W. BARTHOLOMEW.

OUTLET VALVE FOR WASHING MACHINES.

APPLICATION FILED FEB. 8, 1915.

1,241,326.

Patented Sept. 25, 1917.

2 SHEETS—SHEET 1.

Fig. 3.

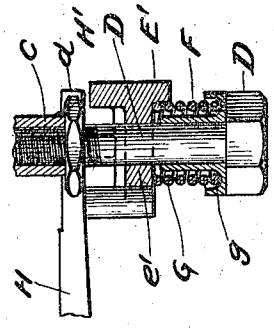


Fig. 1.

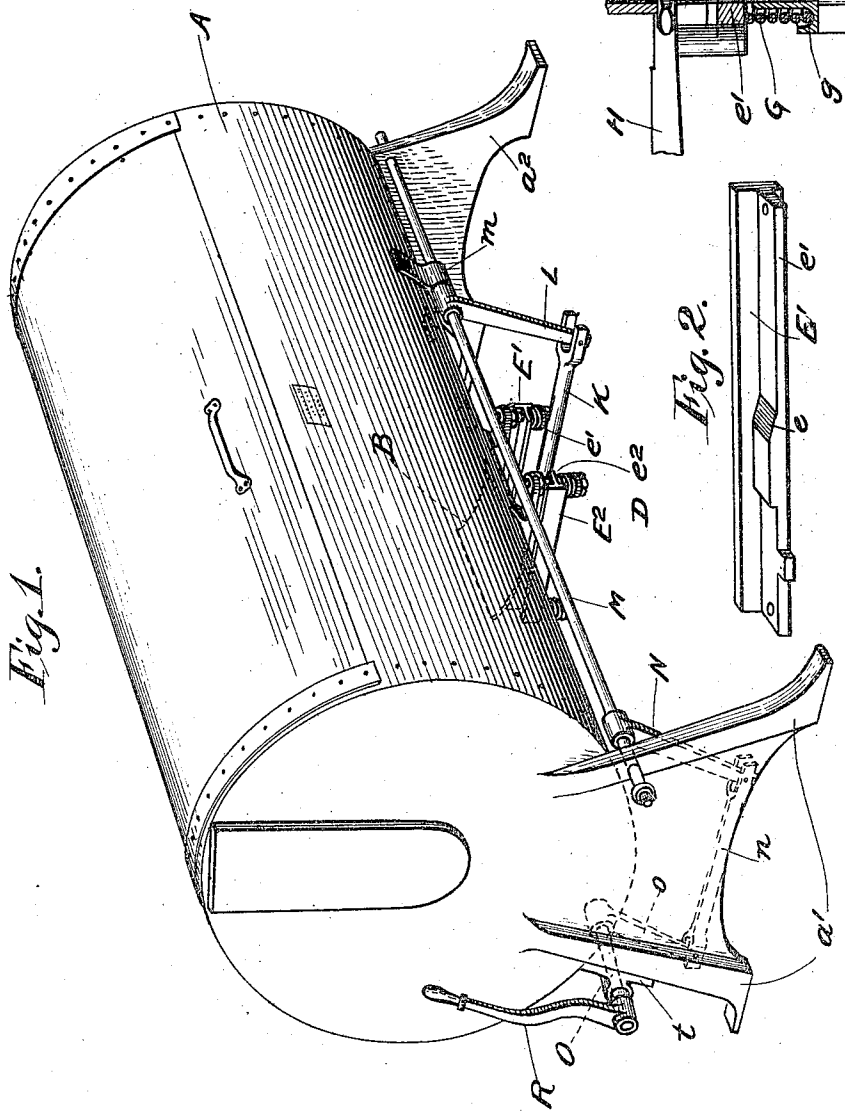


Fig. 2.

Witnesses:

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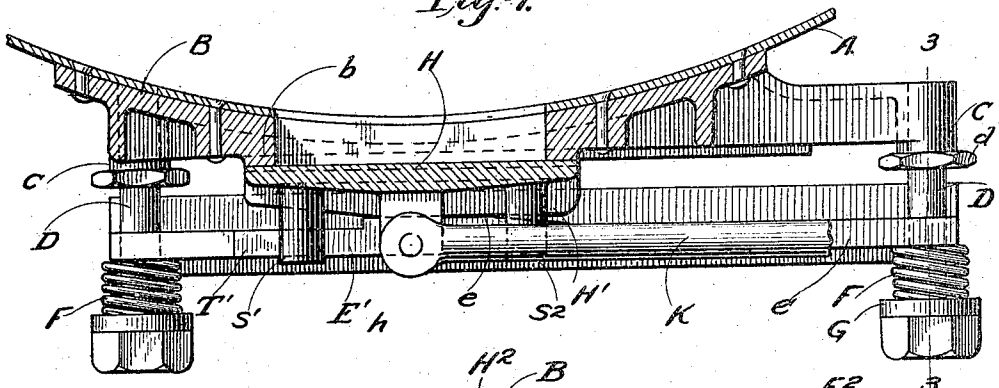
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2 SHEETS—SHEET 2.

Fig. 4.



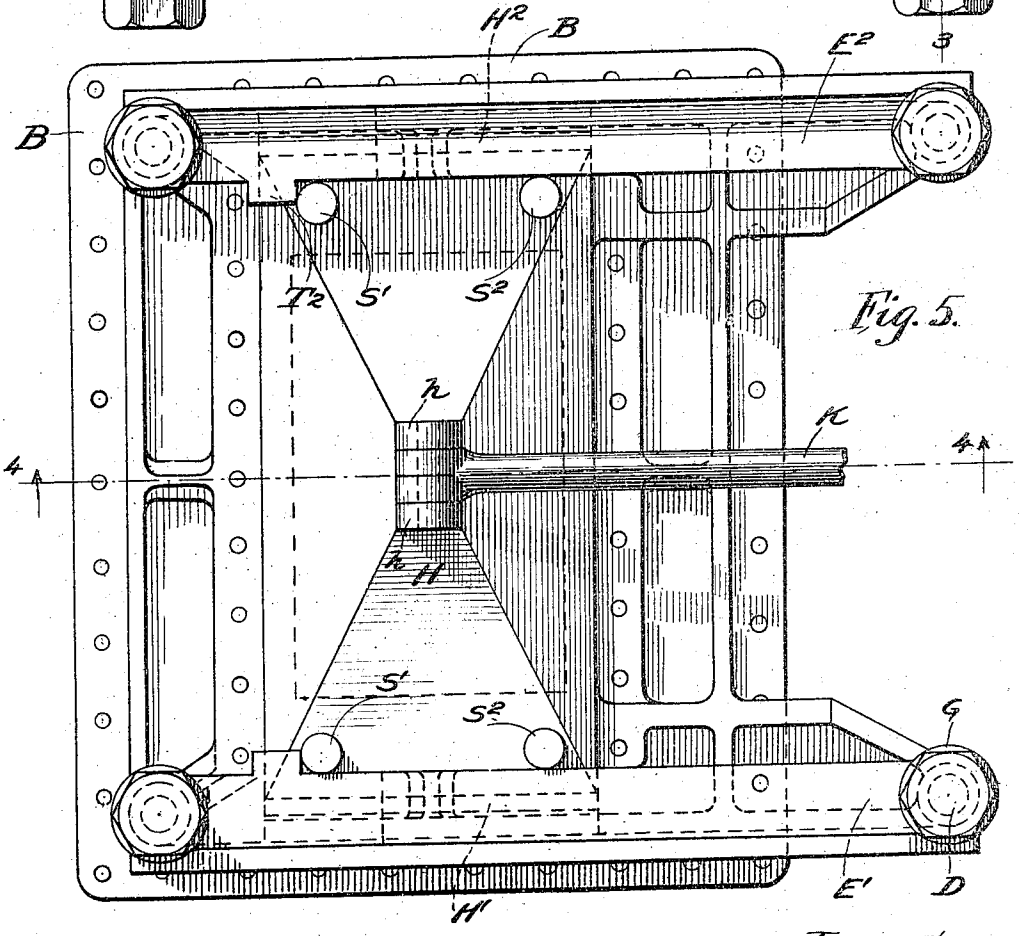


Fig. 5.

Witnesses:

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UNITED STATES PATENT OFFICE.

WILLIAM BARTHOLOMEW, OF CHICAGO, ILLINOIS, ASSIGNOR TO TROY LAUNDRY MACHINERY COMPANY, A CORPORATION OF NEW YORK.

OUTLET-VALVE FOR WASHING-MACHINES.

1,241,326. Specification of Letters Patent. Patented Sept. 25, 1917.

Application filed February 8, 1915. Serial No. 6,776.

To all whom it may concern:

Be it known that I, WILLIAM BARTHOLOMEW, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Outlet-Valves for Washing-Machines, of which the following is a specification.

My invention relates in general to slide valves, and more particularly to an improved outlet valve for the tanks of washing machines.

In the use of washing machines it is customary to supply fresh water and suds to the tank each time a new batch of articles is to be washed. It is desirable that the time required to change the water and suds should be as short as possible, in order to minimize the interruption of the operation of the machine.

The primary object of my invention is to promote the above-referred to desirable result by providing an outlet valve for the tanks of washing machines, which may be quickly opened and closed, and which will permit the rapid discharge of the dirty water and suds.

A further object of my invention is to provide an improved slide valve which will be firmly held in tightly closed position against its seat, and which may be easily moved away from its seat to fully open the outlet which it controls.

A still further object of my invention is to provide an improved discharge valve for the tanks of washing machines which will be simple in construction, durable in use, and efficient in operation.

My invention will be more fully disclosed hereinafter with reference to the accompanying drawings, in which the same is illustrated and described in a convenient and practical form, and, in which,—

Figure 1 is a perspective view of the tank of a cylinder washing machine, having my improved outlet valve applied thereto;

Fig. 2 is a side elevational view of one of the tracks for the valve;

Fig. 3 is an enlarged detail sectional view on the line 3—3 of Fig. 4;

Fig. 4 is an enlarged sectional view on the line 4—4 of Fig. 5; and,

Fig. 5 is a plan view looking upwardly with respect to Fig. 4.

Similar reference characters are used to designate similar parts in the several figures of the drawings.

Reference letter A designates the cylindrical tank of a washing machine, in which is contained the usual rotary perforated cylinder (not shown) for containing the articles to be washed. The heads of the tank are provided with any suitable supporting means, such for instance as pairs of feet a^1 and a^2, adapted to rest on the floor of the laundry. The construction and operation of the washing machine need not be described in detail in order that my invention may be fully understood, inasmuch as my invention is not limited in its application to any particular type of washing machine, nor in fact to washing machines, as it may be used to control outlet passageways in general.

Reference letter B designates a plate which is secured to the bottom of the cylindrical wall of the tank by any suitable means, as for instance rivets. *b* designates a valve seat which surrounds an outlet passageway in the plate B. The plate B is preferably made of cast metal, and has formed integrally therewith at each of its corners a downwardly opening socket C, having screw threads on its inner surface. Supported by each of the tubular sockets C is a bolt D, having its upper screw threaded end engaged with the screw threads in the socket. A lock nut *d* is preferably provided on each bolt D to engage the lower end of the supporting socket, to more securely maintain the connection of the bolt with the socket.

Tracks E^1 and E^2 are supported at opposite sides of the plate B by means of the bolts D. Each of the tracks is provided with holes at its ends, through which the bolts at the front and rear of the plate B pass. The ends of the tracks rest upon coiled springs F, one of such springs surrounding each bolt D below the end of the track through which it extends. In order that each spring F may be held concentrically around the bolt which supports it, a sleeve G, having a circular seat *g* in its lower end, surrounds each bolt and rests upon its head, the spring F being located on the outside of the sleeve with its lower end resting in the seat at the lower end thereof. Each of the tracks E^1 and E^2 is provided with an inwardly projecting hori-

zontal flange e^1 and e^2, respectively, upon which is supported a valve H of a size corresponding to that of the seat b surrounding the passageway in the plate B. Depending from opposite sides of the valve H are flanges H^1 and H^2, which overlie and rest upon the inwardly projecting horizontal flanges e^1 and e^2 of the tracks. The depending flanges on the valve are inclined upwardly toward the rear edge thereof, as shown in Fig. 4, so as to coöperate with upwardly projecting wedge surfaces e on the flanges of the tracks alining with the passageway through the plate B.

Depending from the center of the valve H are spaced ears h, between which is pivotally connected the inner end of a rod K, the outer end of such rod being pivotally connected to the lower end of a crank arm L fixed to a rock-shaft M, suitably journaled on the exterior of the tank A. The rock-shaft M may be supported by means of a bracket m, secured to the cylindrical wall of the tank A, and by extending its ends through holes in the opposite supporting legs of the tank. Fixed to and depending from the rock-shaft M, preferably adjacent one end thereof, is a crank arm N, the lower end of which is connected by a link n with the lower end of a crank arm o, fixed to a rock-shaft O. The rock-shaft O is suitably journaled upon the tank A, as by means of a bracket t, fixed to the rear supporting leg of the adjacent head of the tank. R designates a hand lever fixed to the rock-shaft O.

In order that the valve H may be guided in its reciprocations into and out of registry with the outlet passage, it is provided with pairs of depending studs S^1 and S^2 at its opposite sides, which engage the inner edges of the horizontal flanges e^1 and e^2 of the tracks. Lugs T^1 and T^2 are provided at the inner ends of the tracks, which project into the paths of the rear studs S^1 so as to limit the inward movement of the valve when it has reached its fully closed position.

The operation of my improved slide valve is as follows: In order to open the valve to permit the discharge of the liquid contents from the tank, the hand lever R is oscillated toward the left in Fig. 1. Such movement of the hand lever oscillates the rock-shaft O, and with it the crank arm o, which in turn oscillates the crank arm N through the medium of the connecting link n. The oscillation of the crank arm N rocks the shaft M, and thereby oscillates the depending crank arm L in a direction away from the tank. The valve H is consequently moved toward the right upon the supporting tracks by means of the rod K. The opening movement of the valve H permits the upper surface thereof to move downwardly away from the valve seat b, owing to the inclined portions of the depending flanges h^1 and h^2 thereon moving relatively to the downwardly inclined wedge surfaces e on the inwardly projecting flanges e^1 and e^2 of the tracks. The valve, therefore, in its movement to fully open position does not contact with the valve seat except at the beginning of its opening movement. Wear upon the valve and its seat is therefore avoided.

In order to close the valve the hand lever R is moved toward the right in Fig. 1, which through the interposed connections moves the valve H toward the left. When the valve approaches a position of registry with the valve seat b, it is lifted upwardly into close contact therewith by reason of the inclined flanges h^1 and h^2 thereof riding upwardly on the supporting wedge surfaces e on the tracks. The springs upon which the ends of the track are supported serve to retain the valve tightly in contact with the valve seat, and to compensate for any wear which may occur either on the valve or its seat.

From the foregoing description it may be observed that I have invented an improved outlet valve for the tanks of cylindrical washing machines, and for similar purposes, which may be quickly moved into open or closed position, and which will be tightly held when closed in contact with its coöperating seat. It will be further observed that my improved valve, and its coöperating seat, is subjected to minimum wear as the valve is raised into contact with the seat during its closing movement. It will be further evident that my improved valve is resiliently supported in closed position, thereby maintaining a tight joint with its seat.

While I have described more or less in detail the specific form in which I have illustrated my invention as embodied, yet I do not wish to be understood as limiting myself thereto, as I contemplate changes in form, proportion of parts, and substitution of equivalents, as circumstances may require, or as may be deemed expedient.

I claim:—

1. The combination with a valve seat surrounding a passageway, of a valve coöperating with said seat to open and close the passageway therethrough, a track upon which said valve is movably supported, resilient means for supporting said track, and coöperating wedge surfaces on said valve and track for forcing said valve when in registry with said seat into contact therewith.

2. The combination with a valve seat surrounding a passageway, of a valve coöperating with said seat to open and close the passageway therethrough, a track upon which said valve is movably supported, and

springs engaging said track for moving the same toward said valve seat and thereby resiliently retaining said valve in tightly closed position.

3. The combination with a valve seat surrounding a passageway, of a slide valve cooperating with said seat to open and close the passageway therethrough, a track upon which said valve is movably supported, cooperating wedge surfaces on said valve and track for forcing said valve when in registry with said seat into contact therewith, and springs engaging said track for moving the same toward said valve seat and thereby resiliently retaining said valve in tightly closed position.

4. The combination with a valve seat surrounding a passageway, of a valve coöperating with said seat to open and close the passageway therethrough, a pair of parallel tracks on opposite sides of and spaced away from said valve seat, means for resiliently supporting said tracks, flanges on the opposite sides of said valve resting upon said tracks, and coöperating wedge surfaces on said flanges and tracks for forcing said valve when in registry with said seat into contact therewith.

5. The combination with a valve seat surrounding a passageway, of a valve coöperating with said seat to open and close the passageway therethrough, a pair of parallel tracks on opposite sides of and spaced away from said valve seat, flanges on the opposite sides of said valve resting upon said tracks, coöperating wedge surfaces on said flanges and tracks for forcing said valve when in registry with said seat into contact therewith, and springs engaging said tracks for moving the same toward said valve seat and thereby resiliently retaining said valve in tightly closed position.

6. The combination with a valve seat surrounding a passageway, of a valve coöperating with said seat to open and close the passageway therethrough, a pair of parallel tracks on opposite sides of and spaced away from said valve seat, flanges on the opposite sides of said valve resting upon said tracks, coöperating wedge surfaces on said flanges and tracks for forcing said valve when in registry with said seat into contact therewith, and guides on the opposite side of said valve from said seat extending between and engaging said tracks to retain said valve in a predetermined path of movement.

7. The combination with a valve seat surrounding a passageway, of a valve coöperating with said seat to open and close the passageway therethrough, a pair of parallel tracks on opposite sides of and spaced away from said valve seat, flanges on the opposite sides of said valve resting upon said tracks, coöperating wedge surfaces on said flanges and tracks for forcing said valve when in registry with said seat into contact therewith, guides on said valve engaging said tracks to retain said valve in a predetermined path of movement, and coöperating stops on said tracks and valve to limit the movement of the valve when it reaches a position in registry with said seat.

8. The combination with a valve seat surrounding a passageway, of a slide valve cooperating with said seat to open and close the passageway therethrough, a pair of parallel tracks on opposite sides and spaced away from said seat, bolts secured to said seat extending through holes in said tracks to support the same, springs yieldingly supporting said tracks in predetermined relation to said valve seat, and coöperating wedge surfaces on said valve and tracks for forcing said valve when in registry with said seat into contact therewith.

9. The combination with a valve seat surrounding a passageway, of a slide valve cooperating with said seat to open and close the passageway therethrough, a pair of parallel tracks on opposite sides and spaced away from said seat, bolts secured to said seat extending through holes in said tracks to support the same, coöperating wedge surfaces on said valve and tracks for forcing said valve when in registry with said seat into contact therewith, and springs surrounding said bolts upon which said tracks rest.

10. The combination with a valve seat surrounding a passageway, of a slide valve coöperating with said seat to open and close the passageway therethrough, a pair of parallel tracks on opposite sides and spaced away from said seat, bolts secured to said seat extending through holes in said tracks to support the same, coöperating wedge surfaces on said valve and tracks for forcing said valve when in registry with said seat into contact therewith, springs surrounding said bolts upon which said tracks rest, and coöperating stops on said valve and tracks to limit the movement of said valve when it reaches a position in registry with said seat.

In testimony whereof, I have subscribed my name.

WILLIAM BARTHOLOMEW.

Witnesses:
C. M. LEARY,
J. J. HOERGER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."