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The figure contains five technical drawings of a mechanical device, labeled Fig. 1 through Fig. 5. Fig. 1 and Fig. 2 are vertical cross-sectional views of the device. Fig. 1 shows a central shaft (18) with a handle (23) at the top, passing through a series of components including a nut (34), a washer (24), and a series of stacked rings (27, 32, 31). A side arm (29) with a handle (30) is attached to the side. The base (10) is supported by a frame (11). Fig. 2 is a similar cross-section but with different internal components (e.g., 17, 25, 22, 20, 14, 19). Fig. 3 is a side cross-sectional view showing the side arm (29) and handle (30) in more detail. Fig. 4 is a top-down view of the device, showing the circular arrangement of the rings and the central shaft. Fig. 5 is another side cross-sectional view, showing the device from a different angle, highlighting the base (10) and the support structure (11).

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UNITED STATES PATENT OFFICE.

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STOP AND WASTE COCK.

955,770.

Specification of Letters Patent.

Patented Apr. 19, 1910.

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To all whom it may concern:

Be it known that I, WILLIAM H. DEHN, a citizen of the United States of America, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Stop and Waste Cocks; and I hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

This invention relates to improvements in stop cocks and has for its main object the provision of means for preventing the passage of water through the drainage or waste port except when the valve is closed, thus preventing water from being forced by the service pressure through the drainage port while the valve is being closed or when left in a partially closed position.

A further object is the provision of a stop cock consisting of few parts which are arranged in a manner such as to produce a cock which is very effective in its operation and neat and attractive in appearance and may be readily mounted in any position.

In carrying out my invention, I provide in a cock having the usual drainage port, a valve stem having means for covering the drainage port at all times except when the cock is closed. In my preferred construction this port closing means is in the form of an enlarged portion of the stem which engages the cylindrical bore of the valve plug and has a length such that when the valve is open or in any position between the open and closed positions, it covers the drainage port, but as the valve is being seated it passes inwardly toward the valve chamber a sufficient distance to partially or wholly uncover the port and permit the drainage to take place. On each side of this enlarged portion the stem is slightly reduced in size and the waste water is conveyed from one side of the enlarged portion to the other by one or more passageways in the valve stem which passageways extend beneath this enlarged portion so as to place the valve chamber in communication with the drainage port when the valve is closed.

My invention may be further briefly summarized as consisting in certain novel details of construction and combination and arrangement of parts which will be de-

scribed in the specification and set forth in the appended claim.

For a better understanding of my invention reference is had to the accompanying drawings in which—

Figure 1 is a longitudinal sectional view of a cock constructed in accordance with my invention, the valve being closed. Fig. 2 is a similar view with the valve partially open. Fig. 3 is a similar view with the valve in its full open position. Fig. 4 is a sectional view substantially along the line 4—4, Fig. 1.

Referring now to the figures of the drawing 10 represents the valve chamber which is provided with a threaded pipe connection 11 for the inlet pipe and a connection 12 for the outlet pipe, and intermediate said pipe connections with a partition 13 having a valve opening 14 and a flange 15 surrounding said opening and serving as a valve seat. The valve chamber is also provided with a tubular projection 16, which is threaded on the interior and receives with a tight fit a valve plug 17 having a longitudinal passageway or bore for the valve stem 18.

The valve shown at 19 is either integral with the valve stem 18 as in the preferred construction, or may be secured thereto and is provided on the bottom with a disk 20 of yieldable material such as leather secured to the valve by a screw 20', and on its upper face with a washer 21 which is seated within a recess in the valve and is adapted to take against the lower end 22 of the valve plug when the valve is in its full open position.

The stem is provided at its outer end with an operating handle 23 and with a threaded portion 24 which engages a correspondingly threaded portion of the valve plug. These threads are of a very large pitch so that the valve can be thrown from its closed to its open position by a partial turn of the handle and stem, and as the valve is preferably constructed, I provide on the stem and in the plug three separate threads having a pitch such that the valve can be thrown from its closed to its full opened position, and vice-versa, by turning the handle through a half revolution only. The stem is also provided within the plug a short distance from the threads with an enlarged portion 25, the surface of which is cylindrical and engages with a close but working fit the cylindrical wall of the unthreaded

lower portion of the passageway or bore in the plug. The size of the bore or passageway of the valve plug is of uniform diameter from the threaded portion of the open inner ends, and the valve stem from the valve to the enlarged portion and between the latter and the threaded portion is smaller than the bore of the plug thereby forming annular passageways 26 and 27. The valve stem is also provided with one or more passageways 28 preferably cored in the stem, said passageways extending under the enlarged portion 25 and having openings on opposite sides thereof at the surface of the stem, thereby placing the passageways 26 and 27 in communication with each other.

Seated on the valve plug at the base thereof adjacent the end of the tubular projection 16 of the valve chamber, is a ring or collar 29, a washer 30 being interposed between this collar and the end of the tubular projection 16 of the chamber so as to prevent leakage of water at this point. Underneath this ring or collar 29 there is an annular groove 31 in the valve plug, which when the collar is in place forms an annular passageway. In the wall of the valve plug and communicating with this annular passageway 31 at one end and with the interior bore or passageway of the plug at the other end, is a drainage or waste port 32 through which the water may drain from the cock and pipes of the building when the valve is closed as will be brought out presently. The ring or collar 29 is provided with a laterally extending opening which receives a drainage tube 33 through which the drainage takes place, the ring or collar 29 being mounted upon the valve plug in a manner such that it can be turned on its bearings so that said drainage tube can be made to extend in any direction and so that the latter will not interfere or prevent the cock being placed at any position adjacent to a wall. At the outer end of the valve plug is a stuffing box or packing gland 34 in the form of a cap which is threaded to the outer end of the valve plug and is provided with an opening through which the valve stem extends. Suitable packing 35 within the cap prevents leakage around the stem.

By referring to the different figures of the drawings it will be seen that the drainage cannot take place through the drainage port and drainage tube while the valve is open or in any position between its full open and closed position, for the reason that the

tion 25 of the valve stem during this time and not until the valve is on its seat is this port uncovered at which time the water may pass from the valve chamber through the passageways 28, into the annular passageway 27 between the enlarged portion 25 of the stem and the threaded portion thereof, through the drainage port 32 into the annular passageway 31 and out through the drainage tube 33. Thus while the valve is open or while being closed, or if left partially closed, as is frequently the case, it will be impossible for the water to squirt out of the drainage tube under the service pressure as with many cocks in use at the present time.

I do not desire to be confined to the exact details shown but aim in my claim to cover all modifications which do not involve a departure from the spirit and scope of my invention.

What I claim is,—

In a stop cock, a chamber having a valve opening and a valve seat, a valve plug extending into said chamber, said plug having a longitudinal bore or passageway, a portion of which is threaded, and having a drainage port between said threaded portion and the valve chamber, a valve stem extending through said plug, said stem having a threaded portion engaging the threaded portion of the plug, and having at its inner end a valve adapted to engage said valve seat, said stem having an enlarged portion engaging the unthreaded portion of the passageway in the valve plug and covering said drainage port at all times except when the valve is on the valve seat, and between such enlarged portion and the valve, the stem being of less diameter forming with the inner cylindrical wall of the valve plug, annular passageways, one of which communicates with the chamber, said stem having also a passageway which extends beneath said enlarged portion, and places said annular passageways in communication with one another so that the water may drain through said port when the latter is uncovered by shifting the valve stem inward until the valve is on its seat.

In testimony whereof, I sign the foregoing specification, in the presence of two witnesses.

WILLIAM H. DEHN.

Witnesses:

DANIEL E. DALY,
VICTOR C. LYNCH.