(No Model.)

I. M. MABONE.

WATER GAGE FOR STEAM BOILERS.

No. 513,649. Patented Jan. 30, 1894.

FIG. 2.

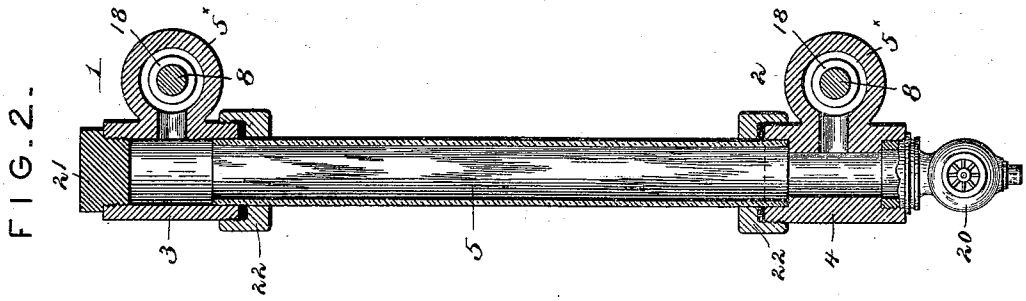
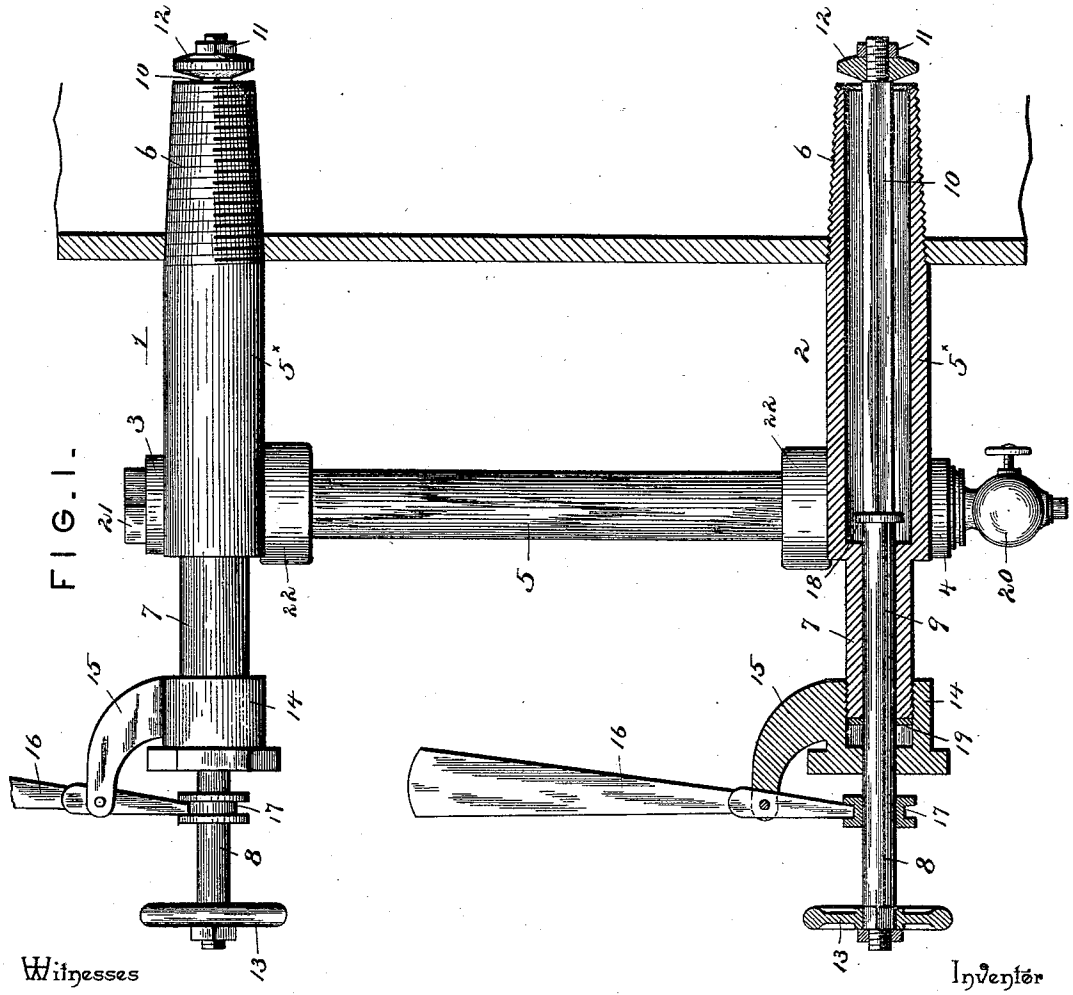


FIG. 1.



Witnesses

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N. J. Riley

Inventor

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ISAAC M. MABONE, OF OSKALOOSA, IOWA.

WATER-GAGE FOR STEAM-BOILERS.

SPECIFICATION forming part of Letters Patent No. 513,649, dated January 30, 1894.

Application filed June 23, 1893. Serial No. 478,629. (No model.)

To all whom it may concern:

Be it known that I, ISAAC M. MABONE, a citizen of the United States, residing at Oskaloosa, in the county of Mahaska and State of Iowa, have invented a new and useful Water-Gage for Steam-Boilers, of which the following is a specification.

The invention relates to improvements in water gages for steam boilers.

The objects of the present invention are to improve the construction of water gages for steam boilers, to enable the valve seats to be readily ground, without moving the valves or cocks, to prevent leakage without inconvenience, and to enable the valves of a water gage to be automatically closed in case of breakage of the water tube to prevent the escape of steam and the liability of persons being scalded in case of wreckage or other accidents.

The invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings and pointed out in the claim hereto appended.

In the drawings, Figure 1 is a side elevation partly in section of a water gage constructed in accordance with this invention, the section being taken longitudinally of the cocks. Fig. 2 is a vertical sectional view taken transversely of the cocks and illustrating the manner of connecting the water tube to the cocks.

Like numerals of reference indicate corresponding parts in all the figures of the drawings.

1 and 2 designate upper and lower gage cocks, provided at their sides with vertical water tube sockets 3 and 4 receiving the ends of a glass water tube 5. Each water tube socket communicates with the barrel $5^{\times}$ of a cock, and the barrel is provided near its inner end with a threaded portion 6 and screws into an opening of a boiler and projects inward into the same some distance. The barrel $5^{\times}$ has a reduced outer portion 7 and has a smooth bore through the same, and journaled in the portion 7 of the barrel is a valve rod 8, which has a rounded portion 9 fitting in the bore of the reduced portion, and a polygonal portion 10 which is arranged within the enlarged portion of the barrel. The inner end of the valve rod is threaded, and has secured thereon by a nut 11, a valve plug 12. The inner end of the barrel $5^{\times}$ is countersunk to form a valve seat; and the valve plug, which has a threaded opening to receive the threaded portion of the valve rod, and which is arranged beyond the barrel, tapers to fit the valve seat. In case of impure water being used and grit and other accumulations collecting around the valve and causing leakage, the valve seat may be readily ground to form a perfect connection by turning the valve rod. The outer end of the valve rod is squared, and has secured on it a hand wheel 13.

The cock is prevented from leaking at the outer end by a stuffing box 14, which is interiorly threaded and screws on the exteriorly threaded end of the barrel $5^{\times}$. The stuffing box is provided with a bracket arm 15, which forms a fulcrum for a hand lever 16; and the lower end of the latter engages an annularly grooved collar 17 of the valve rod. The handle lever 16 enables the valve rod to be moved readily inward to open the valve; and each of the cocks 1 and 2 being constructed alike with the exception of the sockets, the valves may be opened by the levers 16 to admit steam to the water tube from above, and water from below. When the valves are opened, the pressure being equal above and below, they will remain open; but, in case of the glass tube breaking, the pressure within the boiler will close the valves and prevent leakage.

In case a valve plug should be broken or become loose in any manner, the valve rod is prevented from being blown out by an annular flange 18, arranged intermediate of the ends of the valve rod and located within the enlarged portion of the barrel to engage the shoulder formed by the reduced portion 7.

A washer 19 and a suitable packing is arranged within the stuffing box 14; and the valve rod is free to turn at all times and cannot be injured by an inexperienced hand turning it and grinding the valve seat.

The lower socket 4 has its upper portion enlarged to form a seat for the lower end of the water tube, and a drip or blow-off cock 20 is screwed into the lower portion of the socket. The upper socket is of the same diameter

throughout, in order that a water tube may be inserted in the sockets, without removing the cocks from the boiler, and the upper socket is closed at the top by a screw plug 21. Each of the sockets is provided with a packing ring 22 to make a tight joint, the packing ring of the lower socket being arranged at the upper end thereof, and that of the upper socket being located at the bottom.

It will be seen that the water gage is simple and comparatively inexpensive in construction, that the valve seats thereof may be readily ground to afford at all times a perfectly tight valve, that in case of breakage of the water tube the valves are automatically closed, and that the valve rod cannot blow out.

Changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

The cocks are adapted to be used singly without the glass water tube to perform the functions of an ordinary gage cock as will be readily seen.

What I claim is—

In a water gage, the combination of a barrel having a bracket arm mounted thereon and provided at its inner end with a valve seat, a valve rod extending through the barrel and provided at its inner end with a valve plug and having at its outer end a hand wheel, an annularly grooved collar arranged on the valve rod near the outer end thereof, and a lever fulcrumed on the bracket arm and engaging the groove of the collar and adapted to move the valve rod inward and to permit the valve rod to be rotated to grind the valve seat, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

ISAAC M. MABONE.

Witnesses:
C. F. AULTMAN,
J. B. KEMPER.

Correction in Letters Patent No. 513,649.

Affidavit having been filed showing that the name of the patentee in Letters Patent No. 513,649, granted January 30, 1894, for an improvement in "Water-Gages for Steam-Boilers," should have been written and printed *Isaac M. Malone* instead of "Isaac M. Mabone," it is hereby certified that the proper correction has been made in the files and records pertaining to the case in the Patent Office, and should be read in the Letters Patent that the same may conform thereto.

Signed, countersigned, and sealed this 22d day of May, A. D. 1894.

[SEAL.]

JNO. M. REYNOLDS,
Assistant Secretary of the Interior.

Countersigned:

JOHN S. SEYMOUR,
Commissioner of Patents.