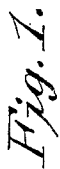


933,050.

3 SHEETS—SHEET 1.



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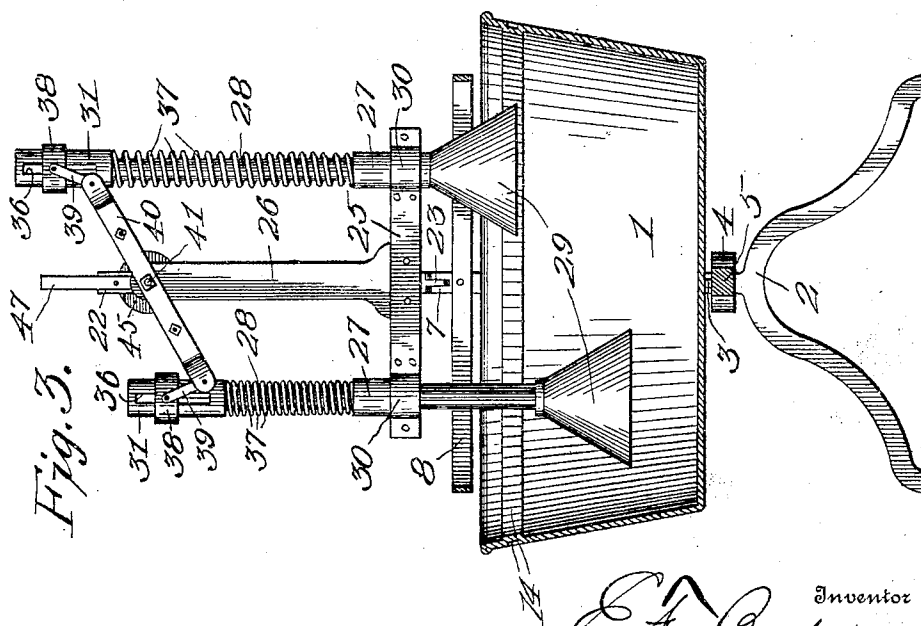
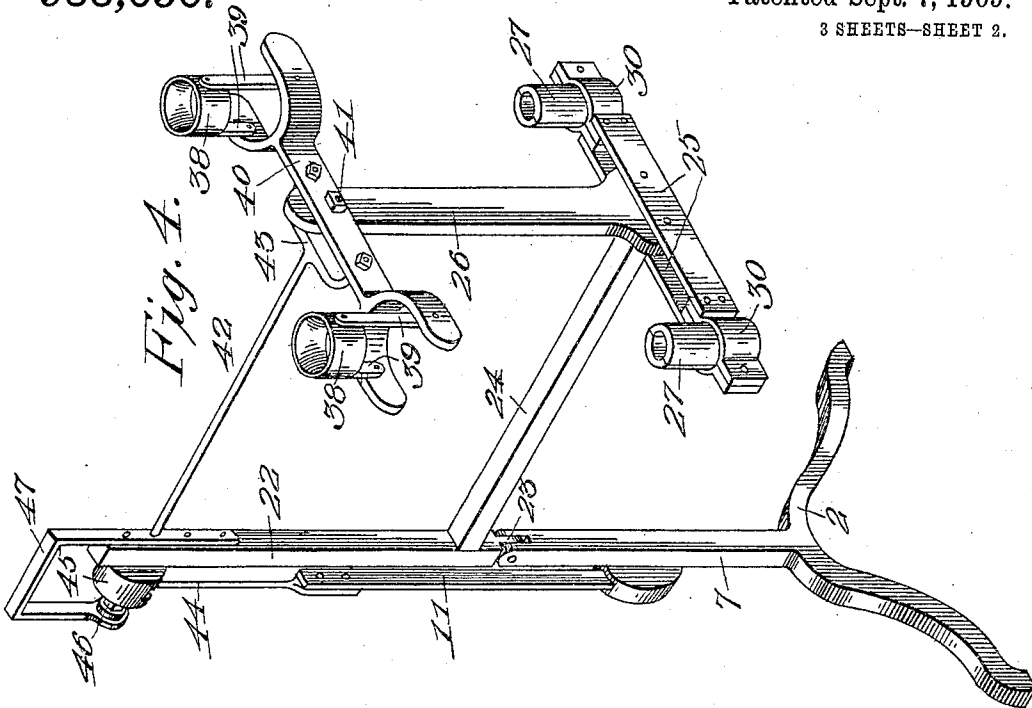
E. F. BEEBE.
WASHING MACHINE.

APPLICATION FILED JUNE 12, 1908.

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Patented Sept. 7, 1909.

3 SHEETS—SHEET 2.



Witnesses

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 3 SHEETS—SHEET 3.

Fig. 6.

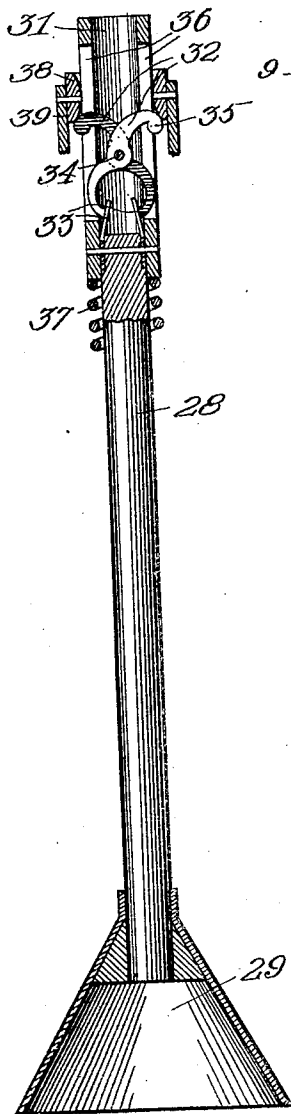


Fig. 7.

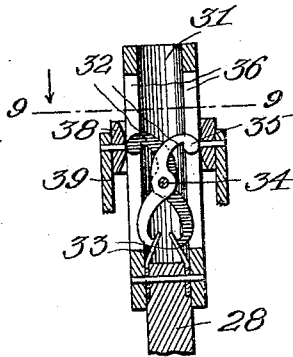


Fig. 9.

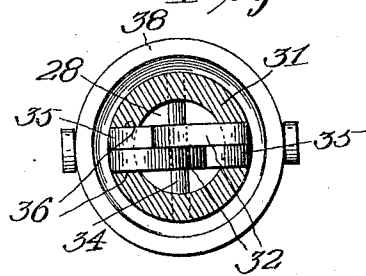


Fig. 10.

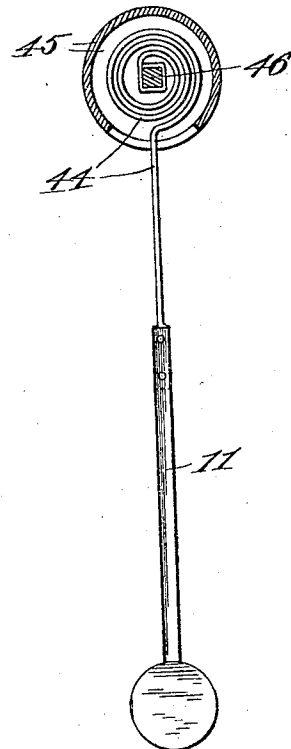
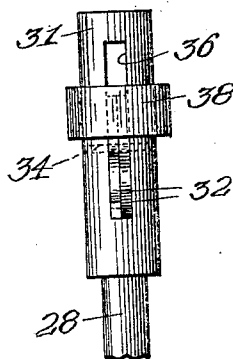


Fig. 8.



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UNITED STATES PATENT OFFICE.

EUGENE F. BEEBE, OF WICHITA, KANSAS.

WASHING-MACHINE.

933,050.

Specification of Letters Patent.

Patented Sept. 7, 1909.

Application filed June 12, 1908. Serial No. 438,181.

To all whom it may concern:

Be it known that I, EUGENE F. BEEBE, a citizen of the United States, residing at Wichita, in the county of Sedgwick and State of Kansas, have invented certain new and useful Improvements in Washing-Machines, of which the following is a specification, reference being had to the accompanying drawings.

10 This invention relates to improvements in washing machines of that class employing suction pounders.

The principal object of the invention is to provide an improved pounder operating and controlling mechanism which will actuate the pounder head or cup downwardly into the water in the tub and against the clothes to thereby compress the air in the head and force the water downwardly through the clothes, and which will automatically release the pounder from its depressing or actuating element and force it quickly upward or in an opposite direction so that a partial vacuum or suction is created beneath the head or cup of the pounder to cause the water to be drawn upwardly through the clothes, the repeated passage of the water and air through the clothes causing them to be quickly and thoroughly cleaned.

30 A further object of the invention is to provide improved means for intermittently rotating the tub.

With the above and other objects in view, the invention consists of the novel features of construction and the combination and arrangement of parts hereinafter fully described and claimed, and illustrated in the accompanying drawings, in which—

40 Figure 1 is a side elevation of the improved washing machine; Fig. 2 is a top plan view; Fig. 3 is a vertical section taken on the plane indicated by the line 3—3 in Fig. 2; Fig. 4 is a detail perspective of the operating lever and some of the parts which it operates; Fig. 5 is a detail perspective of the pawl device for intermittently rotating the tub; Fig. 6 is an enlarged detail section through one of the pounders or suction cups, its staff and the locking device for the latter; Fig. 7 is a detail sectional view through the locking device shown in Fig. 6, showing the parts in a different position; Fig. 8 is a

side elevation of the parts shown in Fig. 7; Fig. 9 is a detail transverse section taken on the plane indicated by the line 9—9 in Fig. 7; and Fig. 10 is a detail sectional view of the operating lever and co-acting parts.

In the drawings 1 denotes a tub rotatably mounted upon a suitable stand or support 2 here shown in the form of a substantially rectangular frame within which the tub is arranged. The tub is preferably provided upon the center of its bottom with a depending pivot 3 arranged in a suitable bearing 4 upon a horizontal bar 5, which latter connects the two upright side portions 6, 7 of the frame 2. Said side portions 6, 7 have their upper ends connected by an open top portion 8 and their lower ends are shaped to provide supporting feet 9 which are connected by braces 10 to the bar 5. While the above is the preferred manner of making the supporting frame or stand, it will be understood that it may be otherwise constructed.

The tub 1 is of substantially cylindrical form and preferably constructed of sheet metal. It is adapted to be intermittently rotated by a pawl and ratchet device actuated by a lever 11 hereinafter described. The tub operating device comprises a pawl 12 pivoted at one end to a lever 13 and adapted to engage an annular series of ratchet teeth 14 provided upon the exterior of the tub and preferably formed by crimping or stamping the side wall of the tub, as illustrated. The pawl 12 is held normally against the ratchet teeth by a spring 15 arranged between it and the lever 13, which latter is pivoted intermediate its ends, at 16, upon a supporting bar 17 attached to the side portion 7 of the stand 2. The other end of the lever 13 is connected by a link 18 to one end of a lever 19, which latter is pivoted intermediate its ends at 20 and has its other end bifurcated, as shown at 21 in Fig. 5, to loosely receive the lever 11. It will be seen that when the latter oscillates it will rock the lever 19 and the motion of said lever will be imparted through the link and lever connections 18, 13 to the pawl 12.

The clothes pounding or washing mechanism is carried by a vertically swinging support comprising a standard 22 pivotally or hingedly connected, as shown at 23, to the

side portion 7 of the stand 2 so that said mechanism may be swung upwardly out of the tub and then over to one side of the same so as to permit the clothes to be readily placed in or removed from the tub. Projecting inwardly from the lower or pivoted end of the standard 22 is an arm 24 having at its end a cross head 25 and an upright 26. The arm 24 is preferably of such length that the cross head 25 is disposed centrally over the tub when the standard 22 is in a vertical position and upon the outer ends of the cross head 25 are secured tubular guides 27 for the staffs 28 of pounders 29. As illustrated, the cross head 25 is composed of two plates and the guides 27 are secured between clamping plates 30 arranged between the outer ends of the plates of said cross head. The plungers 29 are in the form of cone-shaped cups having closed or air tight upper portions secured to the lower ends of the staffs 28 and open lower ends so that when they are forced downwardly into the water the air within them will be compressed and when raised out of the water they will produce a suction or vacuum, as hereinafter more fully explained.

Carried by the upper end of each of the staffs is a locking device consisting of a pair of catches 32 in the form of pivoted dogs and a pair of leaf springs 33 for actuating said catches, said catches and springs being arranged in hollow or recessed portions of the staffs 28, which portions are formed by sleeves 31 fixed to the upper ends of the staffs. The hollow sleeves or lock heads 31 are formed on opposite sides with slots 36 through which the catches or dogs are adapted to project so that they co-act with the actuating elements or collars hereinafter described. Said catches or dogs are pivoted intermediate their ends on a transverse pivot 34, their upper ends being shaped to provide rounded heads 35 adapted to move into and out of the slots 36 formed in the locking heads or sleeves 31, while the lower ends of said dogs are engaged by the springs 33, which latter actuate the dogs to project their ends 35 out of the slots 36.

The staffs 28 are actuated upwardly by coil springs 37 which surround them and are confined between the upper ends of the guide tubes 27 and the lower ends of the locking heads or sleeves 31. The upward movement of the staffs 28 is limited by the engagement of the upper end of the compression and suction cup 29 with the cross head 25.

The staffs 28 are actuated downwardly by actuating elements or members 38 in the form of collars which surround the locking heads or sleeves 31 and are connected by links 39 to the bifurcated outer ends of a lever or rock arm 40 pivoted at its center at 41 to the upper end of the upright 26. The lever 40 is actuated by a shaft 42 jour-

naled in the upper portion of the standard 22 and having one of its ends forked to provide spaced branches 43 which are secured to the lever 40 at points equally distant from its pivot 41. The actuating member or collar 38 is adapted to slide freely upon the locking head or sleeve 31 and its inner face or wall at its ends is beveled or inclined inwardly so that when said collar is forced against the ends 35 of the dogs 32 said ends of the latter will be forced into the locking head or sleeve 31 as said collar passes said dogs. The tension of the springs 33 which project said dogs is such that when the collar 38 is arranged above the projecting ends 35 of the dogs and is forced downwardly the head or sleeve 31, the staff 28 and the pounder or cup 29 will be carried downwardly with the collar 38 until the resistance offered by the clothes and water beneath the plunger or cup and by the spring 37 overcomes the tension of the springs 33, whereupon, the collar 38 will force the ends 35 of the dogs inwardly and pass said dogs so that the spring 37, which is brought under compression by the downward movement of the staff 28, will expand and force the staff and the plunger or cup upwardly. It will be seen, therefore, that when the downward pressure of the pounder heads or cups 29 upon the water and clothes in the tub reaches a predetermined point the resistance offered by the clothes and water will overcome the tension of the springs 33 and the collars 38 will release the spring catches or dogs and thereby unlock the pounder staffs from their depressing or actuating elements or collars 38 and the springs 37 will thereupon quickly elevate or retract the pounders to produce a partial vacuum or suction beneath the pounder heads or cups, which suction tends to draw the water through the clothes and thereby remove the dirt from the latter. A further advantageous feature of this mechanism results from the pounders having a yieldable or automatically releasable connection with their operating or depressing elements so that they will adapt themselves to the clothes in the tub and there will be, consequently, no danger of injury to the clothes or breakage to the mechanism should the clothes in the tub accumulate or become packed at one or more points.

The lever 11 has a weight at its lower end and its upper end is secured to the projecting end of a coil spring 44 arranged within a cylindrical casing 45 and having its inner end fixed to the squared portion 46 of the shaft 42. The spring 44 yieldably connects the lever 11 and the shaft 42 and it also permits the said lever 11 to be swung laterally or to one side of the upright side portion 7 of the stand 2 when the standard 22 and the pounder mechanism thereon are swung away

from or off of the tub. Said portion or end 46 of the shaft 42 is supported by a bracket 47 arranged upon the upper end of the standard 22. In the bottom of the tub 1 is a drain 5 opening closed by a plug or cap 48.

In operation, the clothes to be washed and a suitable quantity of water or soap suds are placed in the tub 1 while the pounding or washing mechanism is thrown back by tilting the standard 22 outwardly upon its pivot 23. After the clothes are in position in the tub the standard 22 is swung inwardly so that the pounders or cups 29 rest upon the clothes in the tub and the lever 11 is then engaged with the forked end of the lever 19 and oscillated by hand or by any suitable device so that through its connecting spring 44 it will rock the shaft 42 and the lever 40. The latter through the links 39 will move the 20 actuating members or collars 38 vertically to reciprocate the staffs 28 of the pounders or cups 29. As above explained, when the collar 38 is above the locking dogs 32 and is moved downwardly said dogs will lock the 25 staff to said collar until the resistance offered by the spring 37 and by the clothes and water beneath the plunger or cup of said staff is sufficient to overcome the tension of the springs 33, whereupon the ends 35 of the 30 dogs move into the locking head or sleeve 33 and allow the collar 38 to pass beneath said dogs. The instant the staff is thus released from the collar 38 the spring 37 will force said staff and its plunger or cup upwardly 35 and out of the water in the tub. As the plunger or cup 29 moves downwardly it compresses the air within it and forces the water through the clothes and when it moves upwardly it creates suction or vacuum. This 40 alternate forcing and sucking of the water through the clothes causes the dirt to be quickly and effectively removed from the clothes. When the collar 38 is moved upwardly by the lever 40 it will slip over the 45 projecting ends 35 of the dogs 32, the upward movement of the staff 28 being limited by the engagement of the top of the plunger or cup 29 with the cross head 25, as above explained. It will be seen, therefore, that 50 as the rock arm or lever 40 is oscillated the staffs 28 will be alternately raised and lowered and that they will be locked to the actuating members or collars 38 until the pressure beneath their pounders or cups releases 55 them and that when they are released they will be lifted by the springs 37 and held in their elevated positions until they are again locked to said actuating members or collars. As the lever 11 oscillates it will actuate the 60 pawl and ratchet mechanism above described so that the tub will be intermittently rotated and the clothes within the latter will be brought beneath the pounders or cups 29.

While I have shown and described the

lever 11 as a means for operating the rock shaft 42, it will be understood that any other suitable operating device may be substituted for the same.

While the preferred embodiment of the invention is shown and described in detail, it will be understood that the invention is not limited to the specific construction set forth and that various changes in the form, proportion and minor details may be resorted 70 to without departing from the spirit or sacrificing any of the advantages of the invention.

Having thus described the invention what is claimed is: 80

1. In a washing machine, a tub, a pounder, means for depressing the pounder, a spring for elevating the pounder, and a locking means for operatively connecting the pounder to said depressing means, said locking means 85 being adapted to automatically release the pounder from the depressing means.

2. In a washing machine, a pounder, means for depressing the pounder, a spring for elevating the pounder and a spring catch for 90 operatively connecting the pounder and said depressing means.

3. In a washing machine, a tub, a pounder, an operating means for the pounder and a locking means for operatively connecting 95 the pounder and its operating means, said locking means being adapted to automatically release the pounder from the operating means.

4. In a washing machine, a tub, a pounder 100 carrying support movable toward and from the tub, a pounder upon said support, means for operating the pounder and a locking means for operatively connecting the pounder to its operating means, said locking 105 means being adapted to automatically release the pounder from its operating means.

5. In a washing machine, a pounder having a staff and a cup at one end thereof, a collar for actuating the staff in one direction, 110 means for actuating the staff in the other direction, means for operating said collar, and a locking means for connecting the collar to the staff for simultaneous movement, said locking means being adapted to auto- 115 matically release the staff.

6. In a washing machine, a pounder, an operating collar for actuating the pounder in one direction, means for actuating the pounder in the other direction, means for 120 operating said collar, and a spring device for locking the pounder to the collar for movement therewith, said device being adapted to automatically release the pounder.

7. In a washing machine, a pounder, a 125 staff therefor, a spring for retracting the pounder, an actuating means for depressing the pounder staff, means for operating said actuating means, and a spring catch for locking the pounder staff to the actuating means. 130

8. In a washing machine, a pounder, an actuating collar for depressing the same, means for operating said collar, means for retracting the pounder, and a spring catch
5 for locking the pounder to the actuating collar.

9. In a washing machine, a tub, a support having a guide, a pounder having a staff slidable in said guide and a compression and
10 suction cup at its lower end, a spring for elevating the pounder, an actuating collar for depressing the pounder, means for operating said collar, and an automatically releasable locking means for connecting the actuating
15 collar to the pounder staff.

10. In a washing machine, a tub, a support, a pounder having a staff slidable in said support, and a compression and suction
20 cup at its lower end, a spring for elevating the pounder, an actuating collar on the staff, a spring catch for locking the staff and collar together and means for actuating the collar.

11. In a washing machine, a tub, a support, a pounder having a staff slidable in
25 said support, and a compression and suction cup at its lower end, a spring for elevating the pounder, an actuating collar on the staff, a spring catch upon the staff to co-act with said collar, means for limiting the upward
30 movement of the staff and a lever for actuating said collar.

12. In a washing machine, a support, a pounder having a staff slidable therein, means for elevating the pounder, an actuating
35 collar on the staff, a spring catch for locking the staff and collar together, and a lever for actuating said collar.

13. In a washing machine, a support having guides, pounders having staffs slidable
40 in said guides, springs for elevating said pounders, a rocking lever pivoted at its center, actuating collars loosely connected to the ends of said lever and arranged upon said staffs, spring catches for locking the
45 staffs and collars together and means for oscillating said lever.

14. In a washing machine, a tub, a support having spaced guides, pounders having staffs slidable in said guides and compres-

sion and suction cups at their lower ends, 50 springs for elevating said pounders, means for limiting the upward movement of the pounders, a rocking lever, actuating collars upon the staffs and loosely connected to the
55 ends of said rocking lever, spring catches for locking the staffs and collars together and means for actuating said rocking lever.

15. In a washing machine, a tub, a vertically swinging support, a guide, means connecting said support and guide, a pounder
60 having a staff slidable in said guide, and a compression and suction cup at its lower end, a spring for elevating said pounder, an actuating collar for depressing said pounder, means for operating said collar, and a spring
65 catch for locking said collar and pounder staff together.

16. In a washing machine, a tub, a support, a pounder having a staff slidable in said support and a compression and suction
70 cup at its lower end, a spring for elevating the pounder, an actuating collar upon said staff, a spring catch for locking the staff and collar together, means for limiting the upward movement of the staff, a lever loosely
75 connected to said collar for actuating the same and means for rocking said lever.

17. In a washing machine, a pounder having a staff provided with a hollow or recessed
80 portion, an actuating element slidable upon the staff, means for operating said element, and a retractable catch in the hollow or recessed portion of the staff to co-act with said element.

18. In a washing machine, a pounder hav- 85 ing a staff provided with a hollow or recessed portion, an actuating element slidable upon the staff, means for operating said element, and a spring pressed, pivotally mounted, retractable catch in the hollow or recessed
90 portion of the staff to co-act with said element.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

EUGENE F. BEEBE.

Witnesses:

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J. G. MILTNER.