R. C. FRITZ.

POUNDER LAUNDRYING MACHINE.

APPLICATION FILED SEPT. 24, 1914.

1,176,953.

Patented Mar. 28, 1916.

2 SHEETS—SHEET 1.

Fig. 1.

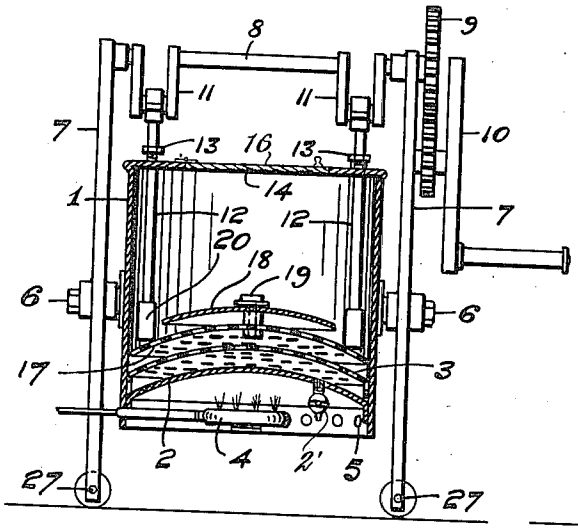


Fig. 2.

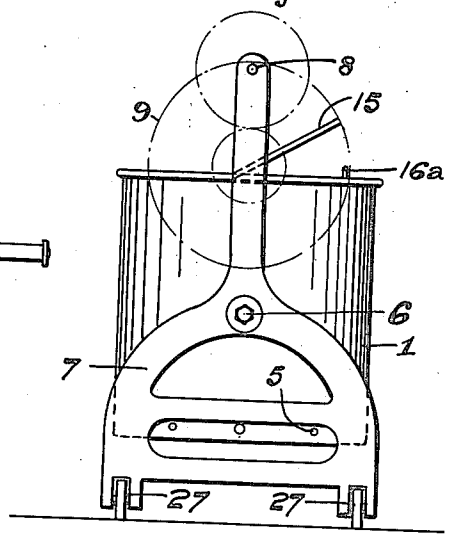


Fig. 3.

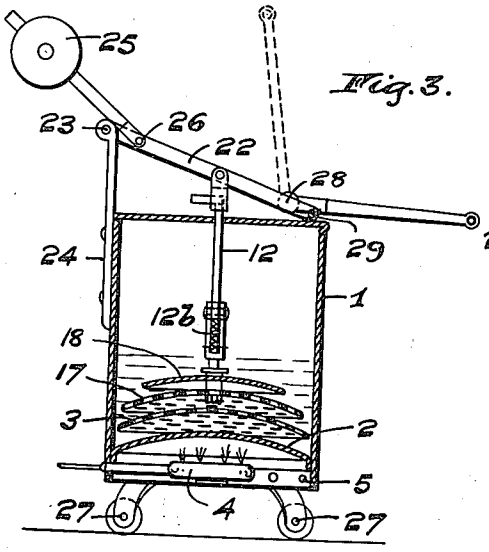
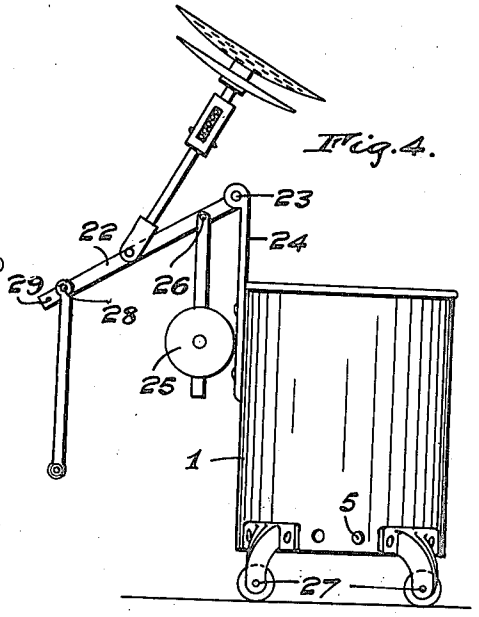


Fig. 4.



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POUNDER LAUNDRYING MACHINE.

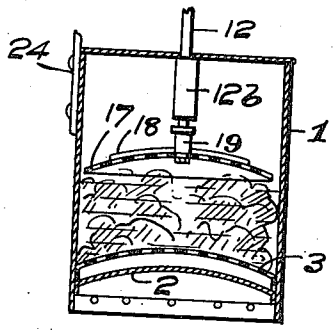
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2 SHEETS—SHEET 2.

Fig. 3a.



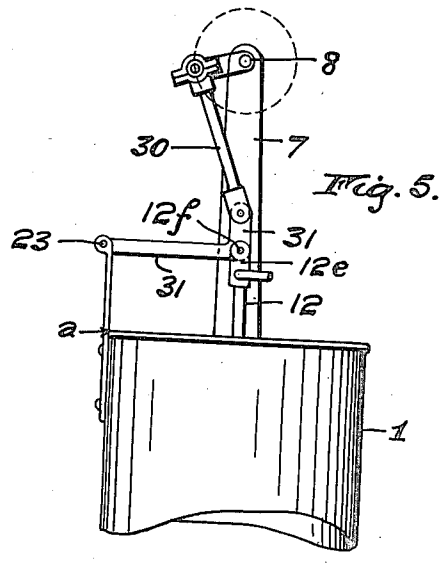


Fig. 5.

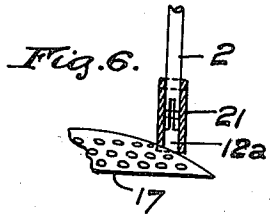


Fig. 6.

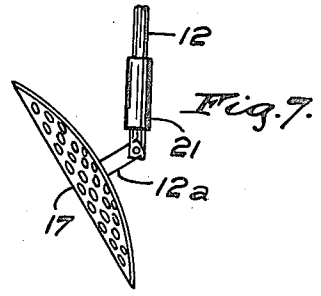


Fig. 7.

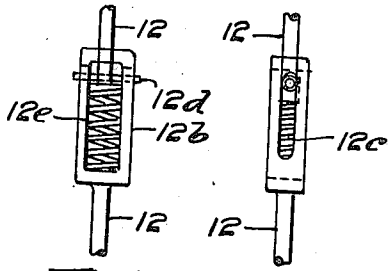


Fig. 8.

Fig. 9.

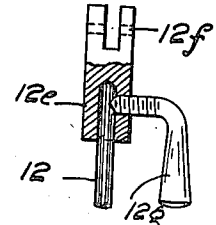


Fig. 10.

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UNITED STATES PATENT OFFICE.

ROBERT CARL FRITZ, OF WATERLOO, LIVERPOOL, ENGLAND.

POUNDER LAUNDRYING-MACHINE.

1,176,953. Specification of Letters Patent. Patented Mar. 28, 1916.

Application filed September 24, 1914. Serial No. 863,394.

To all whom it may concern:

Be it known that I, ROBERT CARL FRITZ, a subject of the King of Great Britain, and a resident of Waterloo, Liverpool, England, have invented certain new and useful Improvements in Pounder Laundrying-Machines, of which the following is a specification.

This invention has reference to improvements in and relating to disinfecting, washing, starching, dyeing, and like machines, and the invention has primarily for its objects and effects to provide improvements hereinafter described in connection with machines of the type referred to by which the required operations are carried out more simply and conveniently than heretofore; the chance of damaging the articles is reduced to a minimum, and the machine itself is generally more convenient, and cheaper to construct and operate, than machines at present in use.

In the following description of the machine the improvements under this invention are comprised, and are described in a preferred form for a perforated double pounder washing machine, but alterations and modifications may be made to adapt it to various purposes.

According to this invention, the machine comprises a vessel or cylinder of suitable material such as wood, iron, or the like which will not injure the materials to be washed or treated, and which may be of any convenient size. The vessel is provided with a reciprocating pounder consisting of a perforated disk adapted to be moved up and down in the vessel by any suitable system of cranks or levers. Mounted above the perforated pounder is a smaller disk which is not perforated, but which is adapted to act as a valve to the central perforations of the reciprocating pounder, such upper disk being of smaller diameter than the perforated pounder and so mounted and supported with reference to the pounder that it may have a slight vertical play relatively thereto, so that on the downward stroke the disk valve is moved upward by the pressure of the water in the vessel rising through the perforations of the pounder, the greater portion of the water so passing being deflected sidewise against the walls of the vessel, and thus preventing splashing. On the upward movement the disk valve closes on the perforated pounder and creates a partial vacuum beneath the perforated pounder and in the central zone of the vessel, the water passing downwardly through the peripheral perforations of the pounder and causing the clothes, which have been compressed on the downward stroke, to follow the upward movement of the pounder. In this way the clothes are alternately compressed, and released and distended, and a thorough permeation of the clothes by the water effected.

Various types of machines in accordance with this invention are illustrated in the accompanying drawings, Figure 1. being a vertical section through a crank operated machine, the vessel for the clothes being pivotally mounted so as to oscillate. Fig. 2. is a side view of the machine illustrated in Fig. 1. Fig. 3. is a vertical section through a modified form of the machine in which the reciprocation of the pounder is effected by a lever, Fig. 3ª being a fragmentary detail showing the pounder of the machine in Fig. 3. at the uppermost point of its stroke. Fig. 4. is an outside view of the machine illustrated in Fig. 3., showing the pounder and operating lever thrown over to give access to the interior of the vessel. Fig. 5. is a fragmentary view of a modified form of the vessel combining the crank arrangement shown in Fig. 1. with the fixed or non-pivotal vessel of Fig. 3. Figs. 6. and 7. are fragmentary detail views of the swivel connection for enabling the pounder in Fig. 1. to be swung to one side for the removal of the clothes. Figs. 8. and 9. are fragmentary side and end views, respectively, of a spring connection for fitting to the pounder operating rod or rods, and Fig. 10. is a detail in section of the means provided for enabling the pounder rod and its operating mechanism to be readily connected or disconnected.

Referring first to the forms illustrated in Figs. 1 and 2, the machine comprises a vessel or cylinder 1 of some suitable material such as wood, iron, copper, brass, or the like, of any convenient size, the vessel being provided with a flat, concave, or corrugated bottom 2. In the form shown this bottom 2 is concave, and is provided with a similarly concave detachable false bottom 3, which is perforated and sits loosely by its peripheral flange on the fixed bottom 2, so as to leave a space between. The vessel may be provided with any suitable means for

heating the water therein. In the form shown, this is effected by a gas burner 4, and perforations 5 are provided in the skirt of the vessel 1 to permit of the fumes escaping. The vessel 1 is pivotally supported at 6 in side frames 7 of any suitable construction, within which is mounted the crank shaft 8 driven through gear wheels 9 from, say, a hand wheel 10. The cranks 11 are connected to rods 12 passing through glands 13 in the inclosing top 14 of the vessel, such top being provided with a manhole or pivoted lid 16 to give access to the interior, means being provided such as the locking eye 16^a, for holding such lid closed when the machine is in operation. The rods 12 are connected to a perforated pounder or disk 17 which, in the form shown, is concave, and mounted above this perforated pounder 17 is a disk valve 18 which is not perforated, and is so mounted above the pounder 17, say upon a flanged stud 19, or the like, that it is capable of slight vertical play relatively to such pounder. This disk valve 18 may be of metal, india-rubber, or any other suitable material which will permit it to close on the inner perforations of the pounder and act as a valve thereto. The rods 12 are, preferably, connected to the pounder 17 through swivel connections 20, shown in detail in Figs. 6 and 7, the rods 12 being pivotally connected to projections 12^a on the pounder 17 and provided with a sleeve 21, which when slid up to the position shown in Fig. 7 enables the pounder to be swung around and the clothes to be removed or inserted beneath the pounder, the sleeve 21 when slid down over the straightened pivotal joint and resting on the pounder 17 as shown in Fig. 6, acting to maintain a rigid connection between the rods 12 and the pounder 17.

The clothes are inserted between the pounder 17 and the false bottom 3, and the pounder is then reciprocated in the vessel 1 by operating the hand wheel 10, the vessel being filled with water, which is heated by the gas burner 4, or other heating means. The clothes will thus be alternately compressed between the pounder 17 and the false bottom 3 and released. On the downward compression stroke the valve disk 18 will rise from the pounder 17 owing to the water passing up through the perforations in the latter. On the return upward stroke the valve disk 18 closes on the pounder 17, masking the inner perforations and creating a partial vacuum in the central zone of the vessel, the water passing down through the outer perforations in the pounder 17 and entering among the clothes from the side, lifting them and causing them to follow the upward movement of the pounder 17. In this way a complete permeation of the clothes is effected, and the water thoroughly circulated therethrough. By fitting a false perforated bottom 3 the clothes are kept out of direct contact with the fixed bottom 2 of the vessel and thus prevented from being burnt or damaged, while a further advantage accruing from this detachable fitting 3 lies in the fact that it provides a certain resiliency in the downward compression stroke of the pounder 17, giving flexibility to the working of the machine. This flexibility or resilient action of the machine may be still further assured by providing a spring connection in the rods 12 such as illustrated in detail in Figs. 8 and 9. In this arrangement the rods are divided as shown, one end socketed at 12^b and provided with a compression spring 12^c engaged by the other end of the rod 12, a pin 12^d connected to the upper rod being slidably guided in slots 12^e in the socket. With such a resilient fitting, should too great a quantity of clothes be inserted in the machine, no harm would result.

Wringing or mangling rollers may be added to the machine if desired. The waste valve 21 is provided for running off the water.

Owing to there being no scrubbing or rubbing action on the clothes, but only a compressing and releasing action, wear and tear on the articles is avoided.

In the form shown in Figs. 3, 3^a, and 4, the pounder 17 is operated by a single rod 12 coupled to a lever 22 pivoted at 23 to a standard 24 bolted to the receptacle 1, which in this form is fixed, that is, not oscillating. A balance weight 25 is pivotally connected at 26 to the lever, 22, which is operated by a handle 27. By working the lever 22 up and down about the pivot 23, a similar reciprocating action of the pounder is obtained to that previously described. In order to enable the hand part 27 of the operating lever to be folded up out of the way when not in use, it may be pivoted at 28 to the lever 22, and rest when in operation upon a pin 29, such connection, while enabling the lever to be reciprocated, permitting of it being folded up to the dotted position. In this form the spring foot connection 12^b shown in Figs. 8 and 9 is preferably fitted. The detail view, Fig. 3^a, shows the pounder raised, the disk valve closed, and the clothes distended in following the raised pounder. To provide for complete removal of the pounder mechanism from the receptacle a fitting such as that illustrated in Fig. 10 may be provided, the thrust rod 12 being detachably socketed into a piece 12^e pivoted to the lever 22 at 12^f, and a grip screw 12^g being provided for nipping the rod 12 in the socket. In place of disconnecting the pounder from its operating lever 22, by pivoting the balance weight lever at 26 to the operating lever 22 the whole pounder operating mechanism

may be swung out about its pivot 23 to the position shown in Fig. 4. The machine may be carried on suitable rollers, 27.

In the modification shown in Fig. 5 the crank shaft 8, operated as previously described with reference to Fig. 1, is coupled by a connecting rod 30 to a bent lever 31 pivoted at 23, the thrust rod 12 being detachably connected to a grip socket fitting 12^e, as previously described, which is pivoted at 12^f to the lever 31. Such an articulation enables a crank operated mechanism to be used in connection with a non-pivotally mounted receptacle 1, but if desired by forming the pivot 23 at the point *a* indicated in Fig. 5 and pivotally mounting the receptable 1, then by disconnecting the socket connection 12^e and withdrawing the pounder and its rod 12, the articulation 31 will permit of the receptacle being canted over for emptying the water.

I claim:

1. A washing machine comprising in combination, a cylinder having a stationary convexed bottom, a removable perforated convexed bottom within the cylinder, means for supporting the removable bottom in spaced relation with the stationary bottom, a perforated reciprocating pounding member of a diameter equal to the diameter of the interior of the cylinder, a reciprocating valve member of less diameter than the pounding member positioned above the pounding member and adapted to move into engagement therewith on the up stroke of the pounding member.

2. A washing machine comprising in combination, a cylinder having a convexed bottom, a removable convexed bottom in the cylinder, the removable convexed bottom having perforations to allow fluid to flow therethrough, a convexed reciprocating pounding member perforated and operating above the removable bottom, means adjacent the periphery of the reciprocating pounding member for moving the same within the cylinder, and a convexed valve member of less diameter than the diameter of the pounding member, means for supporting the valve member with relation to the pounding member, whereby the same will move into and out of engagement therewith for closing substantially all of the perforations of the pounding member on the up stroke thereof.

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

ROBERT CARL FRITZ.

Witnesses:
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A. J. DAVIES.