Nov. 18, 1924. 1,516,367

H. G. WILLIAMS

GAUGE COCK

Filed April 16, 1921

Fig. 1.

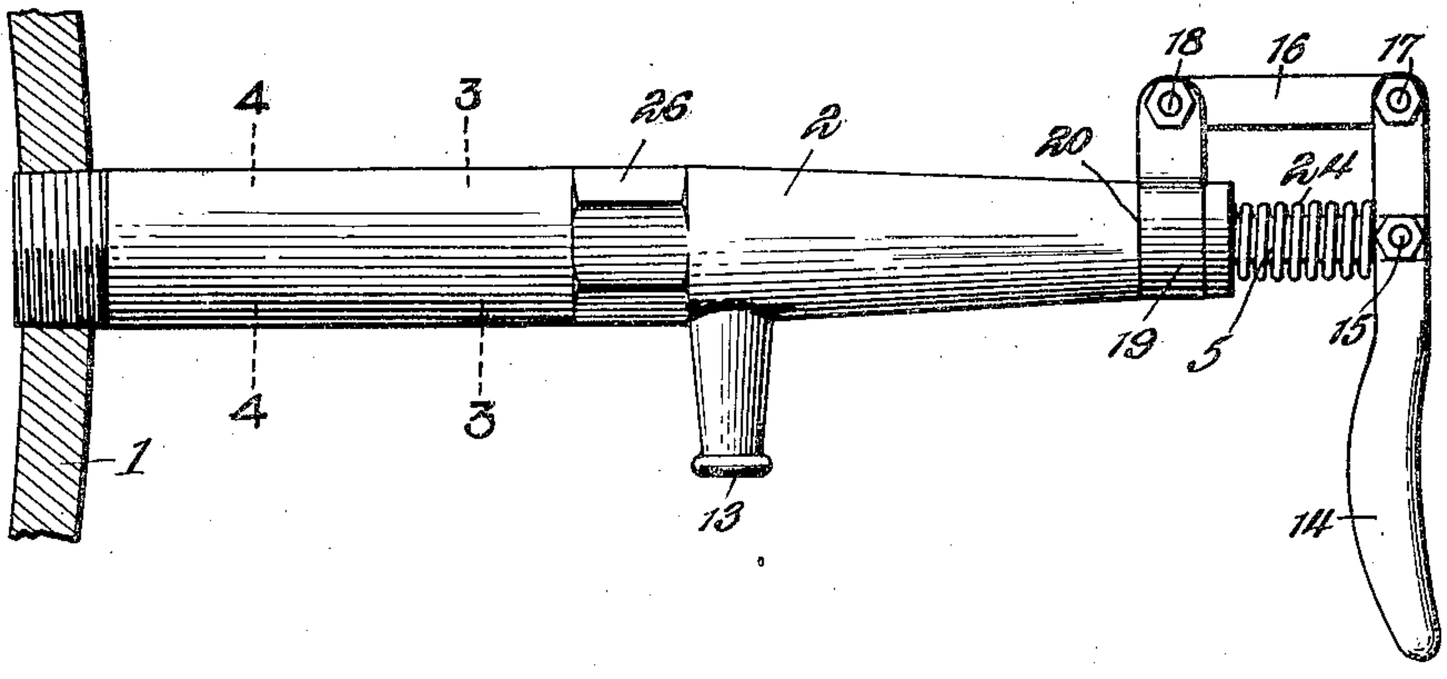


Fig. 2.

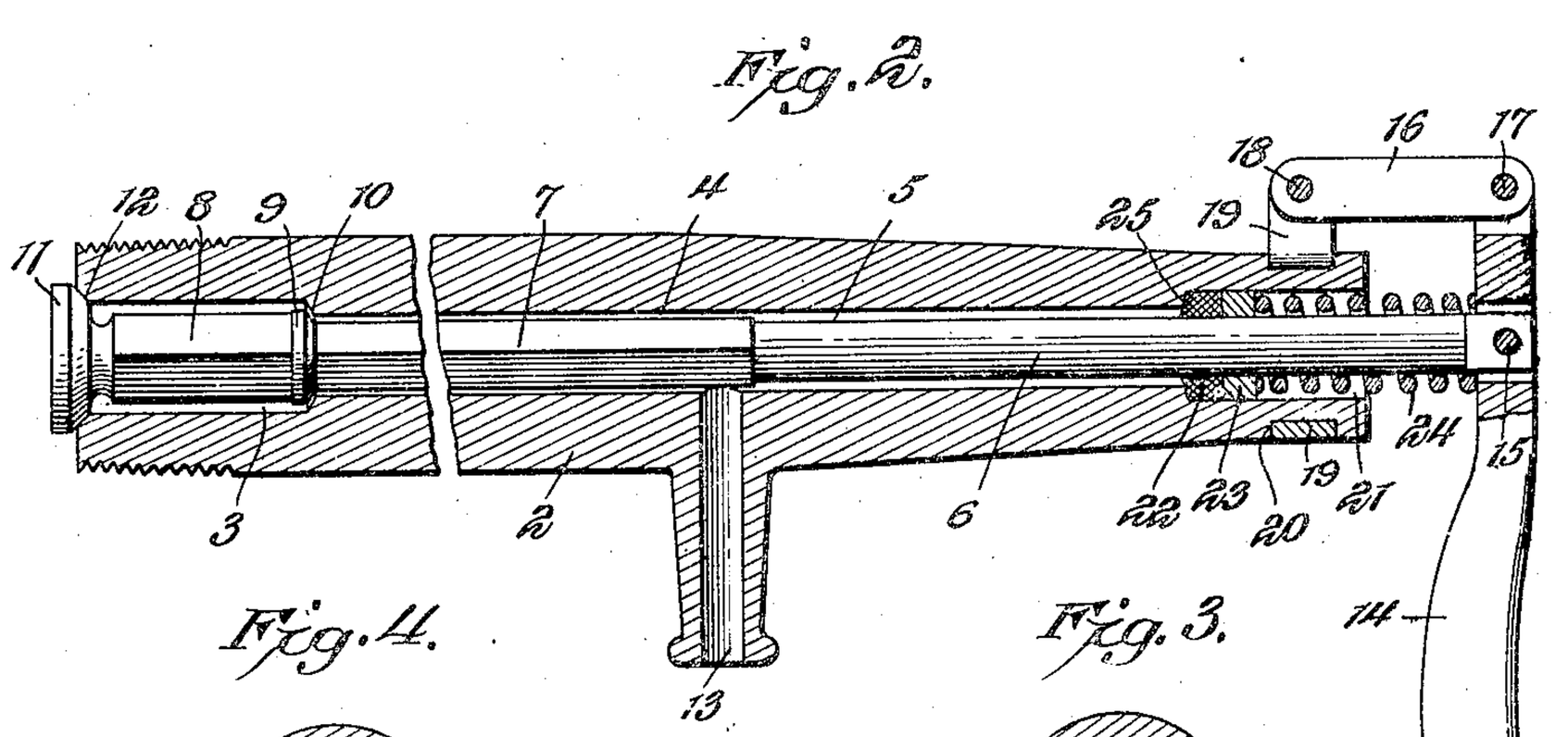
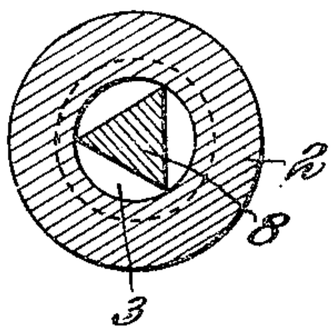


Fig. 4. Fig. 3.



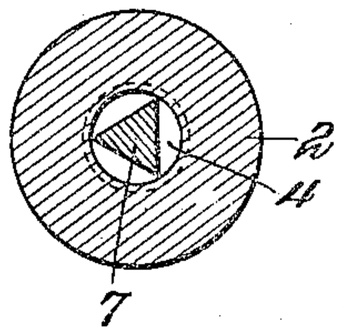
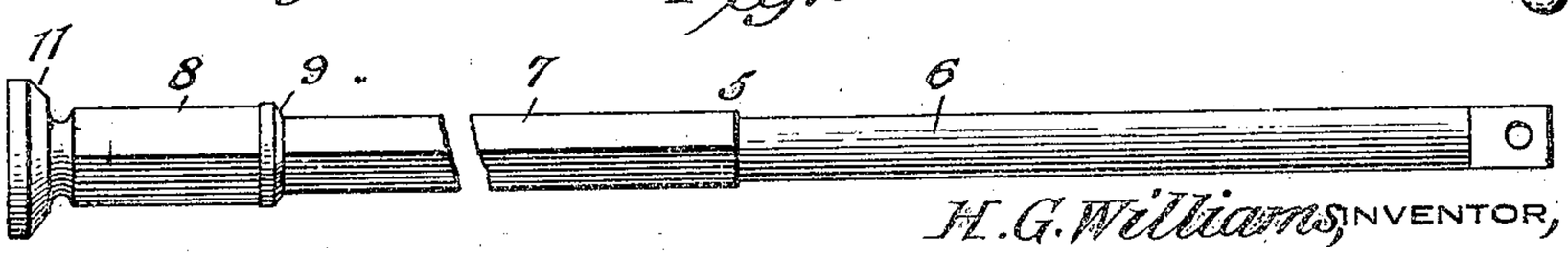


Fig. 5.



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UNITED STATES PATENT OFFICE.

HORACE GALVESTON WILLIAMS, OF CHICAGO, ILLINOIS.

GAUGE COCK.

Application filed April 16, 1921. Serial No. 462,016.

To all whom it may concern:

Be it known that I, HORACE G. WILLIAMS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Gauge Cock, of which the following is a specification.

This invention relates to gauge cocks, and is more particularly directed to a combined means forming a component part of the device for operating and grinding the valves of the gauge while the valves are under pressure.

An object of the invention is to provide a means operatively connected with a valve of the gauge cock for not only opening the valve in the gauge, but also to rotate and grind the valve on its seat in order to remove corrosive matter from the valve and its seat.

Another object of the invention is to provide a gauge cock having a plurality of valves on a single stem, one of which becomes active only in case the other is broken off, and a means connected with the stem for grinding the active valve on its seat.

The above, as well as such other objects as may hereinafter appear, I attain by means of the construction which is illustrated in the preferred form in the accompanying drawings, in which:—

Fig. 1 is a side elevation of the device.

Fig. 2 is a longitudinal section of the device.

Fig. 3 is a cross section of the device along the line 3—3 of Fig. 1.

Fig. 4 is a similar cross section along the line 4—4 of Fig 1.

Fig. 5 is an elevation of the valves and stem.

One of the disagreeable features of operating a valve in a gauge cock on a steam or water boiler is the inability to maintain a water-tight seal between the valve and its seat, due to impurities and corrosive elements found in the water. Various devices have been employed to prevent leakage through the gauge, but none have been sufficiently successful to maintain a seal between the main valve and its seat.

I not only employ a plurality of valves on a single stem within the gauge cock, but provide a means for grinding any extraneous matter that may lodge upon the valves or on their seats, while the valves are under pressure and without disturbing the pressure within the boiler to which the gauge cock is connected.

In the drawings, 1 designates a boiler in which casing 2 of the gauge cock has a threaded engagement.

The casing has a central longitudinal conduit or bore of different cross sections providing chambers 3 and 4, in which is disposed the valve stem 5 comprising three distinct portions: a cylindrical portion 6 located within the chamber 4 and projecting beyond the outer end of the casing 2, a triangular portion 7 located within the chamber 4, and a triangular section 8 of a larger cross section than the portion 7, located in the chamber 3 which is likewise greater in cross section than the chamber 4. The portions 7 and 8 are made triangular in cross section in order to afford a passage for fluid between the stem and the inner surface of the bore of the casing.

At the intersection of the two triangular sections 7 and 8, I have formed a valve 9 which is adapted under certain conditions to cooperate with a seat 10 located at the junction between the chambers 3 and 4 of the casing. On the inner end of the stem I have formed a valve 11 which is adapted to cooperate with a seat 12 disposed on the inner end of the casing and projecting within the boiler 1. The valves 9 and 11 are so disposed along the stem that the valve 11, is normally seated, in order to prevent the fluid within the boiler 1 from escaping through an outlet port 13 in the casing 2, while the valve 9 is normally inactive and slightly spaced from its seat 10, but immediately becomes seated in case the valve 11 is broken off.

The stem carrying the valves 9 and 11 is reciprocated by means of a lever 14 pivoted at 15 to the outer end of the stem and fulcrumed on a link 16, at 17. The link is pivoted, at 18, on a bracket or strap 19 which is adapted to revolve in an annular groove 20 formed in the outer end of the casing 2.

A recessed portion 21 in the outer end of the casing 2 carries a packing 22 and a gland 23 through which the stem reciprocates. A coil spring 24 surrounding the outer portion of the stem bears against the gland 23 at one end and at its other end against the lever 14 in order to maintain the valves 9 and 11 in seating position, and also to force the gland and packing firmly against a seat 25 in the recess

21 to prevent fluid from the boiler escaping through the outer end of the casing 2.

It will be noted that the lever 14 may not only be oscillated to reciprocate the stem and unseat the active valve 9 or 11 to open communication between the boiler 1 and the outlet port 13, but it may be rotated by reason of the link and swiveled bracket on the outer end of the casing in order to grind on its seat either the valve 9 or the valve 11 whichever is active to eliminate corrosive matter or impurities that have collected thereon.

The polygonally faced portion 26 on the casing 2 is adapted to be gripped by a suitable tool for turning the casing in order that the threaded portion of the casing may be screwed into the threaded opening of the boiler 1.

What is claimed is:—

1. In a gauge cock, the combination of a casing provided with a seat, a valve normally located on said seat and provided with a stem, means on said casing and operatively connected with the valve stem and operable selectively to effect a rectilinear movement of the valve inwardly and outwardly without rotating the same, or rotate said valve to grind it upon its seat.

2. In a gauge cock, a casing provided with a seat, a valve normally located on said seat and provided with a stem, and means swiveled on said casing and operatively connected with said stem for seating and unseating the valve and also for turning the valve to grind the valve on its seat.

3. In a gauge cock, a casing provided with a seat, a valve normally located on said seat and provided with a stem, a link adapted to be revolved around said casing, and a handle pivotally connected to said link and stem for reciprocating the valve and also for rotating the valve to grind the valve on its seat.

4. In a gauge cock, a casing provided with a seat, a valve normally located on said seat and provided with a stem, a link adapted to be revolved around said casing, and a lever fulcrumed on the link and pivoted to the valve stem for reciprocating the valve and also for rotating the valve to grind the valve on its seat.

5. In a gauge cock, a casing provided with a plurality of valve seats, a plurality of valves provided with a common stem, one of said valves being normally active and located on one of said seats, another of said valves being inactive and slightly spaced from another of the seats but adapted to seat thereon in case the normally active valve becomes broken off, a strap swiveled on the casing, a link pivoted to the free end of the strap, and means fulcrumed on the link and pivoted to the stem for reciprocating the stem to seat or unseat the active valve and for rotating the stem to grind the active valve on its seat.

6. In a gauge cock, a casing provided with two valve seats, two valves provided with a common stem, one of said valves being normally active and seated on one of said seats, the other valve being normally inactive and slightly spaced from the other seat but adapted to engage the same in case the normally active valve becomes broken off, and a single means connected with said casing and operatively connected with the stem for opening the active valve and for rotating the stem to grind the active valve on its seat.

7. In a gauge cock, a casing provided with two valve seats, two valves provided with a common stem, one of said valves being normally active and seated on one of said seats, the other valve being normally inactive and slightly spaced from the other seat, means rotatably mounted on the casing, a lever fulcrumed on said means and pivoted to the stem, and a spring acting against the lever to close the active valve, said lever being operable to rotate the stem and to grind the active valve in its seat.

8. In a gauge cock, a casing provided with two seats, two valves provided with a common stem, one of said valves being normally active and seated on one of said seats, the other valve being normally inactive and slightly spaced from the other seat but adapted to engage the same in case the normally active valve becomes broken off, a bracket rotatably mounted on the casing and a lever fulcrumed on said bracket and pivoted to the stem, said lever being operable to reciprocate the stem for seating or unseating the active valve and to rotate the stem to grind the active valve on its seat.

9. In a gauge cock, the casing having a bore of different sized cross sections providing communicating chambers, a valve stem comprising a cylindrical portion, and two triangular portions, one of the triangular portions being larger in diameter than the other, the triangular portions being located in the respective chambers, a valve seat at the inner end of the casing, another valve seat at the junction of said chambers, valves spaced on said stem adapted to said seats, and an operating lever swiveled to said casing, and pivoted to said stem for reciprocating and turning said stem.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature.

HORACE GALVESTON WILLIAMS.