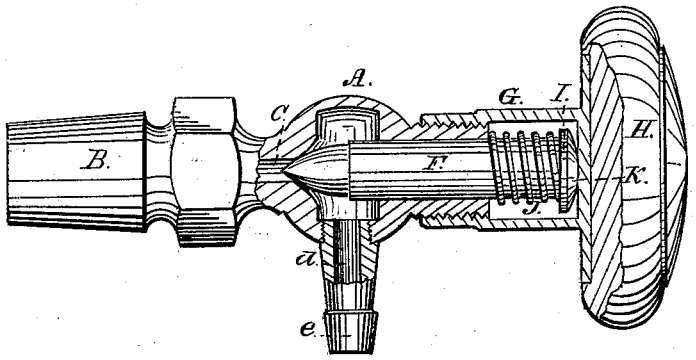
J. Broughton,

Gage Cock,

No. 52,521, Patented Feb 13, 1866.



Witnesses.

Gustave Dietrich

Jm. E. Lyon

Inventor.

John Broughton

UNITED STATES PATENT OFFICE.

JOHN BROUGHTON, OF NEW YORK, N. Y.

IMPROVEMENT IN STEAM-GAGE COCKS.

Specification forming part of Letters Patent No. 52,521, dated February 13, 1866.

To all whom it may concern:

Be it known that I, JOHN BROUGHTON, of the city, county, and State of New York, have invented a new and useful Improvement in Compression Gage-Cocks; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing, forming part of this specification.

The drawing, consisting of only one figure, is a longitudinal elevation of the cock, partly in section, showing the arrangement entire with the valve closed.

A is the globe or body of the cock, and B its shank, which is screwed into any boiler to which the cock is to be applied.

C is the outlet-passage, communicating with the boiler through the shank.

d is the discharge-passage through the nozzle *e*.

F is a cylindrical and conical pointed valve, passing through and supported in a corresponding opening made through the front portion of the body A, and is free to move in a longitudinal direction, and also to rotate on its axis. Said valve is provided at its outer end with a projecting head, whose exterior end is made convex or rounding, while its interior surface forms a shoulder in connection with the stem of the valve. Between this shoulder I and the outer end of the body A a spiral spring, J, is placed, which, when the valve is closed, as shown in the drawing, is in a compressed condition.

G is a tubular cap, provided at one end with a flange, to which is attached a wooden knob or handle, H, and at the other with an internal screw-thread, which screws onto an external one on the outer end of the body A.

The valve F being free to move in a longitudinal direction when the tubular cap G is screwed onto the end of the body A, its inner surface, K, is brought in contact with the outer convex head of valve F and forces the valve forward until its opposite end enters the conical seat in the body A, and thus closes the outlet-passage communicating with the boiler. By reversing the motion of the handle H and cap G, as in the act of unscrewing, the valve E will be free to move in a contrary direction, and will be opened by the pressure within the boiler acting on its inner end and by the action of the spiral spring at its outer end. When steam is up or there is pressure within the boiler the action of said spiral spring is not required to open the valve; but it is placed on the valve as an independent means of opening it when there is no pressure within the boiler, its action being constant and tending to force the valve outward in a longitudinal direction, and thus to withdraw it from its conical seat when the tubular cap G is slightly unscrewed or slacked back.

One of the objects of this invention is, first, to arrange and construct a gage-cock in such manner that while it is simple both in construction and operation the valve may be reground to its seat when it becomes leaky without disturbing the joint connecting it with the boiler, and without the use of tools of any kind or description. This is effected by the arrangement of the body A, detached valve F, and tubular cap G. By unscrewing the cap G from the body A by hand, as in the act of opening the cock, the outer end of valve F is exposed, and is free to be withdrawn by finger and thumb from the body A. It is then free also to be rotated on its axis, which may be done by taking hold of its outer end with the finger and thumb. Thus by taking off the cap G the valve may be withdrawn and examined at any time, and may be reground and the cap replaced in a few minutes and without the use of tools of any kind.

Another object is, second, to construct a compression gage-cock in such manner that while its valve is free to move in a longitudinal direction, so that it may at any time be withdrawn, and while it is also free to rotate on its axis, so that it can be reground, yet the said valve will not rotate on its seat in the act of closing. This is effected by rounding the outer end or head of valve F and making the part of its surface which is in contact with the inner surface of cap G approximate to a pivot. When the cap G is rotated the valve F is forced forward until it rests on its conical seat, and the surfaces in contact at that end being comparatively large and spread out to some distance from the axis of the valve, while the surfaces in contact between the other end of the valve and the cap G are con-

fined to a point at or nearly at the axis of the valve, it follows that the said valve will remain stationary after coming in contact with its seat, and the cap G alone will rotate and act simply to compress it, thus avoiding the abrading and grinding action due to valves rotating on their seats under compression.

Another object is, third, to construct a compression gage-cock provided with a metallic valve and valve-stem in such manner as to dispense with the use of a stuffing-box or gland to pack the said stem at its outer end and admit of the cock being operated under high-pressure without the possibility of scalding the hand of the operator. This is effected by the arrangement of the tubular cap G in connection with the valve F and body A. The outer end of valve F, which projects beyond its bearing in the body A, is the portion of the stem usually packed by a stuffing-box in gage-cocks of the ordinary construction to be used under high pressure; but since it is in my improvement surrounded and covered by the tubular cap G, no steam or water can be blown out in a forward direction, and should the screw connecting the cap with the body become rather loose, so as to allow a slight escape of vapor, it would be discharged backward or in a direction from the hand of the operator toward the boiler.

I claim as new and desire to secure by Letters Patent—

1. In combination with the body and shank of a gage-cock provided with a suitable outlet-passage, a detachable valve, when said valve is supported by and has its bearing in said body independent of the operating handle or screw, substantially as set forth.

2. In a compression gage-cock provided with a detachable and independent valve supported by and having its bearing in the body thereof, the tubular cap whereby to operate the valve F, substantially as set forth.

3. The combination of the body A, detachable valve F, and tubular cap G, when arranged and constructed substantially as set forth.

JOHN BROUGHTON.

Witnesses:
M. M. LIVINGSTON,
C. L. TOPLIFF.