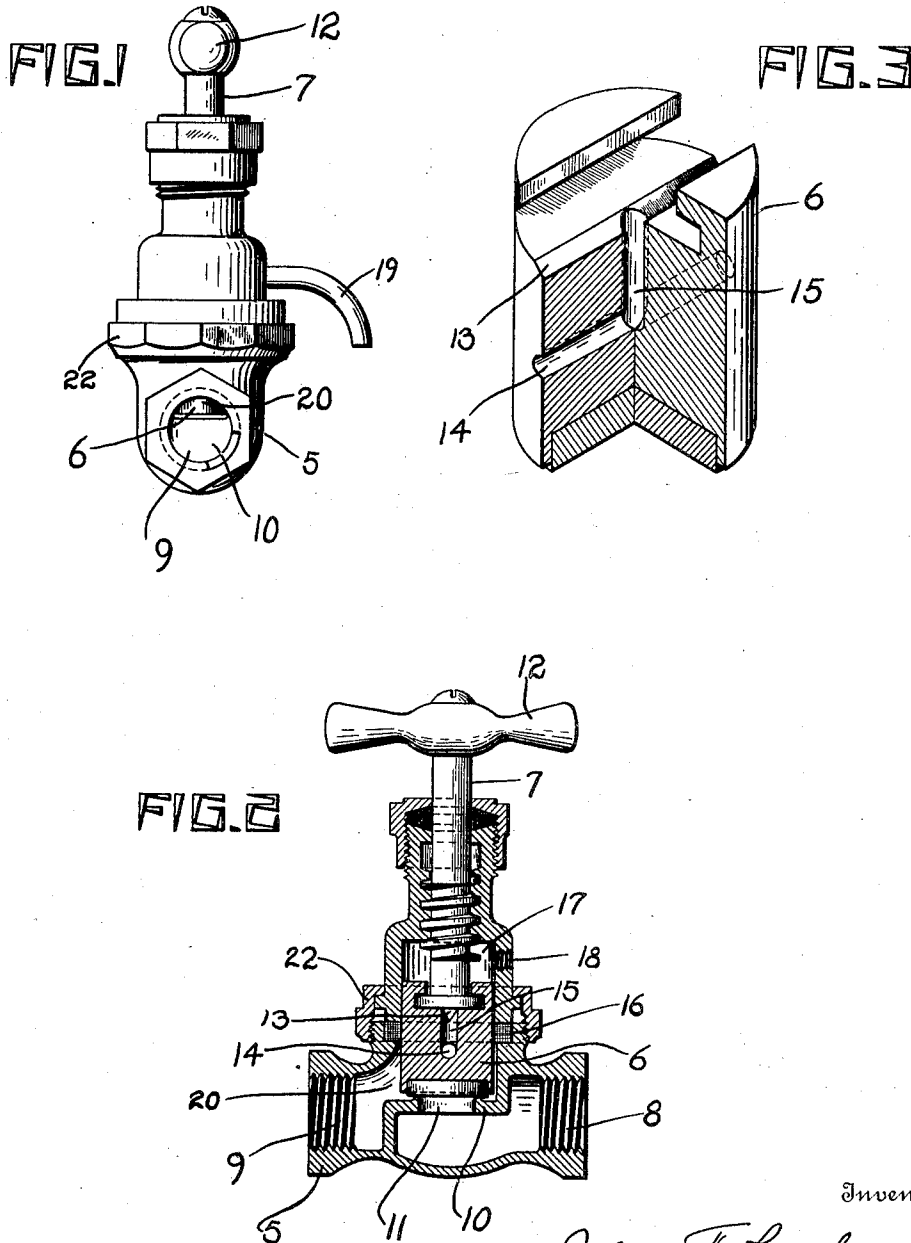


J. F. LAMPING.
STOP COCK AND DRAIN VALVE.
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1,067,259.

Patented July 15, 1913.



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UNITED STATES PATENT OFFICE.

JOHN F. LAMPING, OF CINCINNATI, OHIO.

STOP-COCK AND DRAIN-VALVE.

1,067,259.

Specification of Letters Patent.

Patented July 15, 1913.

Application filed February 29, 1912. Serial No. 680,572.

To all whom it may concern:

Be it known that I, JOHN F. LAMPING, a citizen of the United States of America, and resident of Cincinnati, county of Hamilton, and State of Ohio, have invented certain new and useful Improvements in Stop-Cocks and Drain-Valves, of which the following is a specification.

This invention is an improvement in stop cocks and drain valves.

An object of the invention is to improve the construction and operation of the valve disclosed in my Patent No. 853,246, of May 14th, 1907.

A further object is to produce a valve of improved construction in which water collecting pockets are eliminated from within the valve casing.

The valve disclosed in the patent above referred to is provided with a ported diaphragm, which separates the inlet from the delivery port of the valve casing and on which a cylindrical plunger or block seats, for the purpose of closing the port in the diaphragm and cutting off the flow of water through the valve. The valve casing is so constructed that a chamber is provided above a washer which surrounds the plunger, and a second chamber is provided below the washer. The former chamber communicates with the waste discharge port, and the latter chamber communicates with the delivery port of the valve, even when the plunger is moved to close the port in the diaphragm. Communication is established between these two chambers, when the valve is closed, by means of a slot, which extends transversely across the head of the plunger, and is of such depth that it is normally exposed by the washer when the plunger is seated on the diaphragm. This construction is objectionable, because the sharp edges of the plunger, produced by the slot, cut the washer and tend to destroy its effectiveness.

The principal object of my invention is to overcome this difficulty.

In the drawings accompanying and forming a part of this application, Figure 1 is a side elevation of a valve embodying my invention. Fig. 2 is a sectional elevation of the valve illustrated in Fig. 1. Fig. 3 is a diagrammatic perspective view of a plunger which forms a detail of my invention, the plunger being shown with a quarter section removed.

The valve illustrated consists of a casing

5, a cylindrical block or plunger 6 mounted in the casing, and a stem 7 for actuating the plunger. The casing is provided with an admission port 8 and a delivery port 9, which are separated by means of a diaphragm 10, which is provided with a centrally located port 11. The plunger 6 is adapted to seat on the diaphragm to close the port and is located in a cylindrical extension of the valve casing, which is of such diameter, that it provides an easy sliding fit for the plunger. The stem 7 is provided with the usual operating handle 12 and projects downwardly through a suitably packed aperture, which is provided in the head of the extension formed on the casing. The stem is provided with the usual worm, which causes it to reciprocate longitudinally of the extension when the handle is turned. The stem is secured to the plunger in the same manner as that disclosed in my prior patent, so that the plunger reciprocates with the stem, but does not turn during its reciprocations. A V-shaped slot 13 extends diametrically across the head of the plunger 6, and communicates with an aperture 14, which extends diametrically through the plunger, by means of a longitudinally extending passage 15, which is provided in the plunger 6. The aperture 14 is so located in the plunger, that it is exposed below a washer 16, which surrounds the plunger, when the plunger is seated on the diaphragm 10. The washer 16 is located between the valve casing proper and the extension and forms a water tight joint between the plunger and the extension. A chamber 17 is located above the plunger in the extension of the casing and communicates with a waste discharge port 18, which may be tapped, as illustrated in Fig. 2, and may be provided with a drain spout 19, as illustrated in Fig. 1. The body portion proper of the casing is so formed that it provides a chamber 20 below the washer 16 and around the plunger 6, when the plunger is seated on the diaphragm. The aperture is exposed below the washer, when the plunger is seated, or when the valve is closed, and, consequently coöperates with the passage 15 and the slot 13 to establish communication between the chambers 17 and 20. This arrangement permits the waste water in the piping communicating with the delivery port of the valve to be discharged back through the delivery port and out through the waste discharge port 18.

One of the principal advantages gained by my present invention is that the packing 16 is never engaged by the sharp edges of the slot 13, or by the edges of the undercut or inverted T-shaped groove formed in the plunger, for the purpose of securing the plunger and the stem 7. With the construction shown in my prior patent, the packing was cut and mutilated, not only by the edges of the drain slot provided in the plunger, but also by the edges of the undercut and inverted T-shaped slot formed in the plunger, since the construction was such that these edges must of necessity engage the packing each time the valve was closed. In my present invention, I am able to so proportion the plunger 6, that the edges of the slot 13 never come in contact with the washer, and, consequently I eliminate the objectionable features inherent in my previous invention, since the edges of the apertures 14 have no detrimental effect on the packing, their cutting length being comparatively short. It will be understood, of course, that the circular edges of the apertures 14 may, if desired, be beveled, or rounded for the purpose of preventing them from cutting the packing.

As illustrated the extension of the valve casing is so formed and so secured to the body of the casing, that the washer 16 can be compressed and thereby adjusted from time to time to compensate for wear or shrinkage. This is accomplished by providing an annular recess in the outer edge of the extension, into which the packing 16 may be inserted, and by providing an annular projection on the extension, which is of slightly less diameter than the recess and is adapted to seat upon the packing. The extension is secured to the body portion of the casing by means of a pipe coupling 22, the threads of which engage threads formed on the body of the casing 5, and the re-entrant flange of which engages a projecting flange formed on the extension.

The chambers 17 and 20 are of such size, that they prevent water from collecting around the plunger and from rendering the valve inoperative during cold weather, by the formation of ice. The chamber 17 is of such length that during the operation of opening the valve the plunger is withdrawn into it, to such a position that the aperture 14 is located on the upper side of the washer when the valve is fully open. This shuts off communication between the delivery port 9 and the waste discharge port 18 when the valve is opened.

The worm on the stem 7 of the valve is preferably so designed that during the valve closing operation the last quarter turn of the stem will uncover the ends of the aperture 14 and will place it into communication with the chamber 20. With this arrange-

ment, the first quarter turn of the stem during the operation of opening the valve, will move the aperture 14 to such a position that it will be closed by the packing 16 and in this manner shut off communication between the chambers 20 and 17. The first motion of the stem 7 opens the valve, and, consequently exposes the chamber 20 to water pressure, prior to the time that the aperture 14 is covered by the packing 16. This will cause a spurt of water to pass through the aperture 14, and the passage 15, and out through the port 18, when the valve is opened, and will thereby insure the removal of dirt, or other foreign material, from the drainage passages.

In accordance with the patent statutes I have described and illustrated one embodiment of my invention, its details of construction and its principles of operation, but I desire it to be understood that various changes, modifications and substitutions may be made without departing from the spirit and scope of my invention as set forth in the appended claims.

What I claim is:

1. A stop cock and drain valve comprising, a casing having an inlet and a delivery port, a ported diaphragm between the inlet and delivery ports, a chamber located above the diaphragm on the delivery port side thereof, and a waste discharge port formed in the casing and communicating with the upper end of the chamber, a plunger reciprocally mounted in the chamber for opening and closing the port in the diaphragm and provided with a diametrically extending aperture, a longitudinally extending passage communicating with the aperture and a diametrically extending slot across the head thereof communicating with the passage and serving to establish communication between the waste discharge port and the delivery port when the plunger is moved to close the port of the diaphragm, a packing between the casing and the plunger, so located that it uncovers the ends of the aperture when the plunger is seated on the diaphragm and closes the ends of the aperture when the plunger is moved away from the diaphragm, and means having a loose connection with the plunger, whereby the latter is moved to different positions along the chamber.

2. A stop cock and drain valve comprising, a casing having an inlet and a delivery port, a ported diaphragm between the inlet and delivery ports, a chamber located above the diaphragm on the delivery side thereof, and communicating, near its top, with a waste discharge port formed in the casing, a plunger reciprocally mounted in the chamber for opening and closing the port in the diaphragm and provided in its upper end with an undercut slot, a diametrically extending V-shaped slot formed in the bottom

of the undercut slot, an aperture extending diametrically of the plunger and a longitudinally extending passage formed in the plunger and connecting the V-shaped slot and the aperture, a packing surrounding the plunger and so located between it and the casing that it uncovers the ends of the aperture when the plunger is seated on the diaphragm and closes the ends of the aperture when the plunger is lifted off of the diaphragm, 10 and a rotatable valve stem, for actuating the plunger, projecting through the casing and having a disk formed thereon and engaged by the undercut slot of the plunger.

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