No. 639,707. Patented Dec. 26, 1899.

J. J. CAIN.

GAGE COCK.

(Application filed Apr. 7, 1899.)

(No Model.)

Fig. 1,

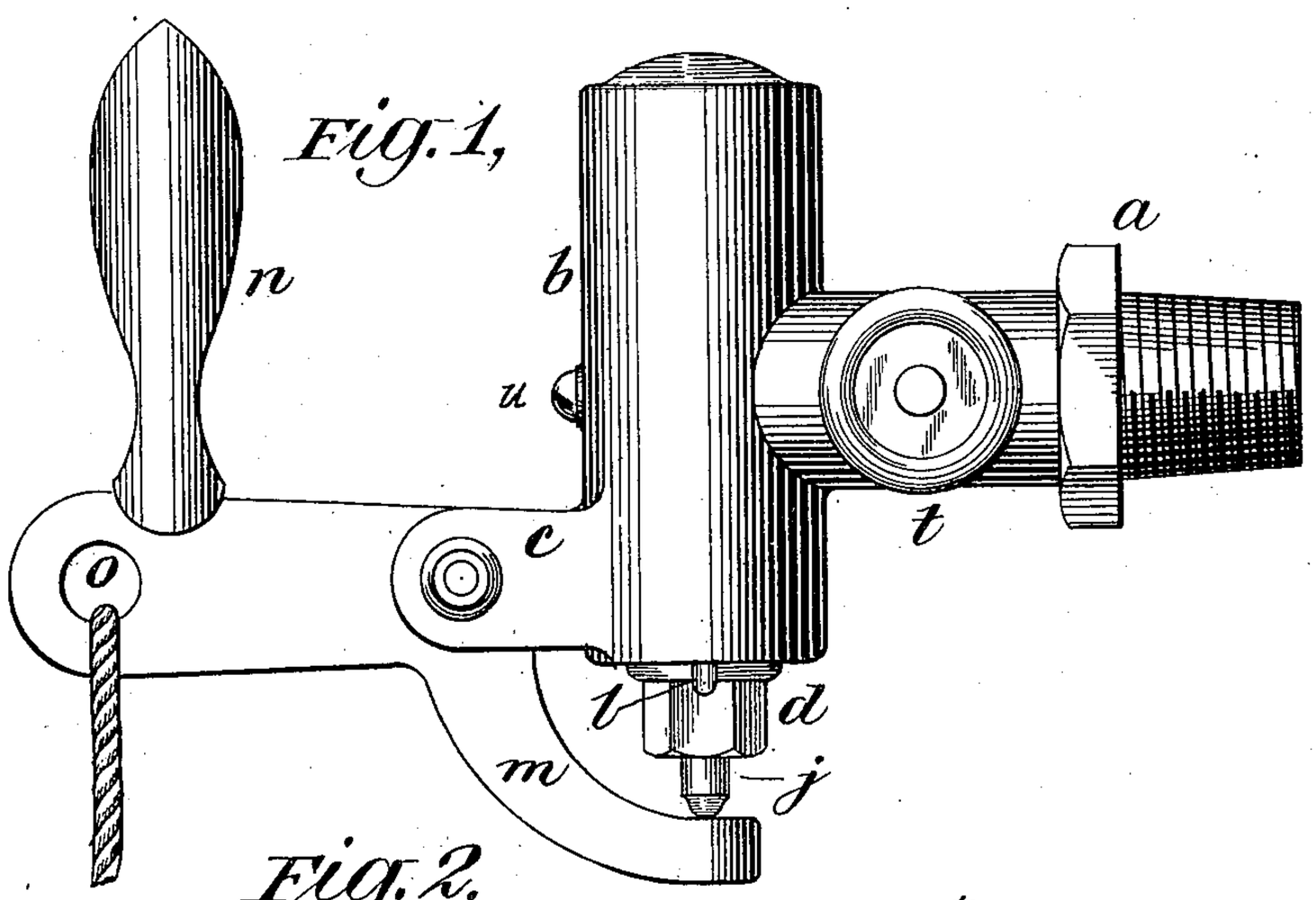


Fig. 2,

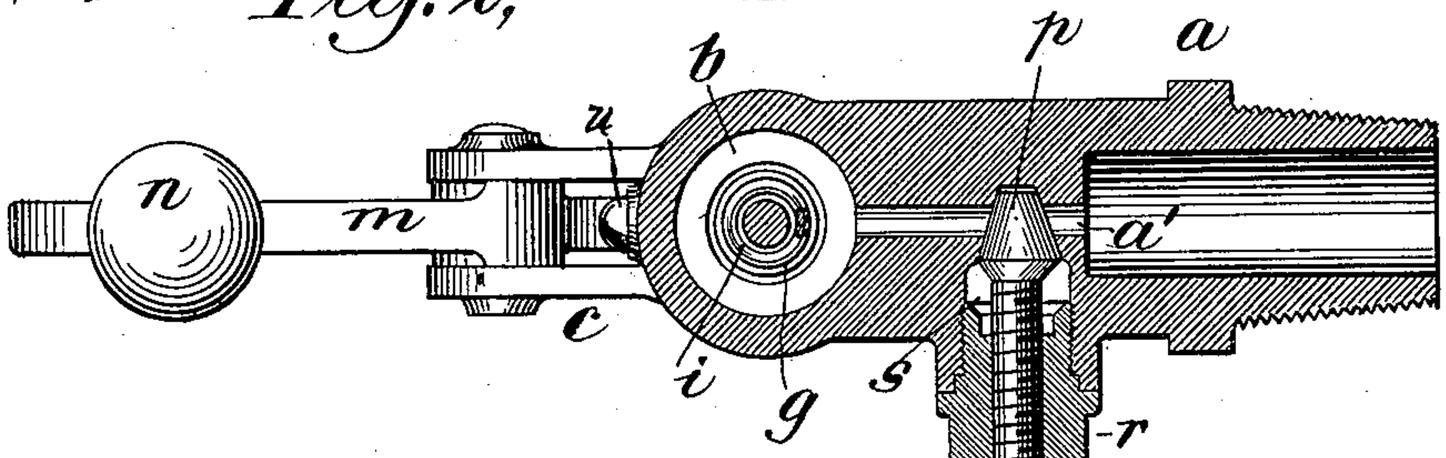
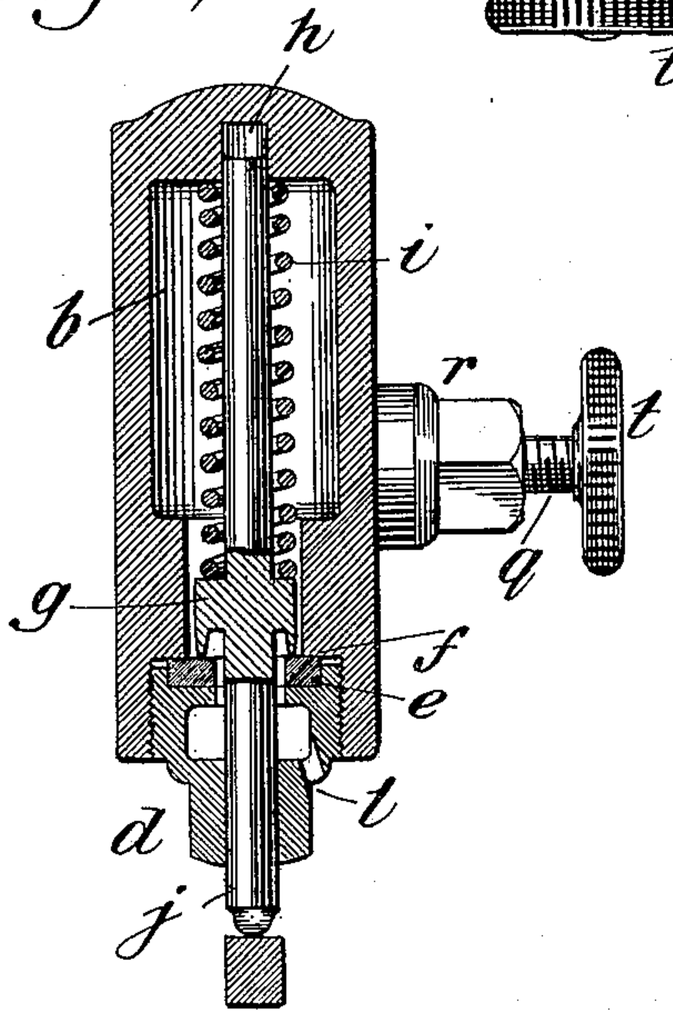


Fig. 3,



WITNESSES:

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INVENTOR

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UNITED STATES PATENT OFFICE.

JOHN J. CAIN, OF BAYONNE, NEW JERSEY.

GAGE-COCK.

SPECIFICATION forming part of Letters Patent No. 639,707, dated December 26, 1899.

Application filed April 7, 1899. Serial No. 712,125. (No model.)

To all whom it may concern:

Be it known that I, JOHN J. CAIN, a citizen of the United States, and a resident of Bayonne, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Gage-Cocks, of which the following is a specification.

This invention relates to gage-cocks or that class of cocks used on steam-boilers to indicate or ascertain the level of the water, and has for its object such improvements in its construction and arrangement of the parts of the cock that the valve will be caused to be perfectly seated, the valve and valve-seat readily removed for renewal or repairs when worn, and the steam or water discharged in a steady stream and in the least objectionable direction.

The invention also embodies means for positively cutting off the steam or water at will from the operating parts of the cock, thereby permitting the valve and valve-seat to be renewed or repaired while the boiler to which the cock is attached is in service.

To fully describe my said improvements, I will refer to the accompanying drawings, in which—

Figure 1 represents a side elevation of a gage-cock made according to my invention. Fig. 2 is a horizontal section of the same on the line 2 2, Fig. 1; and Fig. 3 is a vertical section through the valve-chamber, taken on the line 3 3, Fig. 1.

The body of the valve comprises in a single casting a bored neck *a*, threaded at its end for attachment to the boiler or water-column of a boiler; a valve-chamber *b*, into which the passage *a'* through the neck opens, arranged, preferably, at right angles to the neck, closed at its upper end, and having an internally-threaded shouldered opening at its lower end, and horns *c*, projecting from the front of the chamber for carrying the means for operating the valve. In the internally-threaded opening of the chamber *b* is fitted the nut or cover *d*, the upper end of which is recessed, as shown at Fig. 3, for the reception of the valve-seat *e*, which also acts as a washer for insuring a tight joint between the nut *d* and shoulder *f* of the valve-chamber. This washer valve-seat may be of any suitable metal or composition and by being held in the recess of the nut *d* it will be removed with the nut when it is unscrewed and may then be reversed or turned over, when its upper face is destroyed as a valve-seat, or removed and a new washer inserted in the nut.

The valve *g* is shown as a knife-edge valve bearing on the face of the valve-seat *e*. It may be conical in shape and the nut formed correspondingly. It is provided with an upper stem, which has a guiding fit in a hole *h*, formed in the upper head of the valve-chamber, and on this stem is placed a spring *i*, acting between the top of the valve and the upper head of the chamber *b*. This spring acts in conjunction with the boiler-pressure to insure a perfect seating of the valve. The valve is also provided with a lower stem *j*, which passes through an opening in the valve-seat *e* and upper part of the nut *d*, which opening is sufficiently large for the free passage of the steam or water that may flow between the valve and its seat. The stem *j* then passes through a bore in the lower part of the nut *d*, in which it so fits as to slide freely therein and yet afford no passage for the steam or water. In the body of this nut *d* is formed a chamber *k*, which acts as a baffling-chamber for the steam or water after it passes between the stem *j* and valve-seat *e*, said chamber having a downwardly-directed hole *l* for the discharge to take place from the chamber, this hole being preferably of such a size as to provide for a free discharge of all of the steam and water that may pass beyond the valve, and it is so located that the discharge will be in a downward direction away from the front of the boiler and from the attendant operating the cock, it being preferably arranged, as shown at Fig. 3, to cause the discharge to occur at one side of the cock.

The valve is raised by means of the bent bell-crank lever *m*, pivoted between the horns *c*, with its lower end bearing against the reduced rounded end of the stem *j* of the valve. This lever may be manually operated, either by the handle *n*, attached thereto or forming a part thereof, or by a wire or rod placed in the hole *o* formed through it.

The means here adopted for cutting off the interior of the boiler or water-column from the operating parts of the cock consists of a taper plug *p*, formed to fit in a correspond-

ingly-shaped recess made transversely to the bore a' of the neck a. This plug is provided with a screw-stem q, fitting a tapped hole formed through the cap-nut r, which screws into and closes the lateral opening provided with the taper seat for the plug p. The stem q has secured to it the knurled or scalloped handle r, by means of which the plug-valve p may be operated. The inner end of the cap-nut r has a taper seat s formed in it, in which a taper formed on the back of the plug p seats when the plug is fully drawn back away from its seat, which transversely crosses the bore a', thus securely closing the lateral opening without the employment of the usual packing.

The plug p in Fig. 2 is shown pressed home to its seat, closing the bore a', in which condition repairs, &c., of the operating parts of the cock may be made, as before referred to.

The screw u closes a hole in the chamber b in line with the bore a', through which hole obstructions in the bore may be readily removed.

I claim as my invention—

1. In a gage-cock, the combination of a body having a valve-chamber open at one end and a passage from said valve-chamber to the inlet end of the cock; a nut for closing the open end of the valve-chamber, recessed at its upper end and having a discharge-passage formed through it; a washer fitted in the recess of the nut, forming a valve-seat and a packing between the nut and the valve-chamber; a spring-actuated valve arranged to bear on the valve-seat washer; and means as a bell-crank lever for raising the valve away from its seat.

2. In a gage-cock, the combination of a body having a valve-chamber open at one end, a passage from said chamber to the inlet of the cock, and a lateral opening having at its lower end a conical valve-seat crossing said passage; a cap-nut for closing the lateral opening and having a valve-seat formed at its inner end; a plug provided with a screw-stem fitted in the cap-nut and formed to seat in the conical part of the opening and so close the passage, and to seat against the cap-nut when withdrawn from the conical opening; a valve and valve-seat in the valve-chamber; and means for operating the valve.

3. In a gage-cock, the combination of a body having a valve-chamber open at one end, a passage from said chamber to the inlet of the cock, and a lateral opening having at its lower end a conical valve-seat crossing said passage; a cap-nut for closing the lateral opening and having a valve-seat formed at its inner end; a plug provided with a screw-stem fitted in the cap-nut and formed to seat in the conical part of the opening and so close the passage, and to seat against the cap-nut when withdrawn from the conical opening; a nut for closing the open end of this chamber centrally bored, provided with a valve-seat, having an enlargement in the bore or baffling-chamber formed in it and a downwardly-directed discharge-opening extending from the baffling-chamber; a valve arranged to bear on the valve-seat of the nut; and means for raising the valve away from its seat.

Signed at Bayonne, in the county of Hudson and State of New Jersey, this 31st day of March, A. D. 1899.

JOHN J. CAIN.

Witnesses:
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HORACE ROBERSON.