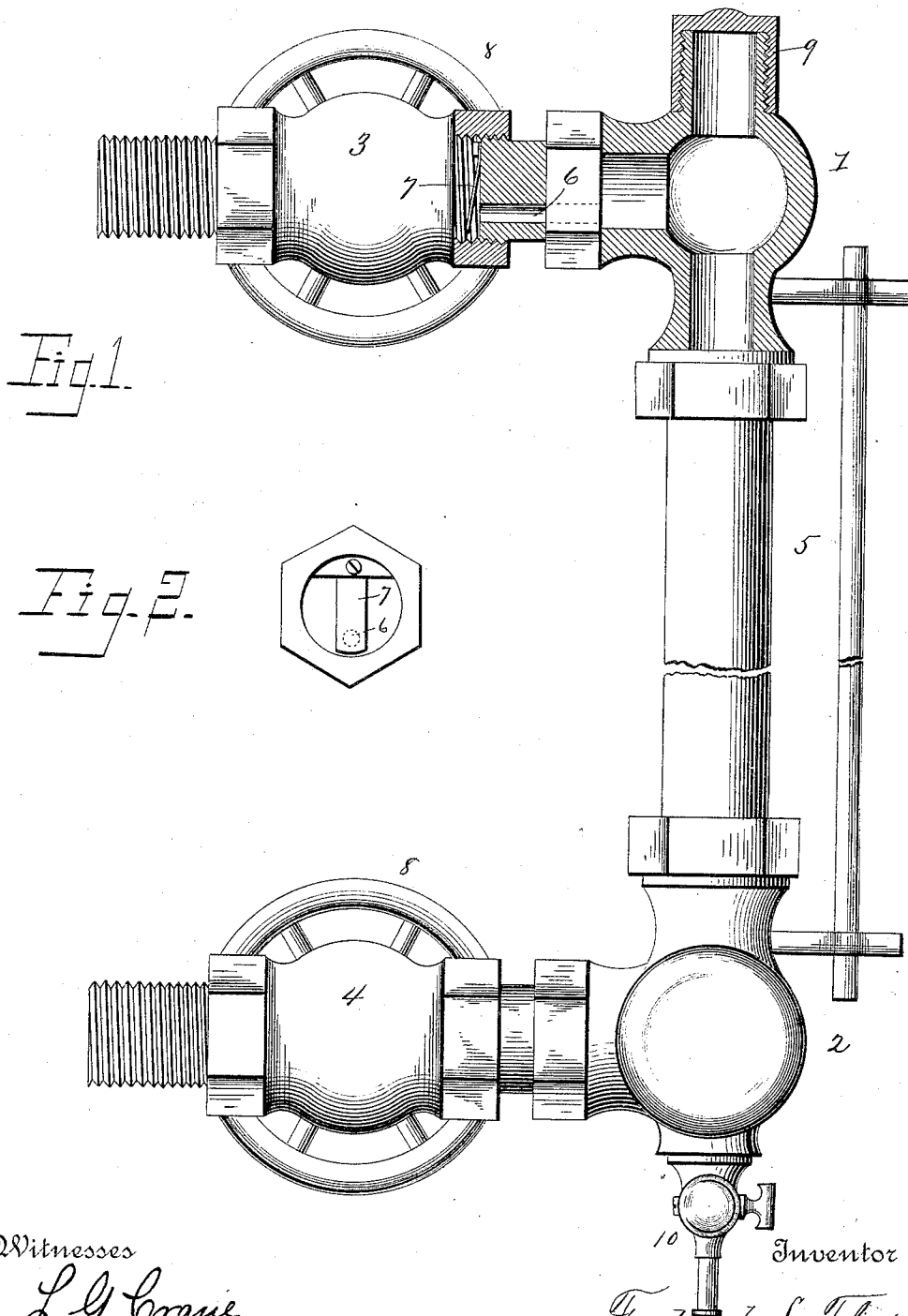


(No Model.)

F. S. THRING.
WATER GAGE.

No. 436,616.

Patented Sept. 16, 1890.



Witnesses

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UNITED STATES PATENT OFFICE.

FREDRICK SAMUEL THRING, OF NEW YORK, N. Y.

WATER-GAGE.

SPECIFICATION forming part of Letters Patent No. 436,616, dated September 16, 1890.

Application filed March 20, 1890. Serial No. 344,620. (No model.)

To all whom it may concern:

Be it known that I, FREDRICK SAMUEL THRING, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Water-Gages for Steam-Boilers; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

This invention relates to an improvement in water-gages for steam-boilers.

The object of the invention is to produce a water-gage which shall be of such construction that should the glass break the flow of steam and water thereto will be automatically cut off, thereby overcoming all danger of the water in the boiler escaping to a dangerously low point and preventing the scalding of the attendant.

A further object of the invention is to produce a water-gage which shall be simple of construction, efficient and durable in use, and may be constructed and applied to a boiler at but a slight expense.

With these objects in view the invention consists, broadly, in the combination, with the tube castings, of a valve or valves connecting therewith and adapted to be operated by the water or steam pressure of the boiler to cause them to close the opening leading to the tube castings to the globe-valves which connect with the water and steam space of a boiler; and the invention further consists in the various novel details of construction, which will be hereinafter fully described in the specification, illustrated in the drawings, and more particularly pointed out in the claims.

In the accompanying drawings, forming part of this specification, and in which like numerals of reference indicate corresponding parts, I have illustrated one form of device embodying the essential features of my invention.

Figure 1 is a side elevation, partly in section, showing my improved water-gage and a valve mounted therein; and Fig. 2 is a detail view of one of the valves.

Referring to the drawings, 1 and 2 designate the tube-castings, which are secured to globe-valves 3 and 4, which latter connect, respectively, with the steam and water space of the boiler in the ordinary manner.

Within the castings is secured a glass tube 5, which forms the gage proper. This tube is of no peculiar construction, and is held in place within the castings in the ordinary manner.

The inner ends, or that portion of the castings which engages with the globe-valves 3 and 4, are furnished with a small aperture and with spring-valves 7, the normal tendency of which are to be out of engagement with the apertures. These valves are of sufficient rigidity to overcome the pressure of the water and steam within the boiler when the device is intact, and thus allow a free circulation of water and steam through the tube; but should the tube be broken, the pressure within the boiler, being greater than the atmospheric pressure, will cause the valves instantly to close the apertures, and thus effectually cut off the escape of steam and water.

In order to replace a new tube, it is only necessary to turn the hand-wheels 8, carried by the globe-valves, thus cutting off the flow of steam and water to the gage. The tube may then be removed from the boiler and a new one refitted within the castings.

When it is desired to clean the tube, it is not necessary to remove it, as with water-gages of the ordinary construction, but simply unscrew the cap 9, carried by the casing 1, open the petcock 10, and then swab out the interior of the tube by securing a piece of waste to a stick or wire and running it through the same.

It will readily be seen from the foregoing description that by the use of the automatically-closing valves in the tube castings all danger of scalding the engineer or fireman when the tube breaks will be effectually overcome; also, that the great risk run in removing the tube for the purpose of cleaning it will be obviated by my improved water-gage.

I would have it distinctly understood that I do not limit myself to the exact construction herein shown, but may vary widely therefrom in carrying my invention into effect.

It is evident that the parts 7 are both springs and valves—that is, spring-valves and not spring-controlled valves. It is also evident that it is not necessary to close the cocks 3 3 when the cap 9 is removed to clean the interior of the gage-tube, as then the spring-valves 7 will close, just as they will when the tube is broken.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the gage-tube and the castings at the ends thereof provided with the longitudinal apertures or openings 6, of the globe valves or cocks connecting said castings to the boiler and the leaf spring-valves 7, secured to the ends of the castings within the adjacent stems of the cocks with

their free ends arranged to close on the apertures or openings 6 under steam or water pressure when the gage-tube is broken, substantially as specified.

2. The combination, with the gage-tube, the castings at the ends thereof having the apertures or openings 6, the cocks connecting the said castings to the boiler, and the leaf spring-valves 7, of the screw-cap 9 on top of the upper casting and the petcock 10 at the bottom of the lower casting.

In testimony whereof I affix my signature in presence of two witnesses.

FREDRICK SAMUEL THRING.

Witnesses:

J. BROWN, Jr.,
JOS. J. MILLER.