(No Model.) 2 Sheets—Sheet 1.

G. H. WALL.

PROTECTOR FOR WATER GAGES.

No. 490,818. Patented Jan. 31, 1893.

Fig. 1

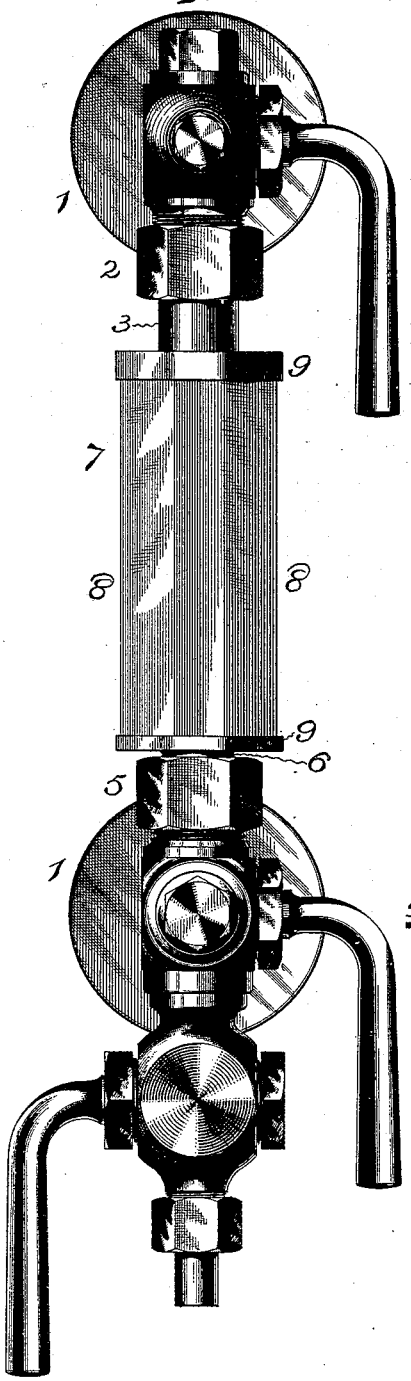


Fig. 2

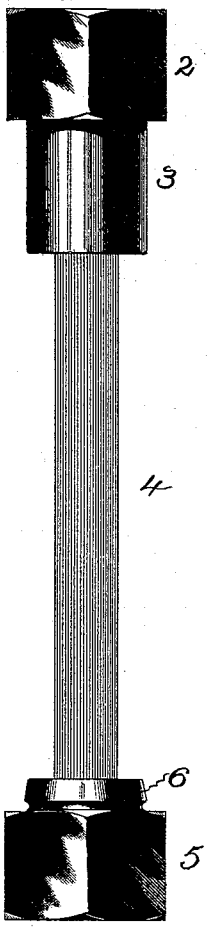


Fig. 3

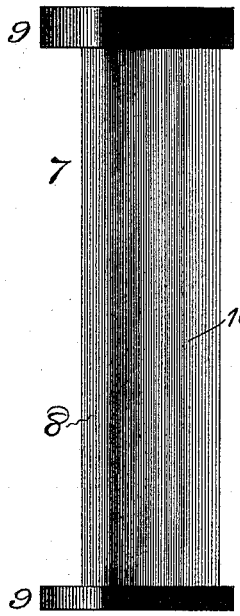
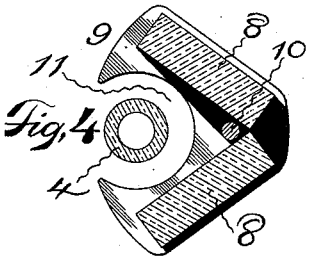


Fig. 4



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Atty.

(No Model.) 2 Sheets—Sheet 2.

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PROTECTOR FOR WATER GAGES.

No. 490,818. Patented Jan. 31, 1893.

Fig. 6

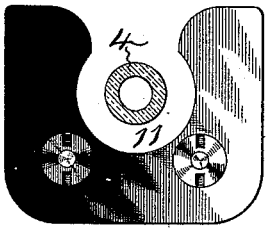


Fig. 9

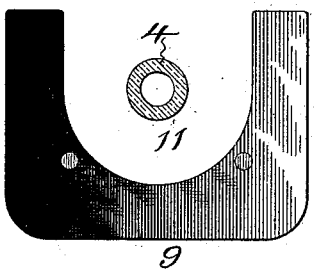


Fig. 5

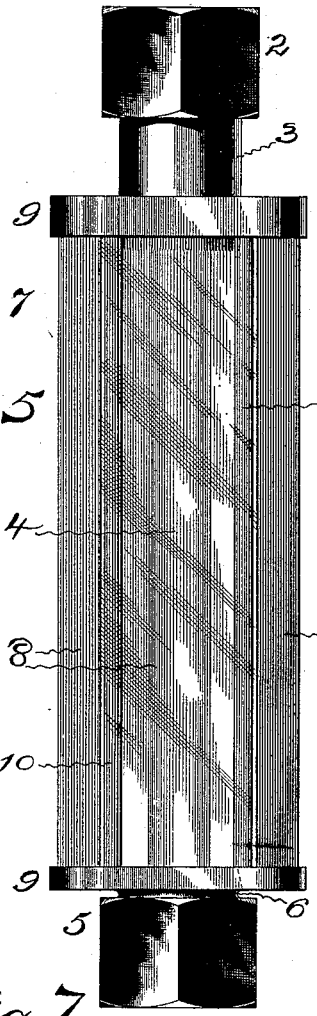


Fig. 8

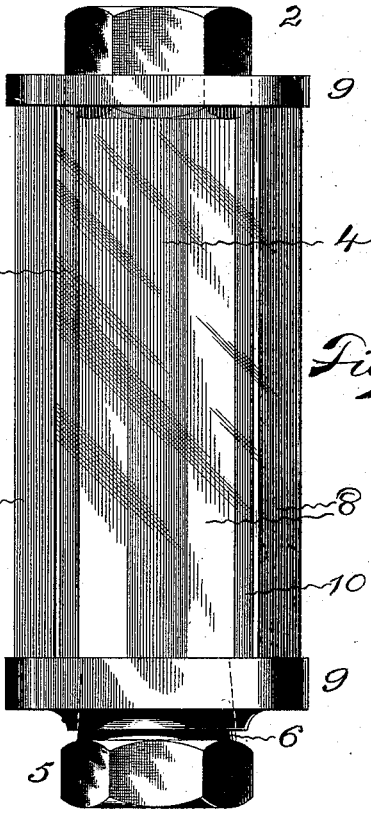


Fig. 7

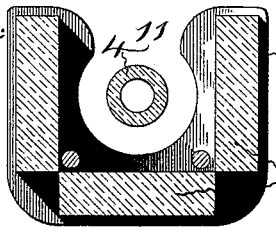
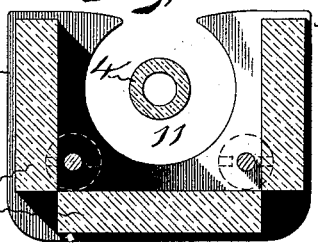


Fig. 10



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UNITED STATES PATENT OFFICE.

GEORGE HENRY WALL, OF LONDON, ENGLAND.

PROTECTOR FOR WATER-GAGES.

SPECIFICATION forming part of Letters Patent No. 490,818, dated January 31, 1893.

Application filed August 9, 1892. Serial No. 442,564. (No model.) Patented in England October 12, 1889, No. 16,075.

To all whom it may concern:

Be it known that I, GEORGE HENRY WALL, a subject of the Queen of Great Britain, residing at London, England, have invented certain new and useful Improvements in Protectors for Water-Gages, (for which a patent has been granted to me in Great Britain, No. 16,075, dated October 12, 1889,) of which the following is a full, clear, and exact specification.

The invention relates to the class of protectors having a transparent shield that, without obstructing the view of the glass observation tube, is attached to a water gage to guard the tube from accidental blows and knocks, and protect persons from injury caused by flying particles and escaping steam and hot water when the tube breaks under pressure; the object being to provide a simple and cheap protector of this class, having few parts that can be quickly assembled or repaired if broken, which can by any one be readily attached to a gage so that it will not be blown off by the bursting of the tube, but which can be easily removed for cleaning or repairing. And to this end the invention resides in a protector consisting of two or more strips of transparent material embedded at their ends in shoes that are secured together by one or more rods and provided with recesses whereby they are adapted to be attached to the metallic parts of the gage, as more particularly hereinafter described and pointed out in the claims.

Referring to the accompanying drawings:—Figure 1 is a reduced front elevation of a water gage provided with a protector. Fig. 2 is a view of the tube with the upper and lower stuffing-box nuts. Fig. 3 is a side elevation of the protector. Fig. 4 is a cross-section of the tube and protector. Fig. 5 is a front elevation of the nuts and tube of a gage with a protector of modified shape. Fig. 6 is a plan view of the top shoe. Fig. 7 is a cross-section of the tube and latter form of protector. Fig. 8 is a front elevation of the nuts and tube of a gage with a protector having shoes of another shape. Fig. 9 is a plan of the top shoe; and Fig. 10 is a cross-section of the last form of protector.

In the views 1 indicates the upper and the lower arms of a water gage of common form, which are secured to a boiler by the usual means in the desired location and provided with the ordinary blow and cut off cocks. The upper arm is provided with a stuffing box and nut 2 usually having a downward projection or hub 3 that holds the upper end of the glass observation tube 4, while the lower arm has a stuffing box and nut 5 usually having an upward projection or hub 6 that holds the lower end of the tube in the ordinary manner.

The protector 7 consists of a shield formed of a number of strips 8 of glass or other transparent material usually somewhat longer than the exposed portion of the tube, which strips are embedded at their ends in shoes 9 formed of metal, or any other suitable material, the shoes being held together by means of one or more rods 10 that have their ends threaded to screw into the shoes or nuts outside of the shoes. In the first form illustrated in the drawings, the shield is formed of two strips of thick glass placed obliquely or embedded at an angle with each other in the shoes, which in this case are held together by a single rod that passes from one shoe to a nut in the other near the vertex of the angle between the strips. The hub 3 which may or may not be integral with the upper stuffing box nut is preferably made cylindrical and somewhat longer than the hub 6 which may or may not be integral with the lower nut, and which is preferably formed tapering. A circular recess or perforation 11 is cut in one side of the shoes of a size that will enable them to fit the hubs, the cut being made in the edge so that the shoes will freely pass the tube but have to be slipped endwise on the hubs so that when in position they cannot be pulled off laterally from the hubs. In attaching this form to the gage the upper shoe of the protector is first slid vertically upon the upper hub until it is high enough for the lower shoe to be slipped vertically down on to the lower hub, which being tapered causes this shoe to fit tightly and hold the protector in place so that it will not shake or vibrate. In the other forms shown, three strips of glass are used in making the shield, the ends of which strips are embedded in the shoes so as to more nearly surround and protect the front and sides of the tube of the gage. In this form it is desirable to hold the shoes together with a pair of rods 10 passing at or near the meeting edges or angles of

the glasses, instead of having one rod as in the structure previously described which is of course the cheaper form.

For use in connection with gages having very short tubes, where it is essential that all possible of the tube be exposed, no hub is formed on the upper nut, but the recess 11 in the upper shoe is cut out of a size sufficient to partially encircle the nut, the protector being held in place by the lower shoe which for this purpose may be made thicker so that it will tightly set over and more firmly hold upon the hub of the lower stuffing box nut.

Protectors made in this manner are simple, cheap and effective, they do not obscure any portion of the glass observation tubes which they protect from receiving accidental knocks, blows and cold drafts which might break them, and should the tubes burst from other causes when under pressure, the flying particles with the escaping steam and hot water are thrown toward the boiler by the sides of the glass shield so that persons in proximity will not be injured. The device is readily formed for gages having tubes of varying lengths, it requires no skillful fitting but is easily slipped in place by anyone so that it cannot be blown off by the explosion of a tube, nor shaken off by any vibration or jar, it is easily removed and cleaned, and should the glasses become broken they can be replaced at once by the person in charge of the boiler to which the gage is attached.

I claim as my invention:—

1. A protector for water gages, consisting of shoes having recesses for surrounding portions of the gage, plain strips of thick transparent material forming a shield placed at an angle with each other with their ends embedded in the shoes, and rods for holding the shoes together and on the ends of the strips, passing from one shoe to the other near the vertices of the angles of the adjoining strips, substantially as specified.

2. A protector for water gages, consisting of shoes having recesses for surrounding portions of the gage, two strips of thick transparent material forming a shield placed at an angle with each other with their ends embedded in the shoes, and a rod for holding the shoes together and on the ends of the strips, passing from one shoe to the other near the vertex of the angle of the strips, substantially as specified.

GEORGE HENRY WALL.

Witnesses:
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