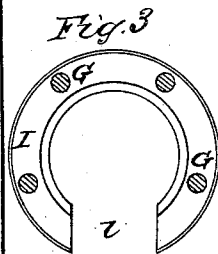
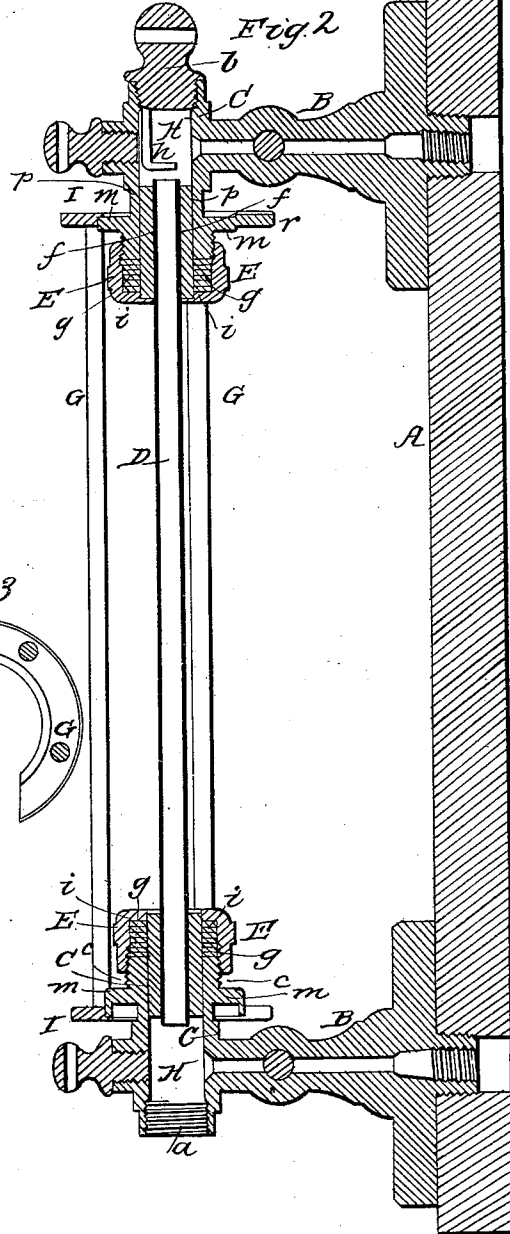
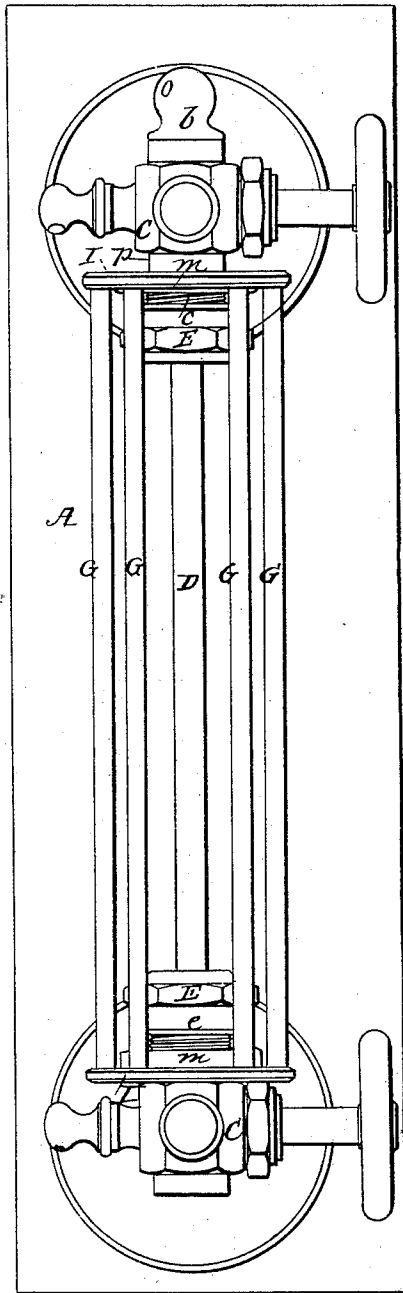


E. WHITELEY,
Water Gage.

No. 18,420.

Patented Oct. 13, 1857.

Fig. 1



UNITED STATES PATENT OFFICE.

EDWARD WHITELEY, OF BOSTON, MASSACHUSETTS.

WATER-GAGE FOR STEAM-BOILERS.

Specification of Letters Patent No. 18,420, dated October 13, 1857.

To all whom it may concern:

Be it known that I, EDWARD WHITELEY, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in "Water-Gages," of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a plan of a water gage; Fig. 2, a longitudinal vertical section through the same; Fig. 3, detail to be referred to.

In water gages where a glass tube is used to indicate the height of the water in the steam boiler, a difficulty has existed in the breaking of the glass tube by the unequal expansion of the tube and the metal; the connection of the tube to its metallic sockets being rigid, would not allow the tube to yield when the sockets and pipes by which the connection between the tube and the boiler was established, were forced asunder by the expansion of the boiler. But in my improved gages this is entirely remedied by placing a packing of india-rubber or other elastic substance around the tube where it is confined in the sockets, in the manner which I will now describe, that others skilled in the art may understand and use my invention.

In the drawings A represents the boiler to which are attached the short metal pipes B, the one placed above and the other below the water line; these pipes are furnished with suitable stop cocks, and have attached to their outer ends the sockets C which hold the glass indicating tubes; these sockets are made open at both ends for the convenience of inserting the glass tube D, without removing the pipes B. The lower socket terminates at *a* in a screw to which a try cock is attached, and the upper one is closed by a screw plug *b*. The inner end of each socket is formed with a screw *c* on which screws the nut or cap E. Embracing the tube D where it enters the sockets C at each end is a tube of india-rubber or other suitable elastic substance *f* which forms a packing between the tube and the socket. One or more elastic washers *g* and a metal washer *i* are placed between the cap E and the end of the socket C, and the cap is screwed down as shown in the drawings when the washers *g* expand by the pressure of the cap, and firmly embrace the elastic tube *f*. This arrangement secures the tube D in place, while it allows it a slight motion longitudinally if necessary to compensate for unequal ex-

pansion, and the tube will not be broken from this cause.

As this kind of gage is at present constructed, with a space H near the end of each socket beyond the ends of the tube D, the tube is liable if it becomes loose in the sockets, to be blown through against the plug *b*, or against the end of the try cock below, when the water or steam will escape from around the other end of the tube; to prevent this I have attached to the inner end of the plug *b* a bent wire or stop *h*, which prevents the longitudinal movement of the tube D beyond a certain limit; a similar wire is attached to the inner end of the try cock below.

To protect the glass tube from being broken by any passing object striking it, a guard has been used consisting of a series of metal rods running parallel to the tube and secured at each end by being passed through lugs cast on the sockets C, these were not all readily removable at once when required. But in my improved construction of these gages, the rods G are connected at each end to a collar I which fits on a shoulder *m* cast on the socket C; these collars are made open on one side of the circle as seen at *l* Fig. 3; the manner in which the cage, consisting of the rods G and collars I, is attached to the gage is as follows: The opening *l* of the lower collar is passed over the tube D immediately above the lower socket C and the collar is slipped down over this socket until the opening of the upper collar is over the small part or throat *p* of the upper socket, when it is brought down over it with the rods parallel to the tube D, when the whole cage is slipped down longitudinally, until both collars I embrace the shoulders *m* on which they fit; a small ear *r* projects from the upper shoulder which fits the opening *l* and prevents the cage from turning around after it is in place.

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

1. The arrangement of the elastic tube or packing around the glass tube, and the elastic disks or washers around the first, in the manner and for the purpose substantially as herein set forth.

2. I claim the within described method of constructing and attaching the cage or guard which surrounds and protects the tube D.

E. WHITELEY.

Witnesses:

THOS. R. ROACH,
THOS. L. GLOVER.