

Jan. 11, 1927.

1,614,117

P. E. GELDHOF

DRAINAGE VALVE FOR CLOTHES WASHING MACHINES

Filed June 1, 1925

FIG. 1.

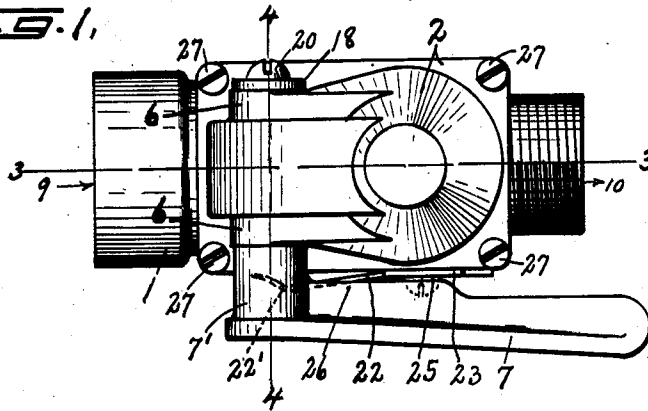


FIG. 2.

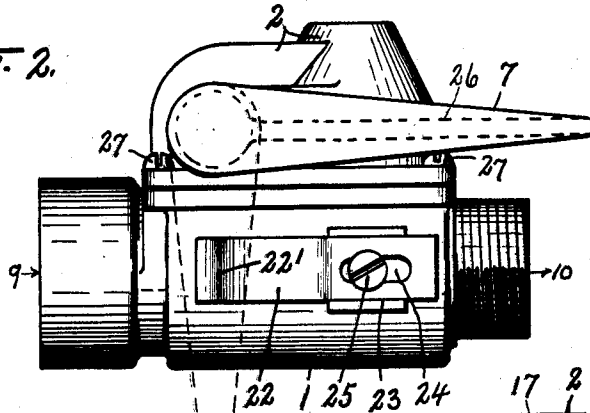


FIG. 3.

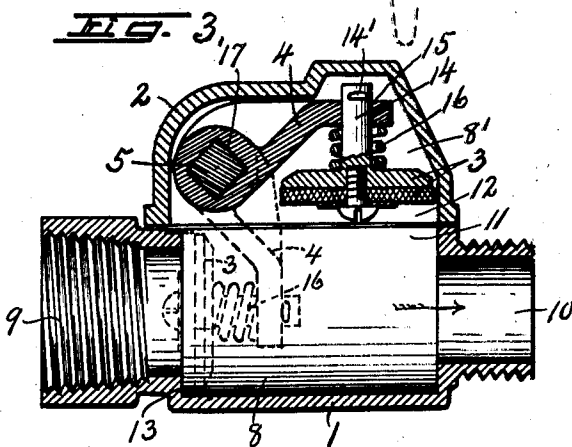
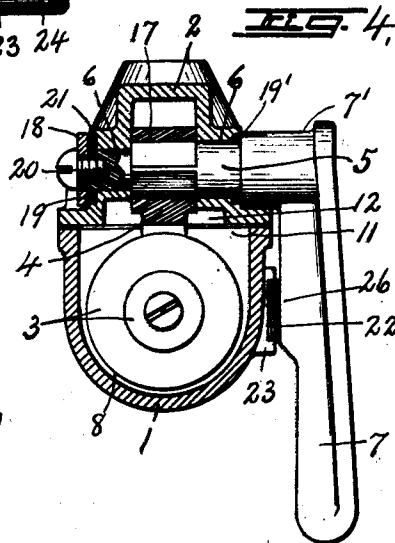


FIG. 4.



WITNESS

H. H. H. H.

INVENTOR

P. E. Geldhof

BY *Derrison & Thompson*
ATTORNEYS

Patented Jan. 11, 1927.

1,614,117

UNITED STATES PATENT OFFICE.

PETER E. GELDHOF, OF SYRACUSE, NEW YORK, ASSIGNOR TO SYRACUSE WASHING MACHINE CORPORATION, OF SYRACUSE, NEW YORK, A CORPORATION OF NEW YORK.

DRAINAGE VALVE FOR CLOTHES-WASHING MACHINES.

Application filed June 1, 1925. Serial No. 34,193.

This invention relates to a valve mechanism adapted to be used more particularly in connection with the drainage outlet of a combined clothes washer and centrifugal drier of a class set forth in my application Serial No. 28,254, filed May 7, 1925.

In the use of drainage outlet valves of this character for clothes washers and analogous machines it is important that the drainage passage be entirely free from obstructions when the valve is open so that lint and other more or less solid matter which may be liberated in the process of washing may drain off freely and rapidly from the tub. It sometimes happens, however, that lint and small pieces of fabric and other foreign matter will catch and accumulate upon the valve in sufficient amounts to materially interfere with the free drainage of the washing fluid from the vat and the main object of the present invention is to support the moving parts of the valve mechanism wholly upon a detachable portion of the valve case and at one side thereof so that it may be easily and quickly removed for repairs or cleansing without disconnecting the valve case from the tub or the main body of the case from the discharge conduits.

Another object is to provide means cooperating with the handle of the valve operating mechanism for retaining the valve in its closed position.

Other objects and uses relating to specific parts of the device will be brought out in the following description.

In the drawings:

Figures 1 and 2 are respectively side elevations taken at right angles to each other.

Figures 3 and 4 are sectional views taken respectively on lines 3-3 and 4-4, Figure 1.

As illustrated, this valve mechanism comprises a main section —1— and a cover section —2— for receiving a suitable valve —3— and its operating mechanism consisting in this instance of a lever —4— mounted upon a supporting shaft —5— which is journaled in suitable bearings —6— and is provided with an operating handle —7— at the exterior of the sections —1— and —2—.

The main section —1— is provided with a lengthwise valve chamber —8— having an inlet opening —9— in one end and an outlet

opening —10— in its opposite end, the side of the main section —1— adjacent the cover section —2— being substantially flat and provided with a lengthwise opening —11— between the inlet —9— and outlet —10— and of sufficient size to permit the free passage of the valve —3— and its operating lever —4— therethrough.

The cover section —2— is provided with a valve chamber —8'— of sufficient size to receive and inclose the valve —3— and its operating lever —4— together with a portion of the shaft —5—, the inner side of said cover section being provided with an opening —12— registering with the opening —11— and of sufficient size to permit the passage of the valve —3— and lever —4— therethrough to and from a position wholly within the cover section so that when the valve is fully opened, it, together with its operating means, will lie in a plane wholly at one side of the main passage through the section —1—.

The main section —1— is provided with an annular valve seat —13— at the inner end of the inlet —9— and of less diameter than the valve —3— to allow the latter to seat flatwise thereagainst when closed, said valve seat being disposed in a plane at right angles to the axis of the main passage and parallel with but at the outside of the shaft —5— as shown in Figure 3.

The valve —3— is preferably of the circular disk type yieldingly mounted upon the lever —4— and for this latter purpose is provided with a stem —14— slidable in an opening —15— in said lever and spring pressed inwardly by a coiled spring —16— which is interposed between the lever and circular portion of the valve —3— around the stem —14— to yieldingly hold the valve to its seat —13— when closed.

A stop pin —14'— is inserted through an opening in the outer end of the stem —14— to engage the outer face of the lever —4— for limiting the inward movement of the valve.

The portions of the shaft —5— engaged in the bearings —6— are cylindrical to permit the shaft to turn easily in said bearings, the end of the shaft opposite the handle —7— being of relatively smaller diameter than the portion adjacent said handle to

allow said shaft to be inserted from the handle side inwardly through an angular opening —17— in the hub of the lever —4—, the smaller end of said shaft being provided with a washer —18— and a packing —19— for engaging the outer end face of the adjacent bearing —6— and are held in place by a clamping screw —20— which engages a threaded socket in the adjacent end of the shaft as shown in Figure 4 for holding the shaft against axial displacement in one direction.

The washer —18— is preferably keyed to the shaft —5— to rotate therewith while the packing —19— is seated in an annular recess —21— in the adjacent face of the cover plate to reduce the liability of leakage of water around the adjacent end of the shaft.

The hand lever —7— is provided with a hub —7'— of greater diameter than the adjacent end of the shaft —5— for engaging the outer end face of the adjacent bearing —6— to limit the axial movement of the shaft in the other direction.

A packing ring —19'— is seated in a recess in the end face of the bearing —6— adjacent the inner end of the hub —7'— to additionally restrain the leakage of water at the corresponding joint.

The intermediate portion of the shaft —5— is angular in cross section to correspond with the angular socket —17— in which it is inserted for locking the two parts together to rotate in unison or rather for imparting motion to the lever —4— and valve —3— when the lever —7— is turned in one direction or the other.

The opening in the cover section —2— for receiving the hub of the lever —4— is of substantially the same width as the hub so that its opposite end walls may engage the adjacent end faces of the hub of the lever to hold the latter against axial movement relatively to the case when adjusted for use.

The end of the lever —4— upon which the valve —3— is mounted is offset outwardly a sufficient distance to bring the valve —3— wholly within the cover section —2— when the valve is opened as shown in Figure 3 and also to cause the valve to seat flatwise against its seat —13— when closed as shown by dotted lines in Figure 3.

In other words, the valve and its operating mechanism are arranged to move through an arc of substantially 90 degrees from its extreme open to its extreme closed position and vice versa so that when the valve is opened it will assume a position substantially parallel with the axis of the main section —1— and when closed will assume a position at substantially right angles to said axis.

The object of the spring —16— is to allow a limited movement of the lever —4— after the valve has been closed against its

seat —13— so as to exert closing pressure upon the valve when the lever is locked in its valve-closing position.

Any suitable means may be employed for retaining the valve in its closed position and for this purpose a spring plate —22— is slidably mounted in a suitable guide —23— on the outer face of the section —1— adjacent the handle —7— and provided with a slot —24— for receiving a clamping screw —25— by which the plate is held in its adjusted position.

The other end of the plate is deflected outwardly at —22'—, shown by dotted lines in Figure 1, to project into the path of movement of a rib —26— on the inner face of the operating handle —7— as shown in Figure 4 for frictionally holding the hand lever and parts operated thereby including the valve supporting lever —4— and valve —3— in their closed positions.

The valve case as a whole is usually mounted in an upright position so that when the valve is opened the weight of the lever —7— will tend to hold it in its opening position, it being understood that the valve supporting lever —4— and the operating lever —7— extend in the same direction from the shaft —5—.

The cover section —2— is secured to the adjacent side of the main section —1— by screws —27— or equivalent fastening means which will permit the cover section, together with the shaft —5—, lever —4— and valve —3— carried thereby to be removed or replaced as a unit whenever desired without disturbing any of the other parts of the fixture.

When the valve case with the parts thereon are arranged in an upright position as usual the free end of the spring plate —22— extends upwardly from its supporting guide —23— so as to bring the shoulder —22'—, Figure 2, at about the same level as the axis of the shaft —5— or in position to be engaged by the rib —26— of the lever —7— when the valve is closed as shown by dotted lines in Figure 2, and by full lines in Figure 4.

The shoulder —22'— also serves as a cam cooperating with the rib —26— to urge the valve to its seat —13— when closed.

Operation.

When the valve is closed its supporting lever —4— and its operating lever —7— will be disposed in a plane at substantially right angles to the main section —1— but when opened they will assume a position substantially parallel with said axis, but wholly at one side of the main section with the movable parts within the removable section —2— thereby leaving the main passage entirely free from obstructions so far as the valve and its operating mechanism is concerned.

In case of accumulation or clogging of the interior of the valve case by lint and small pieces of fabric and the like, the cover section with the parts carried thereby may be easily and quickly removed by simply removing the screws —27— thus permitting access to the main passage and also to the valve and its operating parts for cleansing or repairs.

10 What I claim is:

In a valve mechanism of the character described, the combination with a main section having an opening in one side and a valve seat near one end of the opening, and a chambered cover section removably secured to the main section across said opening, of a rock shaft journaled in and extending outwardly beyond opposite side walls of the cover and having its intermediate portion angular in cross section, a crank arm mounted upon the angular portion of the rock

shaft and engaged with opposite walls of said chamber to hold it against axial movement on the shaft, means on one end of the shaft cooperating with the adjacent wall of the chamber to hold said shaft against axial movement in one direction, means including a hand crank on the opposite end of the shaft cooperating with the adjacent wall of the chamber for holding the shaft against axial movement in the opposite direction, one of said means being removable to permit endwise withdrawal of the shaft from the cover and also from the crank arm, and a valve yieldingly mounted on the crank arm at one side of the shaft for movement into and out of engagement with the valve seat as the shaft is rocked in reverse directions.

In witness whereof I have hereunto set my hand this 20th day of May, 1925.

PETER E. GELDHOF.