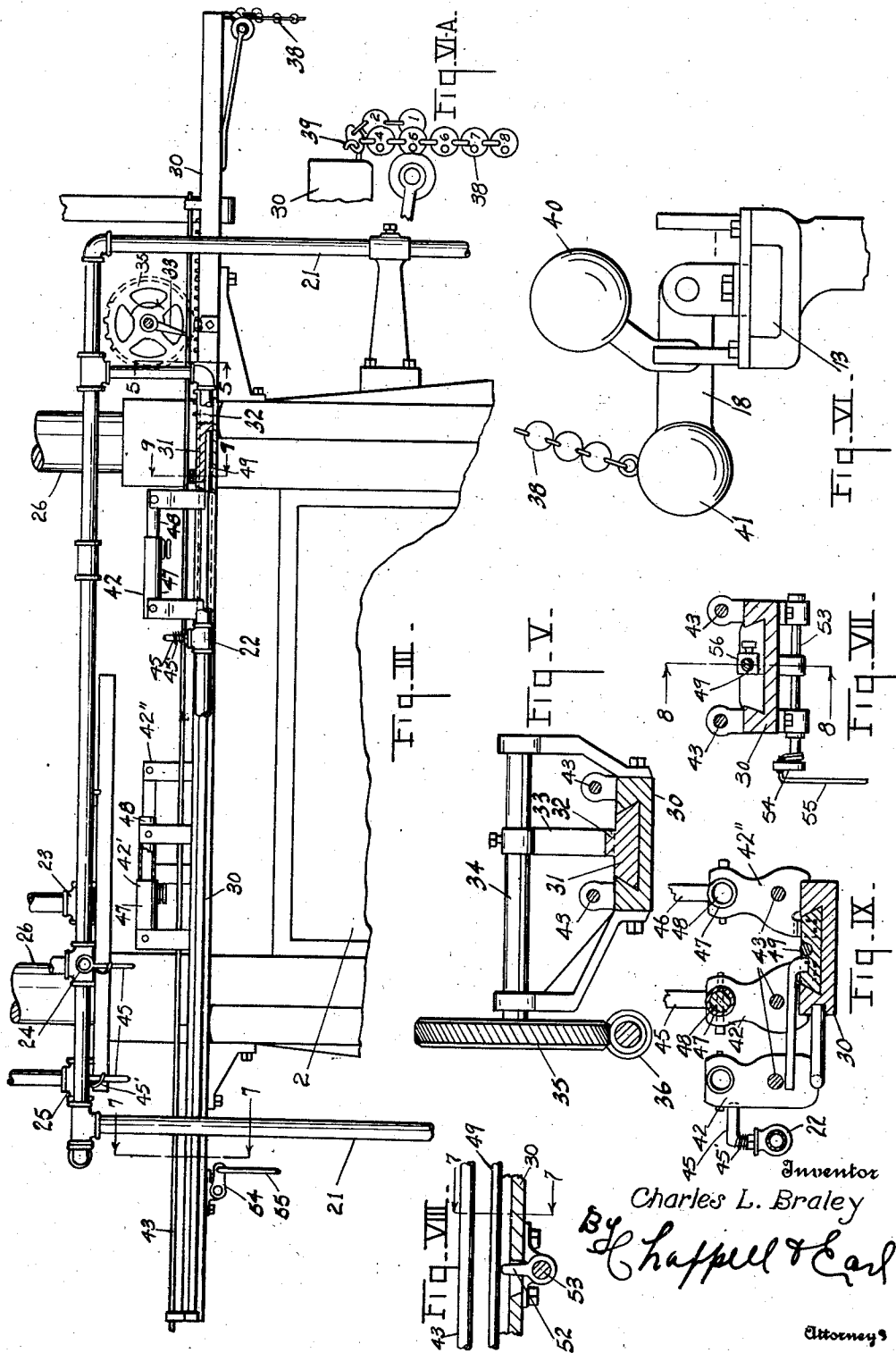
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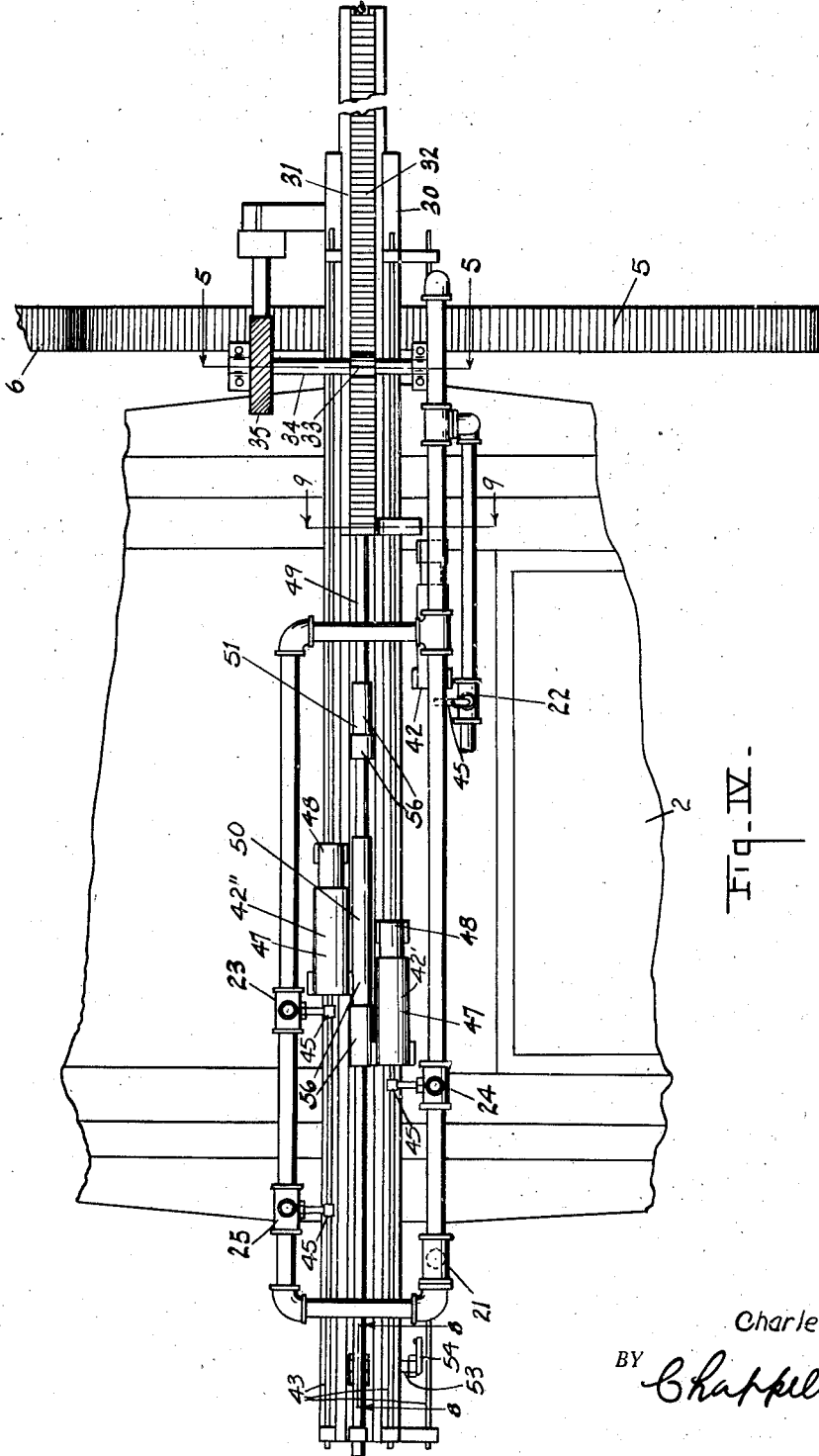


Fig. IV.

INVENTOR.

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Patented May 25, 1926.

1,586,403

UNITED STATES PATENT OFFICE.

CHARLES L. BRALEY, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO CHARLES F. NOFTZGER, OF CHICAGO, ILLINOIS, AND ONE-HALF TO THE AMERICAN LAUNDRY MACHINERY COMPANY, OF CINCINNATI, OHIO, A CORPORATION OF OHIO.

WASHING MACHINE.

Application filed February 1, 1922. Serial No. 533,202.

This invention relates to improvements in washing machines.

The main objects of the invention are:

First, to provide an improved washing machine in which a batch of laundry may be effectively and successively subjected to all the washing operations, as washing, rinsing and bluing, without stopping the machine, the admission of the washing and rinsing and bluing water and the draining of the water being automatically controlled.

Second, to provide an improved washing machine in which the period of washing and rinsing may be regulated to meet the requirements of the particular wash or the wishes of the operator.

Third, to provide an improved washing machine in which the drain valve is automatically opened and held open during a period in which rinsing water is delivered to the washing cylinder, the cylinder being in operation during such period.

Fourth, to provide an improved washing machine in which the hot and cold rinsing water delivery may be timed as desired.

Fifth, to provide an improved structure having these advantages which is comparatively compact and simple in structure and may be quickly and easily adjusted to perform the desired operations.

Further objects, and objects relating to structural details, will definitely appear from the detailed description to follow:

I accomplish the objects of my invention by the devices and means described in the following specification. The invention is clearly defined and pointed out in the claims.

A structure which is a preferred embodiment of my invention is clearly illustrated in the accompanying drawing, forming a part of this application, in which:

Fig. I is a front elevation of a washing machine embodying the features of my invention, portions of the tub or receptacle being broken away; also portions of the power shaft and water supply pipes.

Fig. II is an end view looking from the right of Fig. I.

Fig. II^A is an enlarged detail view on a line corresponding to line 2^A—2^A of Fig. I, showing details of the washing cylinder reversing mechanism and control.

Fig. III is a detail front elevation, par-

tially in vertical section, showing the arrangement of the water supply valves and their actuating tappets.

Fig. IV is a fragmentary plan view partially in section on a line corresponding to line 4—4 of Figs. I and II.

Fig. V is an enlarged detail view, partially in vertical section, on a line corresponding to line 5—5 of Fig. IV, showing details of the actuating slide and its driving means.

Fig. VI is an enlarged detail view of the washing cylinder driving means control looking from the right of Fig. I.

Fig. VI^A is an enlarged detail of the connections for the control means, shown in Fig. VI, to the actuating slide.

Fig. VII is a detail section on a line corresponding to line 7—7 of Figs. I, III and VIII, showing details of the drain valve mechanism.

Fig. VIII is a detail view partially in section on a line corresponding to line 8—8 of Figs. IV and VII.

Fig. IX is a detail section on a line corresponding to line 9—9 of Figs. III and IV, showing details of the water supply valve tappets.

In the drawing similar reference characters refer to similar parts throughout the several views, and the sectional views are taken looking in the direction of the little arrows at the ends of the section lines.

Referring to the drawings, 1 represents the supporting pedestals for the cylindrical washing receptacle or tub 2. The washing cylinder 3 is shown conventionally and is provided with tubular journals 4. One of these journals is provided with a gear 5 driven from a pinion 6 on the shaft 7.

The shaft 7 has a fixed or driven pulley 8 thereon and a loose pulley 8' at each side thereof. Belts 9, one of which is twisted to secure a reverse drive, are driven from the pulley 10 on the power shaft. The belts are alternately shifted to and from the driven pulley to the idlers by means of a belt shifting mechanism consisting of the shifting fork 12 carried by the slide 13, which is oscillated on the support or carrier 17 by the cam 14 on the worm gear 15. The worm gear 15 is driven from the worm 16 on the shaft 7, which is connected to the outer pulley 8'. The driving belt for this pulley is arranged so that it never completely leaves

the pulley, lapping thereon when in driving engagement with the driven pulley 8, so that the worm 16 is continuously driven.

The cam acts upon the carrier 17 which is connected to the slide by the latch 18. The details of this cylinder driving mechanism form no part of my present invention except that I provide means for controlling or stopping the machine through these parts. I have illustrated this reverse driving mechanism in order to make clear the operation of the machine.

The tub 2 is provided with a drain valve 19. The structure illustrated is adapted for supplying the washing machine with washing water or suds, hot and cold rinsing water and bluing water. I illustrate conventionally in Fig. I a tank A in which the suds or washing water is prepared and a tank B for bluing water. The hot and cold rinsing water may be taken from any suitable source. The water is delivered to the washing cylinder through its tubular journals by means of the nozzles 20. The supply pipes 21 are connected to the valves 22, 23, 24 and 25,—see Fig. IV, for the washing water or suds, the hot and cold and bluing waters, respectively. These valves 23 and 24 are connected to suitable sources of supply, the valves 22 and 25 being connected to the tanks A and B, respectively.

At the rear of the washing machine proper is a pair of uprights 26 on which the shaft 11 is mounted and one of these carries a bracket 27 for the motor 28 connected to the shaft 11 by the belt 29. Above the washing machine is a slideway 30 for the actuating slide 31. This slide is provided with a rack 32 and is driven from the pawl 33 on the shaft 34. Each rotation of the shaft 34 advances the rack one tooth.

The shaft 34 has a worm gear 35 driven from the worm 36 connected to a pulley on the shaft 11 by the belt 37. The rack is connected to the latch 18 by means of the chain 38, one end of which is adjustably engaged with the hook 39 on the actuating slide,—see Figs. VI and VI^A.

A weight 40 is provided for the latch so that when the latch is raised to a certain point the weight 40 overbalances the weight 41, thereby quickly opening the latch and stopping the machine.

The valves are provided with projecting lever-like stems 45 and are held in their closed position by the springs 45', shown conventionally in the drawings.

I provide valve tappets 42, 42', and 42'', the tappet 42 being adapted to actuate the suds valve, the tappet 42' the cold rinsing water valve, the tappet 42'' the hot rinsing water valve and also the bluing valve. These tappets are mounted on rods 43 mounted parallel to the slideway 30 so that as the slide travels along its way it engages the tappets

and carries them into contact with the valve levers or stems. These tappets may be independently adjusted on their slides relative to the valves and relative to each other. Each tappet is made up of telescoping sections 47 and 48, so that the length of the tappet may be adjusted to control the period of opening the valves.

The actuating slide also carries the tappet rod 49 having tappets 50 and 51 thereon adapted to coact with the arm 52 on the rock shaft 53 which also carries an arm 54 connected to the valve rod or stem 55 of the drain valve 19, so that when the tappet rod is moved along by the actuating slide these tappets engage the arm 52, thereby opening the drain valve and holding it open for predetermined periods. These tappets are made up of adjustably connected sections 56 which may be adjusted relative to each other to regulate the period of opening and the tappets are adjustable on the rod to time the opening.

With the parts thus arranged, the washing water or fluid or suds, as it is usually called by laundrymen, is admitted in the desired quantity and the hot and cold rinsing water valve tappets are arranged so that the suds is admitted and the machine operated for the desired period and the water drained and the hot and cold rinsing water admitted for the desired periods.

In the arrangement illustrated the hot rinsing water is first admitted, the combination of hot and cold rinsing water admitted for a period and then the cold rinsing water is admitted, the drain valve being held open during this period so that the rinsing water is drawn off, thereby rinsing the clothes under the most satisfactory conditions. After the rinsing operation the drain valve closes and the tappet 42'' opens the bluing water valve admitting bluing in the desired quantities while the machine is still in operation, and finally the drain valve is opened to drain off the bluing water and the machine is stopped through the mechanism described, thus making the several operations entirely automatic.

I have shown in the accompanying drawing a machine designed for admitting the suds and hot and cold rinsing and bluing waters in any combination, the same being automatically controlled. Any desired combination of these might be employed, for instance, the suds valve might be opened by hand, if desired, and for certain washings it will be understood that it is not desired to blue.

With this arrangement of parts substantially any desired formula may be followed out, the tappets being adjustable to each other and independently adjustable to determine the time and period of opening.

I have illustrated and described my im-

provements in an embodiment which I consider very practical. I have not attempted to illustrate or describe various modifications which I contemplate, as I believe the disclosure made will enable those skilled in the art to which this invention relates to embody or adapt the same as may be desired.

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

1. In a washing machine, the combination of a tub, a drain valve therefor, a washing cylinder provided with a tubular journal, driving means for said washing cylinder, supply valves connected to deliver to said cylinder through said journal, an actuating slide, driving means for said slide, supply valve tappets actuated by said slide and slidably mounted so that they may be adjusted in relation to each other and to said supply valves, said tappets each comprising sections adjustably associated so that the length of the tappets may be adjusted to determine the period of opening of the supply valves, a drain valve tappet adjustably mounted on said actuating slide so that the actuation of said drain valve may be timed, said drain valve tappet comprising sections adjustably associated so that its length may be regulated, and means for controlling said cylinder driving means adjustably connected to said actuating slide.

2. In a washing machine, the combination of a tub, a drain valve therefor, a washing cylinder provided with a tubular journal, supply valves connected to deliver to said cylinder through said journal, an actuating slide, supply valve tappets actuated by said slide and slidably mounted so that they may be adjusted in relation to each other and to said supply valves, said tappets each comprising sections adjustably associated so that the length of the tappets may be adjusted to determine the period of opening of the supply valves, and a drain valve tappet adjustably mounted on said actuating slide so that the actuation of said drain valve may be timed, said drain valve tappet comprising sections adjustably associated so that its length may be regulated.

3. In a washing machine, the combination of a tub, a drain valve therefor, a washing cylinder provided with a tubular journal, driving means for said washing cylinder, supply valves connected to deliver to said cylinder through said journal, an actuating slide, driving means for said slide, supply valve tappets actuated by said slide and slidably mounted so that they may be adjusted in relation to each other and to said supply valves, a drain valve tappet adjustably mounted on said actuating slide so that the time of actuation of the drain valve may be controlled, and means for controlling said

cylinder driving means adjustably connected to said actuating slide.

4. In a washing machine, the combination of a tub, a drain valve therefor, a washing cylinder provided with a tubular journal, supply valves connected to deliver to said cylinder through said journal, an actuating slide, supply valve tappets actuated by said slide and slidably mounted so that they may be actuated in relation to each other and to said supply valves, and a drain valve tappet adjustably mounted on said actuating slide so that the time of actuation of the drain valve may be controlled.

5. In a washing machine, the combination of a tub, a drain valve therefor, a washing cylinder provided with a tubular journal, driving means for said washing cylinder, supply valves connected to said cylinder through said journal, an actuating slide, driving means for said slide, supply valve tappets actuated by said slide and each comprising sections adjustably associated so that the tappets may be adjusted to determine the period of opening of the supply valves, a drain valve tappet actuated by said slide comprising sections adjustably associated so that its length may be regulated, and means for controlling said cylinder driving means adjustably connected to said actuating slide.

6. The combination with a washing machine, of a drain valve therefor, supply valves for said washing machine, an actuating slide, driving means for said actuating slide, slide rods mounted at the sides of said actuating slide, supply valve tappets slidably mounted on said slide rods, said tappets each comprising sections associated so that the length of the tappets may be adjusted to determine the period of opening of the supply valves, a tappet rod actuated by said actuating slide, and a drain valve tappet adjustably mounted on said tappet rod so that the actuation of said drain valve may be timed, said drain valve tappet comprising sections associated so that its length may be regulated.

7. The combination with a washing machine, of a drain valve therefor, driving means for said washing machine, supply valves for said washing machine, an actuating slide, driving means for said actuating slide, slide rods mounted at the sides of said actuating slide, supply valve tappets slidably mounted on said slide rods, a drain valve tappet adjustably mounted on said slide so that the actuation of said drain valve may be timed, and means for controlling said washing machine driving means adjustably connected to said actuating slide.

In witness whereof, I have hereunto set my hand and seal.

CHARLES L. BRALEY. [L. s.]

Certificate of Correction.

It is hereby certified that in Letters Patent No. 1,586,403, granted May 25, 1926, upon the application of Charles L. Braley, of Chicago, Illinois, for an improvement in "Washing Machines," an error appears in the printed specification requiring correction as follows: Page 3, line 15, claim 1. after the word "deliver" insert the word *to*; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 5th day of October, A. D. 1926.

[SEAL.]

M. J. MOORE,
Acting Commissioner of Patents.