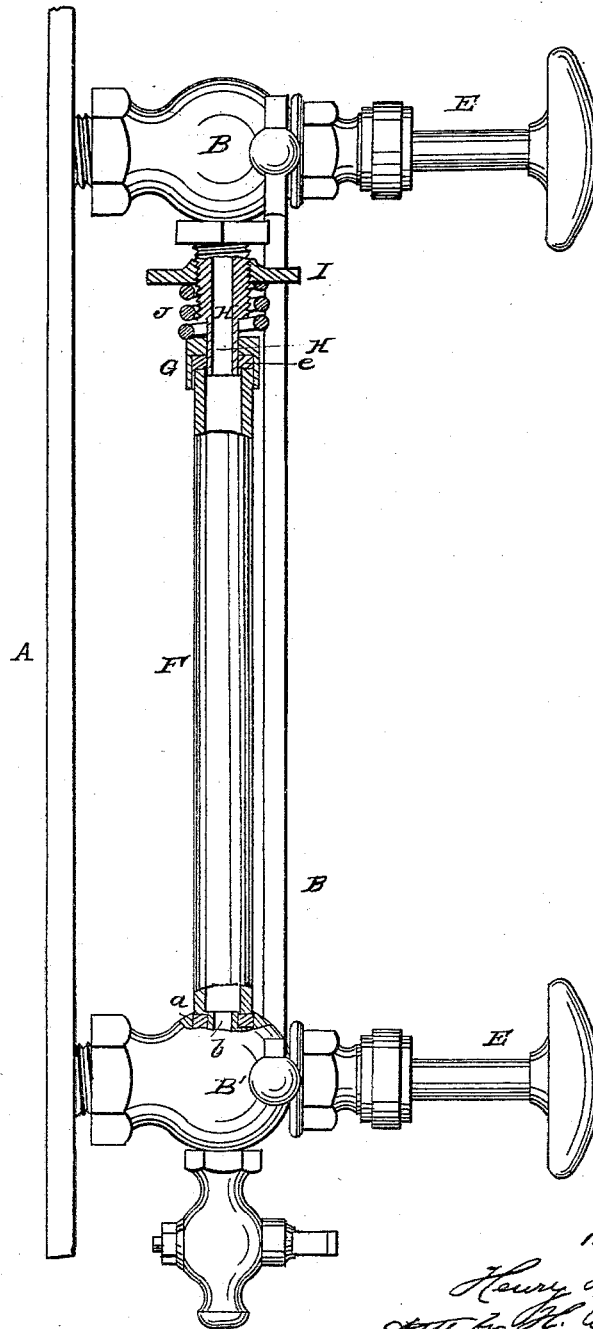


H. BELFIELD.

Water Gage for Steam Generators.

No. 49,366.

Patented Aug. 15, 1865.



WITNESSES
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UNITED STATES PATENT OFFICE.

HENRY BELFIELD, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN WATER-GAGES FOR STEAM-GENERATORS.

Specification forming part of Letters Patent No. **49,366**, dated August 15, 1865.

To all whom it may concern:

Be it known that I, HENRY BELFIELD, of Philadelphia, Pennsylvania, have invented certain Improvements in Water-Gages; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing, and to the letters of reference marked thereon.

My invention consists in the usual glass gage-tube, combined with devices fully described hereinafter, so that the packing is maintained firmly in contact with the tube, and so that the latter may be readily removed when required.

The object of my invention is to afford facilities for the ready removal and replacing of the glass tube, to maintain perfectly steam and water tight joints at the ends of the same, and to prevent the glass from being broken by sudden expansion and contraction.

In order to enable others skilled in the art to make my invention, I will now proceed to describe the manner of constructing the same.

The figure in the accompanying drawing represents a side view, partly in section, of my improved water-gage.

A represents in section the front of a steam-boiler, to which are secured the usual valve-boxes, B and B', the latter being connected together by any suitable number of vertical rods, D, and each box being furnished with a valve controlled by a screw-rod, E, in a manner too well understood by those familiar with steam-boiler fittings to need description.

F is the usual glass tube, the lower end of which bears on an annular packing, *a*, of gum-elastic, contained in an annular recess formed in the top of the valve-box B', round the projection *b*, through which the water in the boiler gains access to the said glass tube when the valve is open. The upper end of the tube is surmounted with a metal cap, G, containing an annular packing, *e*, of gum-elastic, and through the top of the cap, as well as through the packing, passes the plain portion of the tubular projection H on the upper valve-box,

B, the steam passing from the boiler through this projection into the top of the tube when the valve of the said box is open. A portion of the projection is enlarged, and on this enlarged portion are cut screw-threads adapted to those in a nut, I, between which and the top of the cap G intervenes a spiral spring, J. When the tube is in its proper position the lower end projects a short distance into the annular recess containing the packing *a*, which is so far compressed as to form a perfectly steam and water tight joint. The packing *e* in the cap G is also compressed and forms a perfect joint round the plain portion of the tubular projection J, as well as on the end of the tube.

Should there be any leakage after the lapse of time at these points, it can be readily stopped by screwing down the nut I, which gives an additional compression to the packings, the spring J preventing such undue end force from being applied to the tube as to crush and break the same. This spring, as well as the gum-elastic packing-pieces, accommodate themselves to any sudden expansion or contraction of the glass tube.

When the tube has to be removed so that its interior may be cleansed, all that is necessary is to elevate the nut I until the lower end of the tube escapes from the annular recess in the valve-box B', when the said tube is at liberty.

I claim as my invention and desire to secure by Letters Patent—

The combination and arrangement of the cap G, glass tube F, spiral spring J, nut I, elastic packing *e*, and tubular projection H, as herein set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

H. BELFIELD.

Witnesses:

CHARLES E. FOSTER,
JOHN WHITE.