

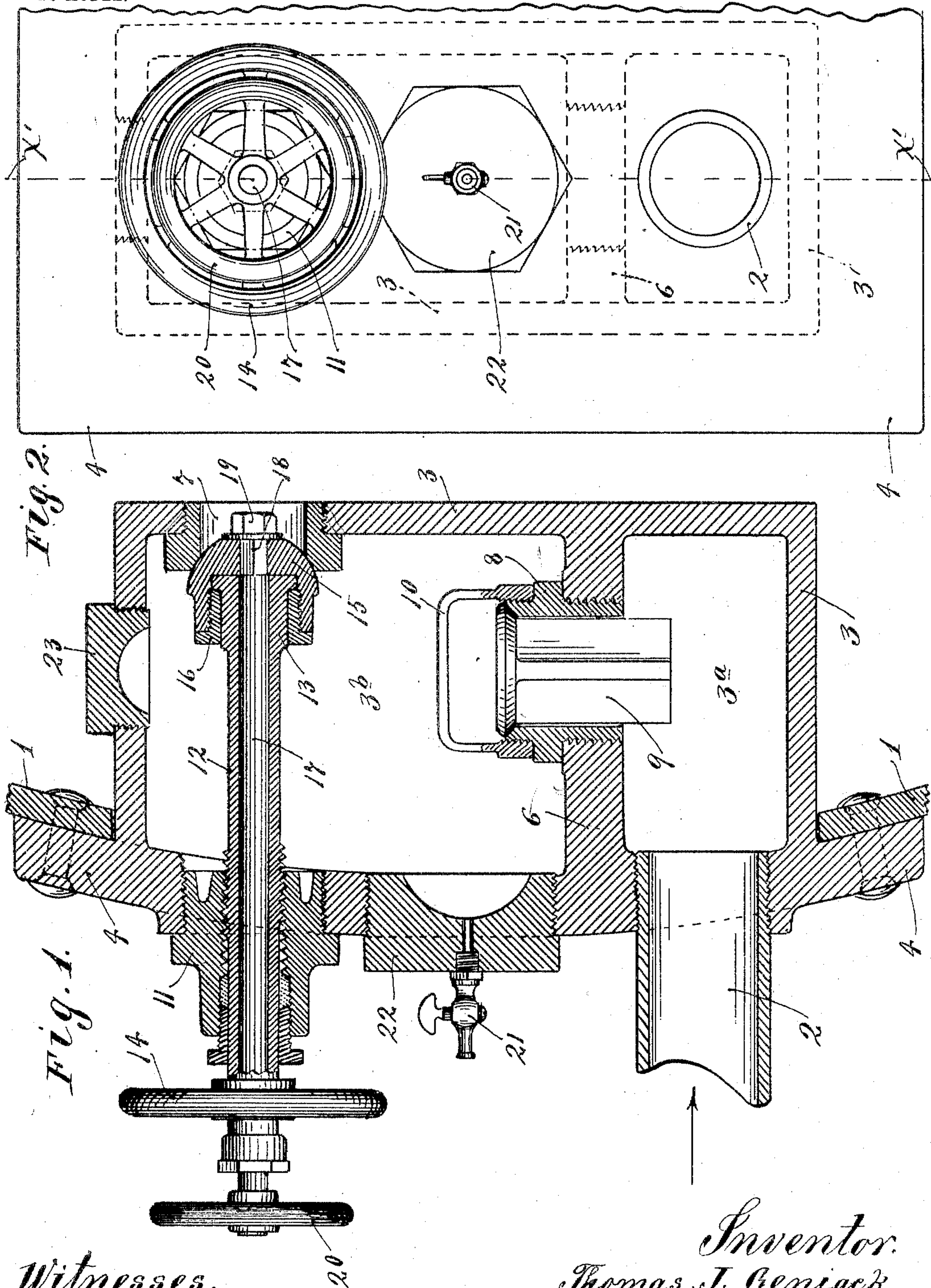
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T. J. GENIACK.
BOILER FEED VALVE.

APPLICATION FILED SEPT. 8, 1904.

NO MODEL.



Witnesses.
A. H. Osahl.
E. W. Jeppson.

Inventor.
Thomas J. Geniack
By his Attorneys.
Williamson & Murchand

UNITED STATES PATENT OFFICE.

THOMAS J. GENIACK, OF MINNEAPOLIS, MINNESOTA.

BOILER FEED-VALVE.

SPECIFICATION forming part of Letters Patent No. 777,623, dated December 13, 1904.

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To all whom it may concern:

Be it known that I, THOMAS J. GENIACK, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Boiler Feed-Valve Mechanism; and I do 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 appertains to make and use the same.

My invention relates to water-feeding devices for boilers, and has for its object to provide an improved valve mechanism therefor.

To the above ends the invention consists of the novel devices and combinations of devices hereinafter described, and defined in the claims.

In the accompanying drawings, which illustrate my invention, like characters indicate like parts throughout both views.

Figure 1 is a vertical section through my improved valve attachment, taken on the line $x' x'$ of Fig. 2 and showing also a portion of a boiler to which it is attached; and Fig. 2 is a view in side elevation, showing the improved valve attachment, but showing no part of the boiler.

The numeral 1 indicates a portion of the boiler to which the valve attachment is applied, and the numeral 2 indicates the water-supply pipe, which in practice may lead either from an injector or from a pump, neither of which is shown in the drawings.

The numeral 3 indicates a cast box-like shell which projects into one side of the boiler and is provided with marginal flanges 4, which are riveted to the shell of the boiler. The shell 3 is formed with an interior partition 6, which divides the same into two compartments 3^a and 3^b. The water-supply pipe 2 opens into the compartment 3^a, and communication between the compartment 3^b and the main water-chamber of the boiler is afforded through an annular valve-seat 7, shown as having screw-threaded engagement with the inner wall of the case 3. Communication between the compartments 3^a and 3^b is had through a vertically-disposed sleeve-like valve-seat 8, which, as shown, has screw-

threaded engagement with the partition 6. A gravity-seated check-valve 9 normally closes the passage through the valve-seat 8, and a yoke-like stop 10, shown as threaded on the upper end of said valve-seat, prevents the said valve from being thrown out of said valve-seat.

The main body portion of a stuffing-box is screwed into a seat formed in the outer wall of the casing 3 in axial alinement with the valve-seat 7. A tubular valve-stem 12 works with screw-threaded engagement through the said member 11 and is provided at its inner end with a flanged head 13 and at its outer end with a hand-wheel 14. A valve 15 in the form of a cap-like head is rotatively mounted on the flanged head 13 and is held against axial movement with respect thereto by an annular nut 16, which has threaded engagement with the interior of said valve and abuts against the flange of said head 13.

A valve stem or rod 17 extends through and is rotatively mounted in the tubular stem 12 and at its inner end is connected for rotation with the valve 15, this connection, as shown, being accomplished by a squared shank 18 of said stem 17, which fits a correspondingly-formed seat in said valve. A nut 19 on the extreme inner end of said stem 17 holds said stem 17 and valve 15 against axial movements with respect to each other. On the outer end of the valve-stem 17 is a hand-wheel 20.

To relieve the pressure from within the chamber 3^b under conditions to be hereinafter noted, I provide a vent-cock or valve 21, which, as shown, is adapted to open and close a passage through a plug 22, which is screwed into the outer wall of the casing 3 just above the partition 6.

The numeral 23 indicates a plug in the upper wall of the casing 3, which plug closes a hole made necessary in the process of construction in order that the hole may be bored in the partition 6 for the reception of the valve-seat 8.

From the foregoing it will be seen that both the check-valve 9 and the cut-off or plug valve 15 are located within the boiler where it is impossible or at least very improbable that they will be damaged in case a locomotive or other portable boiler, to which they may be

applied, should be tipped over. Normally or when the water is to be fed into the boiler the so-called "cut-off" valve 15 will be left in an open position, so that water may be fed into the boiler, the check-valve 9 of course being free to raise and open up under the pressure of the inflowing stream of water.

Under many conditions which may arise it is very important to be able to shut off the outflow of the steam from the boiler independently of the check-valve. For instance, if the check-valve should stick either in an open or closed position access to the check-valve would be necessary in order to restore the same to operative conditions. Furthermore, it is sometimes necessary to remove the check-valve for purposes of repair or to substitute a new check-valve for an old one. Under any of these conditions the plug-valve 15 may be closed, and access to the check-valve may be had by the removal of the plug 22, and this, as is evident, may be accomplished without drawing off the steam or water from the interior of the boiler. When the plug-valve 15 is closed, steam under boiler-pressure will be caged in the compartment 3^b, and hence before removing the plug 22 the pressure from this chamber should be relieved by opening the vent-valve 21. This pressure unless relieved would be liable to blow the plug 22 with great force from its seat in the process of unscrewing it. The removal of the same would be a very dangerous or impossible operation if this vent-valve or means for relieving the pressure were not provided.

The plug-valve 15 will in practice be left standing in an open position usually for very long intervals of time, and hence the face of the said valve will become covered with scale, sediment, or other foreign formation, which would make it impossible to seat the same with a tight joint against the valve-seat 7 by direct axial movement. The two-part valve-stem, one member of which imparts endwise or axial movements to the said plug-valve and the other of which rotates the same, makes the proper seating of the valve an easy matter. For instance, by the hand applied to the wheel 20 the said plug-valve 15 may be rotated against the seat 7, and by rotation of the hand-wheel 14 and sleeve 12 the said valve may be kept tightly pressed against said seat. Under the above action, as is evident, all scale or sediment or incrustation will be ground from the opposing surfaces of said valve and seat, and a tight joint between the same is thereby insured. The importance of the above construction is obvious from the statements made.

The device described, while extremely efficient and convenient for the purposes had in view, is of comparatively small cost and will save much time and expense in all cases where it is used.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. The combination with a boiler, of a check-valve and a cut-off valve in the water-delivery conduit thereto, said latter valve being located inward of said check-valve and within the boiler, substantially as described.

2. The combination with a boiler, of a two-part casing located within the body of the same and constituting a part of the water-delivery conduit thereto, a check-valve between the compartments of said casing, and a cut-off valve arranged to open and close communication between the inner compartment of said casing and the interior chamber of the boiler, and provided with means whereby it may be operated from the exterior of the boiler, substantially as described.

3. The combination with a boiler, of a two-part casing located within the body of the boiler and constituting a part of the water-delivery conduit thereto, a check-valve controlling communication between the two compartments of said casing, a cut-off valve in said casing controlling communication between the inner compartment thereof and the interior chamber of the boiler, said latter valve having means for operating it from the exterior of the boiler, a removable plug, affording, when removed, access to the inner chamber of said casing, and a vent-valve opening from said inner compartment of the casing, substantially as described.

4. The combination with a valve-seat, of a valve cooperating therewith and provided with a two-part stem, one of said stems being arranged to impart rotary, and the other axial, movements to said valve, the said two stems being connected for common axial movements, substantially as and for the purposes specified.

5. The combination with a boiler, of a check-valve and a cut-off valve in the water-delivery conduit thereto, said cut-off valve having a two-part stem extending to the exterior of the boiler, one part of said stem serving to impart rotary, and the other axial, movements to said valve, substantially as described.

6. The combination with a boiler, of a check-valve and a cut-off valve in the water-supply conduit thereto, said cut-off valve having a stem made up of an exterior sleeve and an interior rod, both extending to the exterior of the boiler, said sleeve having threaded engagement with a part fixed on the boiler, and being swiveled to said cut-off valve, and said rod being connected to rotate with said valve, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

THOMAS J. GENIACK.

Witnesses:

ROBERT C. MABEY,
F. D. MERCHANT.