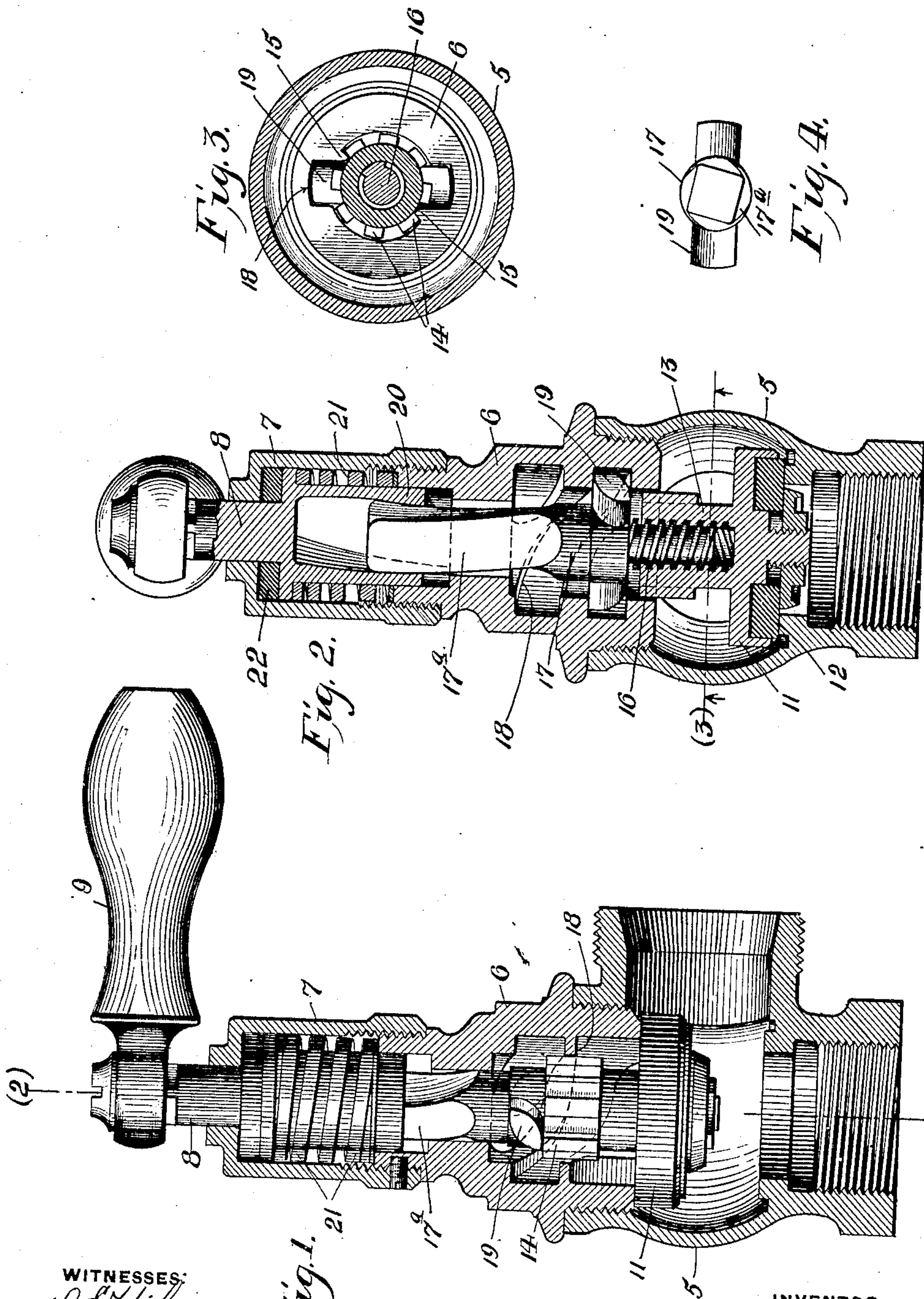


No. 875,812.

PATENTED JAN. 7, 1908

J. T. HAYDEN.
QUICK OPENING VALVE.
APPLICATION FILED AUG. 2, 1906.



WITNESSES:
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UNITED STATES PATENT OFFICE.

JAMES T. HAYDEN, OF CHICAGO, ILLINOIS, ASSIGNOR TO CRANE COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

QUICK-OPENING VALVE.

No. 875,812.

Specification of Letters Patent.

Patented Jan. 7, 1908.

Application filed August 2, 1905. Serial No. 272,364.

To all whom it may concern:

Be it known that I, JAMES T. HAYDEN, a citizen of the United States, residing at Chicago, in the State of Illinois, have invented certain new and useful Improvements in Quick-Opening Valves, of which the following is a specification.

My invention relates particularly to valves designed for use on steam radiators and in such positions where it is necessary to have them quickly open and close. The principal objects of the invention are, to provide for rapid movement of the valve by the turning of an operating handle and for locking the valve in position in a closed position; to provide a non-rotative element with convenient means for attachment and for adjusting the relation of the valve; to provide means to take up wear; to obviate the necessity of a packing box, and to generally improve the structure and operation of such valves. These objects and other advantages which will hereinafter appear, I attain by means of the construction illustrated in preferred form in the accompanying drawing, wherein—

Figure 1 is a vertical central section of the valve and its casing;

Figure 2 is a vertical central section of the valve and its casing taken in a plane at right angles to the section of Figure 1, and on line (2) therein;

Figure 3 is a horizontal section on line (3) in Figure 2 looking upward as indicated by the arrows, and Figure 4 is a top plan view of the movable part of the valve stem.

The valve shown is of the type of angle valve such as is used for a steam radiator. The casing 5 has the usual upward extending bonnet 6 on top of which is a housing 7 for the closure, and through which extends a stem 8 for operating the valve, operated by the handle 9. The valve 11, having preferably a composition disk bearing ring 12, is connected between its head 13 and the actuating stem 17 by rapidly inclined threads 16, and this head 13 has a series of radial ribs 14 which engage two intermeshing teeth 15 in the bottom of the bonnet 6 as seen in Figure 3, in order that the valve may not revolve by the revolution of the stem 17.

In order to effect the raising and lowering of the valve I have provided, inside of the bonnet 6, a rapidly inclined series of slots 18,

which engage the oppositely disposed inclined pins 19 on the stem 17, as will be seen from Figures 2 and 3. It will be observed that at the bottom of the thread or slot 18 it has a flat portion upon which the pin rests when in its extreme position in order to hold the valve locked in place against the pressure. The threads 16 and slots 18 are made so that both operate together to thrust the valve down with double speed, the stem 17 by thread 16 tending to push down the head 13 as the former revolves while the latter does not. The stem 17 ends in a shank 17^a of angular section which is slightly twisted in order to prevent binding, and works in an opening in the rotary stem part 20. This part continues as stem 8 above, and has a flange resting against the rubber washer 22 and is pressed against the same to make a tight joint by means of a spring 21.

It will be seen from this construction that the valve being in open position, as shown in Figure 1, the cross pins 19 rest within the helical groove 18 and the valve is held in upper position, but upon turning the handle 10 and with it the revolving stem section 8, 20, the pins 19 are thrust downward along the inclined slots 18, pushing the valve firmly to place and at the bottom the pins slide along the less inclined portion of the thread slot 18 and lock the valve in place. Meantime the thread 16 also moves the valve slightly downward. In the motions just described, the teeth 15 may engage between any pair of the ribs 14 to prevent the rotation of the valve. When the bearing seat 12 wears or is changed or otherwise adjustment is needed the valve head 13 may be changed in its relation to the stem by screwing up the bonnet 6 and turning the part 13 on the thread 16 to engage another pair of its ribs 14 with the teeth 15 on the hood. By this means the valve may be from time to time adjusted with perfect ease, while still retaining a double travel in closing. It will be seen that by taking off the box 7 the spring 21 and washer 22 may be removed, and by removing the bonnet 6 the entire valve and valve stem are easily taken out and the parts are readily inspected or adjusted.

The valve has no sliding part requiring any packing and all the moving parts are inclosed under equal pressure except the rotating flange of the stem 8 which is kept always

tight by the pressure and cannot leak; the reciprocating parts do not require a close fit at any place. Other advantages in the way of rapidity, simplicity, and accurate operation, will be readily apparent to those familiar with the art.

Having thus described my invention and illustrated its use, what I claim as new and desire to secure by Letters Patent, is the following:

1. In a quick opening valve the combination with a casing, of a valve stem section having a screw connection of high pitch therewith and constructed to lock against longitudinal movement when at its extreme lower position, and a valve having a screw connection of low pitch with the valve stem section.

2. In a quick opening valve the combination with a casing, of a valve stem section having a screw connection of high pitch therewith and constructed to lock against longitudinal movement when at its extreme lower position, a valve having a screw connection of low pitch with the valve stem section, and means whereby the valve may be adjusted at its screw connection to any de-

sired angular position and there guided against rotary movement.

3. In a quick opening valve the combination with a casing, of a valve stem section provided with projecting pins, means to revolve the same, a helical slot in the casing flattened at its end for locking the stem by its pins in a closed position, a valve threaded upon said stem section and provided with a series of ribs to engage a projection provided in the casing, whereby the valve may reciprocate but not rotate, and its position on the stem is adjustable, substantially as described.

4. An angular and twisted valve actuating stem in combination with a surrounding operating sleeve mounted to turn with the said stem, and means for moving the stem longitudinally through the sleeve substantially as described.

In testimony whereof I have hereunto signed my name in the presence of the two subscribed witnesses.

JAMES T. HAYDEN.

Witnesses:

PAUL CARPENTER,
ALBERT C. HOWARD.