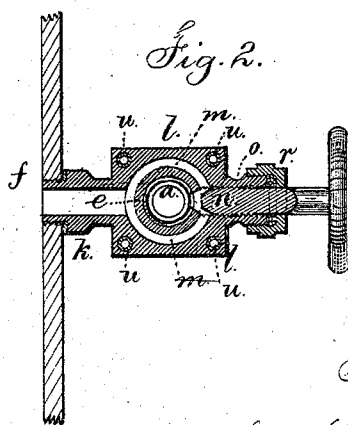
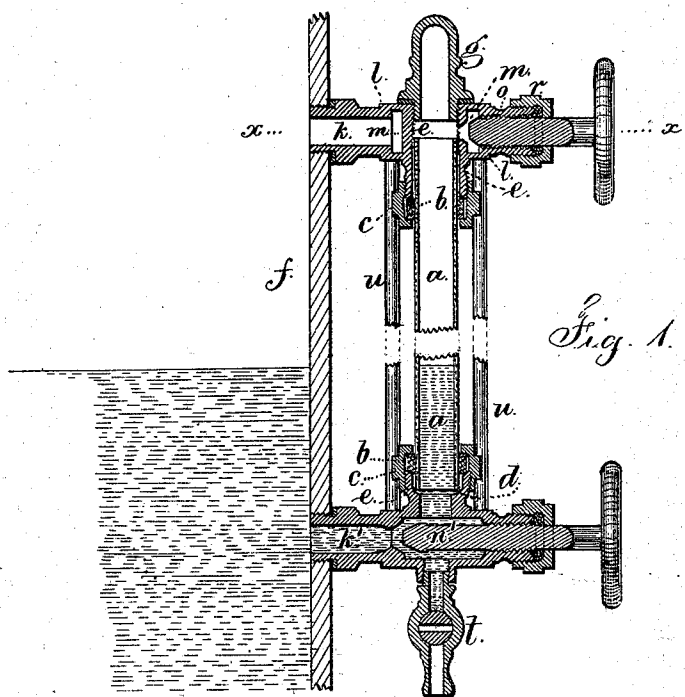


C. G. & B. M. MARTIN.
Water-Gages for Boilers.

No. 144,686.

Patented Nov. 18, 1873.



Witnesses
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Barold Ferrell

Inventors
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att'y.

UNITED STATES PATENT OFFICE.

CHARLES G. MARTIN AND BENAHAH M. MARTIN, OF NEW YORK, N. Y.

IMPROVEMENT IN WATER-GAGES FOR BOILERS.

Specification forming part of Letters Patent No. **144,686**, dated November 18, 1873; application filed August 12, 1873.

To all whom it may concern:

Be it known that we, CHARLES G. MARTIN and BENAHAH M. MARTIN, of the city and State of New York, have invented an Improvement in Water-Gages for Boilers, &c., of which the following is a specification:

Water-gages have been made with a glass tube confined by a packing between two hollow connections of metal that pass to the steam and water spaces, respectively; and there are cocks or valves for opening and closing the passage-ways of these metallic connections. In these metallic connections it is usual to make them of two or more pieces, in order that the passages for the steam may be formed; but in practice it is found that these connections are liable to become bent and to leak, both from unequal expansion and from the wrenching operation in screwing in the connection to the boiler; and, besides this, the glass is difficult to introduce, and liable to be broken by the expansion of the metal.

Our invention is made for simplifying the construction, lessening the cost, preventing leakage, and avoiding injury to the glass tube.

We make use of a metallic connection, with an annular tube around the tubular socket, through which the tube is passed, and to which connection the valve is applied to close the orifice between the annular tube and tubular socket, the parts of this connection being all cast together, as hereafter described, so that there will not be any joints, thereby preventing leakage, and giving increased facility for the insertion of the glass gage-tube.

In the drawing, Figure 1 is a vertical section of said gage, and Fig. 2 is a sectional plan at the line *x x*.

The glass tube *a* is of suitable size and length, and it is received at its ends within the packing *b*, and screw-compressing collars *c* of the coupling. At the bottom of the tube the glass *b* should rest upon the ledge *d* in the tubular socket *e*; but at the upper end this tubular socket *e* extends entirely through the metallic connection to the boiler *f*, so that the tube may be entered or withdrawn from above through the tubular socket *e* when the cap *g* is removed. The metallic connection to the steam-space of the boiler is made of the screw-tube *k*, and the body *l* surrounding the tubular socket *e*, and leaving the annular steamway *m*. The valve *n* passes through the projection *o* and packing-gland *r*. The screw-

tube *k*, body *l*, tubular socket *e*, and projection *o*, are all cast in one piece, to avoid joints and leakage; and the seat for the valve *n* is made in one side of the tubular socket, so that the steam-opening can be opened or closed, as required.

This construction of metallic connection for the upper end of the glass gage-tube combines the following advantageous features: The connection is light and compact, occupying but little space, and keeping the glass as close to the boiler as convenient. The hand-wheel and valve are as far from the boiler as possible, so as to be easy of access, and not liable to become highly heated, and the valve is not in the way in introducing or withdrawing the glass tube; and these advantages result from the annular steamway extending around the tubular socket for the glass tube, so as to allow of these parts being thus constructed and positioned; besides this, the valve is in a position where neither the valve or its seat is liable to be bent or misplaced by the strain incident to screwing the connection into the boiler.

The metallic connection to the boiler at the bottom end of the glass tube is made with the valve-seat for the valve *n'* at the end of the tube *k'*, and the valve-stem extends across below the glass tube.

The usual blow-off cock *t* is provided, and rods *u* are employed to protect the glass. These pass through the upper metallic connection, and enter sockets in the lower connection. By making these connections square, as shown, the rods *u* are received near the angles, and the rods can easily be withdrawn, if required, for cleaning, or when the glass tube has to be removed.

We claim as our invention—

The metallic connection for the glass tube, composed of the tubular socket *e*, tube *k*, body *l*, and projection *o* for the gland, all cast in one piece, with an annular tubular steamway, *m*, around the tubular socket *e*, in combination with the valve *n*, and the opening in the socket forming the seat for said valve, substantially as and for the purposes set forth.

Signed by us this 5th day of August, 1873.

CHAS. G. MARTIN.

BENAHAH M. MARTIN.

Witnesses:

GEO. T. PINCKNEY,

CHAS. H. SMITH.