J. J. TONKIN.
Gage-Cock.

No. 205,152. Patented June 18, 1878.

Fig. 1.

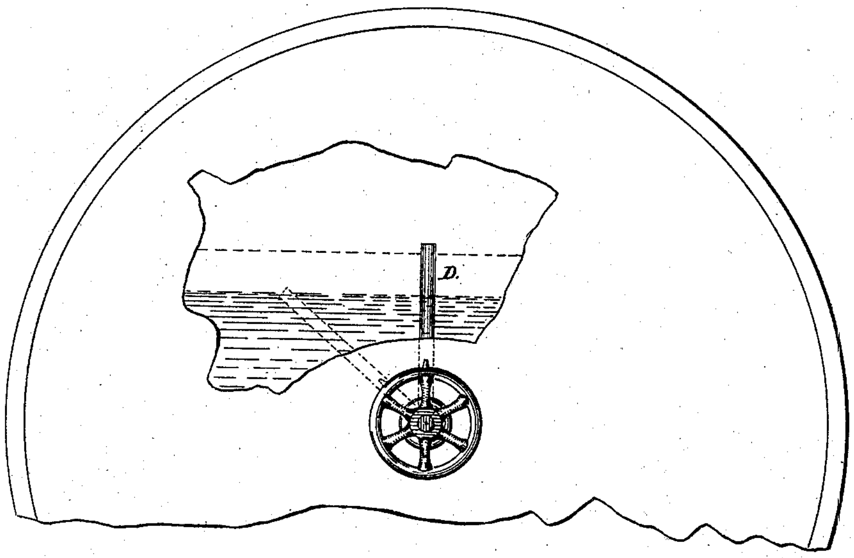


Fig. 2.

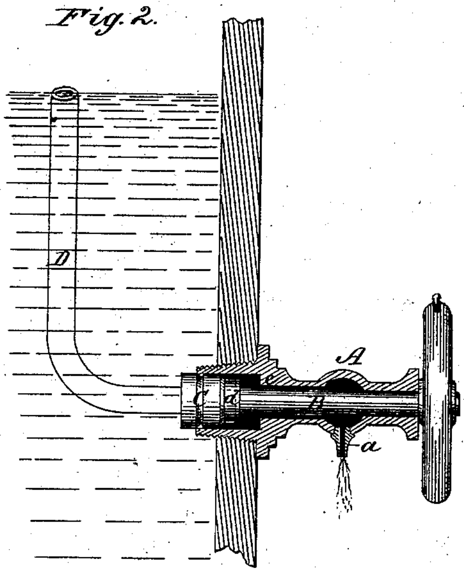
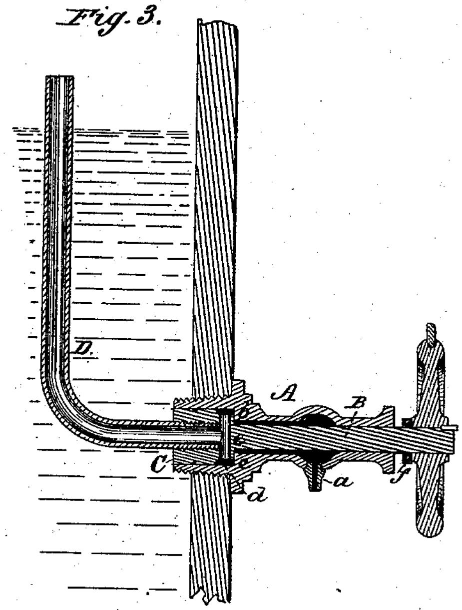


Fig. 3.



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UNITED STATES PATENT OFFICE.

JOHN J. TONKIN, OF RICHMOND, VIRGINIA, ASSIGNOR OF ONE-HALF HIS RIGHT TO JOHN N. VAN LEW, OF SAME PLACE.

IMPROVEMENT IN GAGE-COCKS.

Specification forming part of Letters Patent No. **205,152**, dated June 18, 1878; application filed May 6, 1878.

To all whom it may concern:

Be it known that I, JOHN J. TONKIN, of Richmond, in the county of Henrico and State of Virginia, have invented a new and Improved Gage-Cock for Steam-Boilers; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1 is an end view of a horizontal boiler with a portion of the shell broken out to show the water-line. Fig. 2 is a longitudinal section through the device, showing its opened position; Fig. 3, a similar view, showing its closed position.

My invention relates to an improved gage-cock for determining the water-level in steam-boilers. Ordinarily several cocks are employed for this purpose, arranged at different levels, and the height of the water in the boiler is determined by the issuing of steam or water, as the case might be, from these several cocks when successively tried. Among the efforts to dispense with the multiplicity of these cocks is a single axially-turning tube having a right-angular branch, which, when the tube is turned axially, moves laterally, and dips from the steam-space into the water-space, the water-level being indicated by the degree of deflection. In this case, however, an independent valve was arranged to be opened by independent devices, to permit the water or steam to issue.

My invention is an improvement upon this form of gage-cock; and it consists in constructing the axial portion of the cock in such form that it shall fulfill itself the function of a valve by longitudinal movement, so that, in trying the water-level, all that is necessary is to grasp the handle of the tube and force it longitudinally in, and then turn the tube axially until its right-angular arm shall dip into the water, the pressure of the steam within serving to force back the tube and seat its valve upon the valve-seat, as hereinafter more fully described.

In the drawing, A represents the hollow screw-plug, which is fitted into the boiler, and is provided with a vent-nozzle, *a*, communicating with its interior chamber. B is an axial stem, of less diameter than the chamber of the hollow plug, bearing upon the outside of said plug a hand-wheel having an index-finger to indicate upon a graduated arc the degree of deflection. Said stem B has upon its opposite end a boss or valve, C, fitting in an enlarged valve-chamber of the plug, the face *b* of which valve is adapted to fit against the valve-seat *c*. About the periphery of the valve C is an annular depression, *d*, into which holes *e* lead from the center of the valve which communicates with the right-angular tube D, screwed into said valve.

Now, the stem being adjusted for a slight play of the valve upon its seat, it will be seen that as soon as the stem is pressed longitudinally inwardly, as in Fig. 2, by force applied to the hand-wheel, the valve leaves its seat, and communication is opened from the interior of the boiler through the right-angular tube D, holes *e*, the valve-chamber, and annular space about the stem in the screw-plug, giving free escape to the steam at the nozzle. Now, as the hand-wheel, stem, and tube are turned axially, it will be seen that after the right-angular tube leaves the steam-space and dips into the water the steam will cease to issue at the nozzle, and in the place of the same the water will commence to be discharged, its level being indicated by the degree of deflection. When the hand-pressure upon the wheel is relieved the steam-pressure inside automatically seats the valve again and cuts off the discharge.

When the hand-wheel is forced in to try the water and open communication with the interior of the boiler a gum ring, *f*, on the stem or spindle fits against the end of the screw-plug, and forms a steam-tight joint to prevent the steam from escaping at the point and burning the fingers. A stuffing-box may also be employed in the outer end of the screw-plug for the same purpose.

In addition to the merits of my invention already set forth, the valve-pipe and connections may be enlarged to make a good surface-blower for blowing off the impurities from the surface of the water in marine and other engines, to which point the impurities are lifted

by the boiling action. The difficulty with ordinary fixed blow-off cocks is that they can only be used at times when the water is at a certain level. My device, it will be seen, can be made to follow the level of the water and blow off as long as necessary.

The device may be also used to advantage as an air-cock, for determining where the air-line is in pumps employing an air-chamber.

In pointing out more clearly the distinctions between my invention and the general class upon which it is an improvement I would state that the chief distinctive feature of my invention rests in attaching the tube D directly and rigidly to the valve and valve-stem, in contradistinction to attaching it to an axially-moving sleeve encompassing the valve-stem and operating the latter independently, as heretofore accomplished. My invention, it will be seen, is a decided improvement in that it reduces the number of parts, and hence reduces the cost of construction, number of joints, and the liability to derangement, while still preserving the necessary functions of the device.

Having thus described my invention, what I claim as new is—

A gage-cock consisting of a chambered screw-plug and a stem carrying a valve arranged to be opened by longitudinal movement, together with a bent tube rigidly attached to and arranged to be deflected by the axial movement of the stem, all combined, as shown and described.

JOHN J. TONKIN.

Witnesses:
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