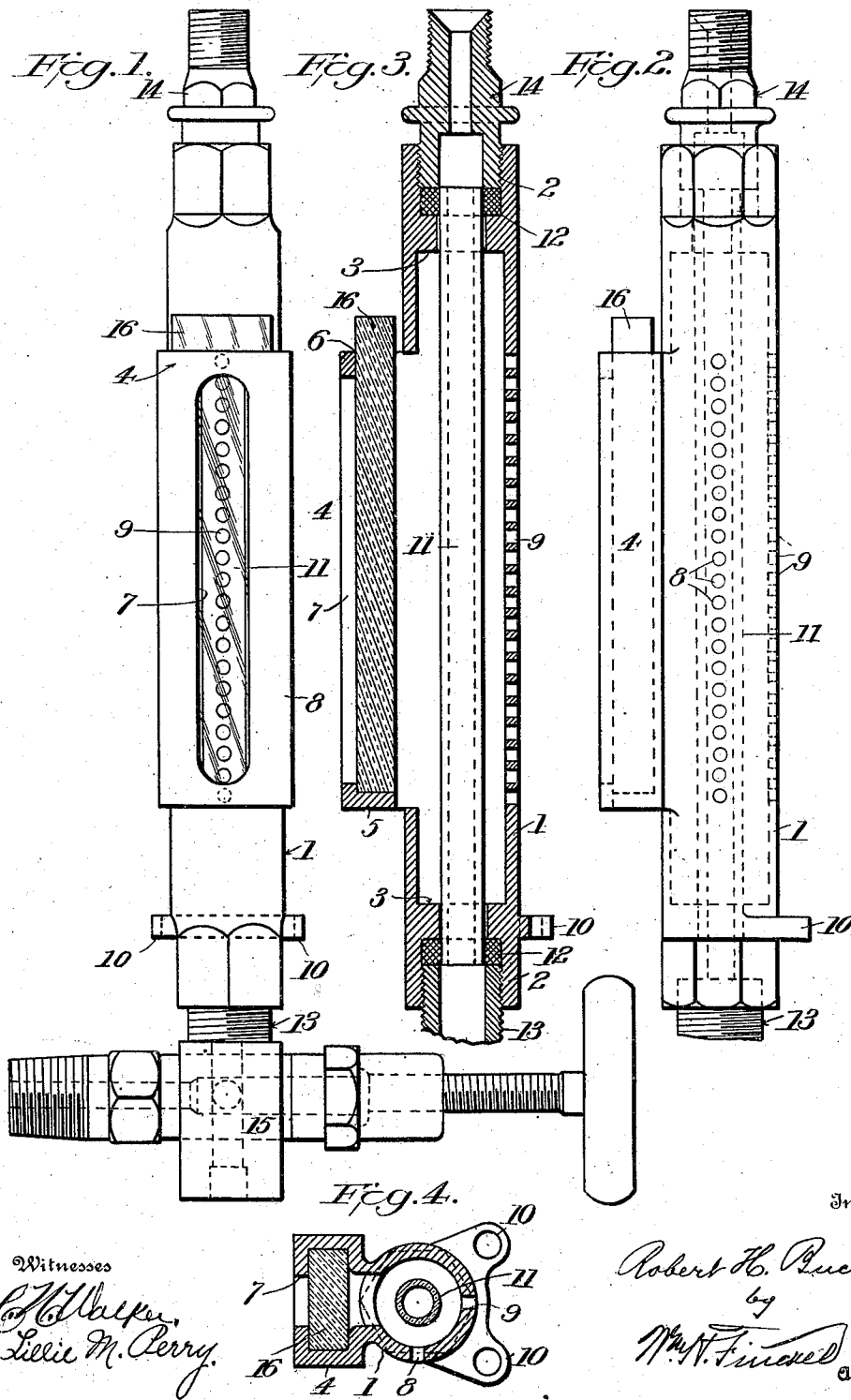


R. H. BUCKNER.  
WATER GAGE.  
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942,365.

Patented Dec. 7, 1909.



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Witnesses

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# UNITED STATES PATENT OFFICE.

ROBERT H. BUCKNER, OF PORTSMOUTH, VIRGINIA.

WATER-GAGE.

942,365.

Specification of Letters Patent.

Patented Dec. 7, 1909.

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*To all whom it may concern:*

Be it known that I, ROBERT H. BUCKNER, a citizen of the United States, residing at Portsmouth, in the county of Norfolk and State of Virginia, have invented a certain new and useful Improvement in Water-Gages, of which the following is a full, clear, and exact description.

The water gages on locomotives frequently break under sudden exposure to changing air currents and variations in temperature, with the result that the engineer is dangerously exposed to the flying glass and hot water. These gages have been inclosed in various kinds of shields to prevent the escape of the broken glass and the hot water, but so far as I am aware, little, if any, account has been taken in constructing such shields of the necessity of thoroughly preserving the unobstructed inspection of the gage glass and its illumination at all times and the control of the direction of escape of the water in the event of the breaking of the glass.

The object of this invention is to meet these requirements in a simple, cheap and efficient manner.

The invention consists of a water gage, having a shield in which the gage tube is directly mounted, said shield being of metal, in a single piece, with a pocket for the reception of a face piece of thick glass, and perforations for illumination of the glass tube and for the escape of water away from the engineer in case of the breaking of the glass tube.

In the accompanying drawings, illustrating the invention, in the several figures of which like parts are similarly designated, Figure 1 is a front elevation of the device. Fig. 2 is a side elevation. Fig. 3 is a longitudinal section. Fig. 4 is a substantially central cross-section.

The valve shown in Fig. 1 is omitted from the other views as not necessary to an understanding of the views, and moreover, the invention is not limited to the use of that valve or to any special form of mountings by which the water gage is applied to the boiler.

The shield of this invention is a tubular casting 1, having internally screwthreaded ends 2 and flanges 3. A pocket 4 extends out from the front of the shield, and has its lower end 5 closed, its upper end 6 open, and its front provided with a longitudinal opening 7. There is a row of holes 8 in one side, extending lengthwise of the shield,

and a similar row of holes 9 in the shield opposite the pocket, so that light may fully pass into the shield. At the lower end are the perforated lugs 10 to receive a light of any sort.

The gage glass tube 11 is placed in the flanges 3 and its ends surrounded by packing rings 12 which are compressed in place by the fittings 13 and 14 used in connection with the boiler mountings. As shown, the fitting 13 may be a part of the valve 15. Any suitable fittings capable of securing the tube 11 in the shield in a leak-tight manner may be employed. The shield is enough larger than the tube 11 to allow free circulation of air around it and to relieve it of undue metallic contact. In the pocket 4 is placed a piece of thick and strong glass 16, in practice about a half inch thick, so as to be capable of resisting the flying glass of a broken tube and yet permit clear vision of the tube when the latter is intact and in working order. The row of holes 9 opposite this plate of glass admits light into the shield so as to insure illumination sufficient to enable the engineer to read the gage readily.

The invention is not limited to rows of holes 8 and 9, to form the light and air openings. The openings 8 and 9 not only admit light and air, but they serve the additional purpose of permitting the escape of water in case the glass tube breaks, and they and the upper open end of the pocket are so arranged as to direct the escaping water away from the engineer and thus save him from being scalded.

It will be noticed that the shield 1 serves to receive the glass tube 11 directly as a holder therefor, and thus becomes a part of the water gage, in addition to serving as a shield. It is to be noted that the shield is in a single piece, and thus the glass may be inserted in the shield at the shop, ready for attachment to the locomotive or boiler wherever it may be. In other words, it is not necessary, indeed it is not possible, to first insert the glass in position on the boiler and then apply the shield. This construction not only has the advantage of enabling the manufacturer to assemble the parts and carry them in stock thus assembled, but it also overcomes the possibility of the shield being purposely or otherwise detached.

Experiments have demonstrated that the rows of holes 8 and 9, arranged substantially

at right angles, and admitting light to the water tube, serve to convert the water glass and its contained column of water into a magnifying glass, which greatly facilitates the observation of the height of the water. The best results in this respect have been obtained by the use of round holes, as shown in the drawings.

What I claim is:—

1. A water gage, having a glass tube for the water, and a combined single piece tube holder and shield comprising essentially a metal tube provided with means for receiving and seating the glass tube, and having openings arranged at right angles to admit light and air and permit the escape of water in case the glass breaks, and a vertically slotted pocket containing a thick plate of glass.
2. A water gage, having a glass tube, and a combined tube holder and shield comprising essentially a tubular casing in a single piece provided with means to receive the fittings by which it may be mounted upon a boiler, flanges to receive the glass tube and against which it may be packed, and a pocket having front and top openings, said casting also having an opening opposite to the pocket, and a glass plate inserted in said pocket.

3. A water gage, having a glass tube, and a combined tube holder and shield made as a single piece and comprising essentially a tubular casing provided with means to receive the fittings by which it may be mounted upon a boiler, flanges to receive the glass tube and against which it may be packed, and a pocket having front and top openings, said casting also having an opening opposite to the pocket, and other openings between the pocket and the opening last named, and a glass plate inserted in said pocket.

4. A water gage, having a glass tube for the water, and a combined tube holder and shield comprising essentially in a single casting a metal tube provided with means for receiving and seating the glass tube, and having openings to admit light and air and permit the escape of water in case the glass breaks, lugs to receive an illuminating agent, and a pocket containing a thick plate of glass.

In testimony whereof I have hereunto set my hand this 28th day of December A. D. 1908.

ROBT. H. BUCKNER.

Witnesses:

HEBER C. CASSELL,  
DAVIS A. ROBERTSON.