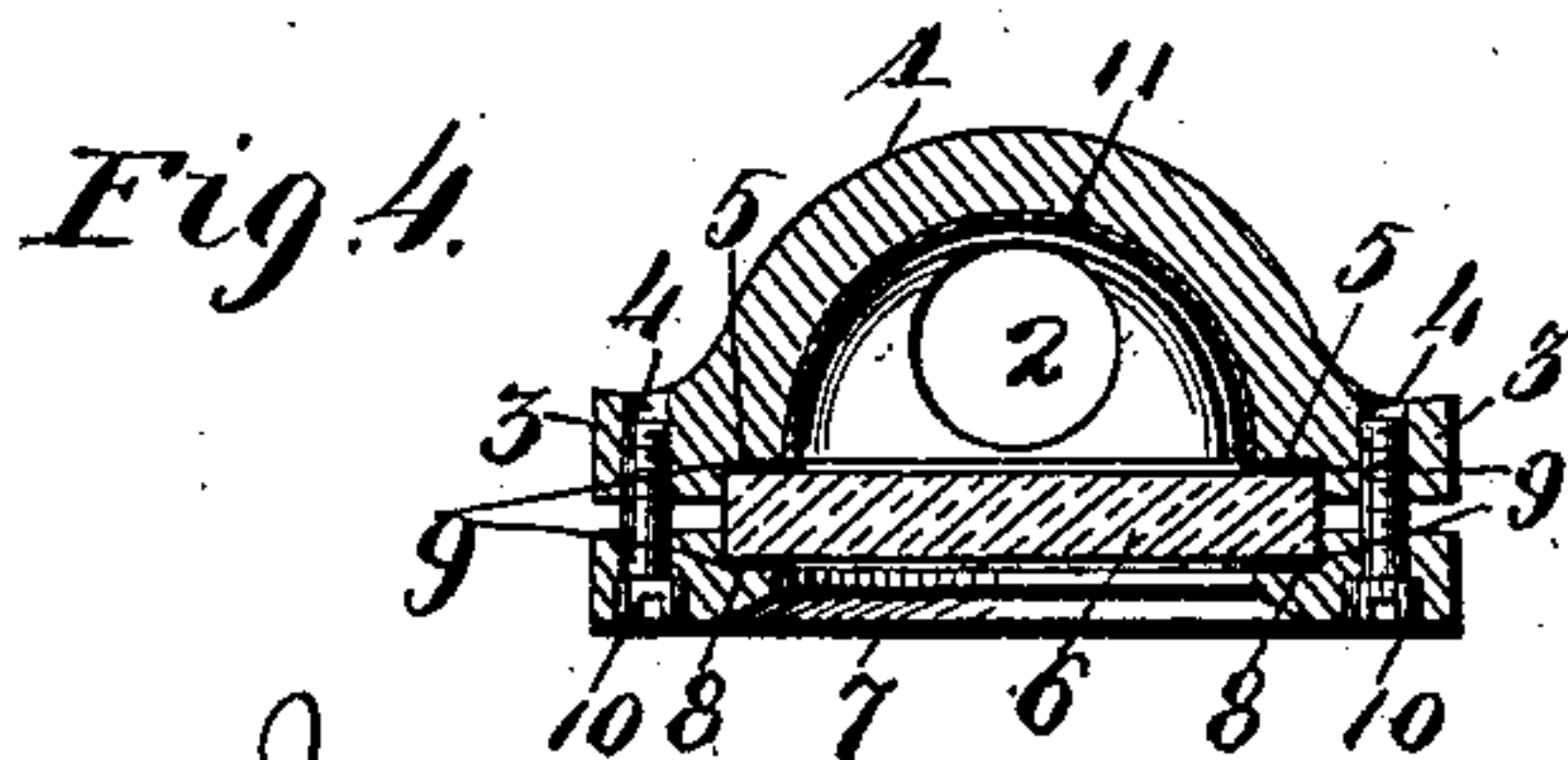
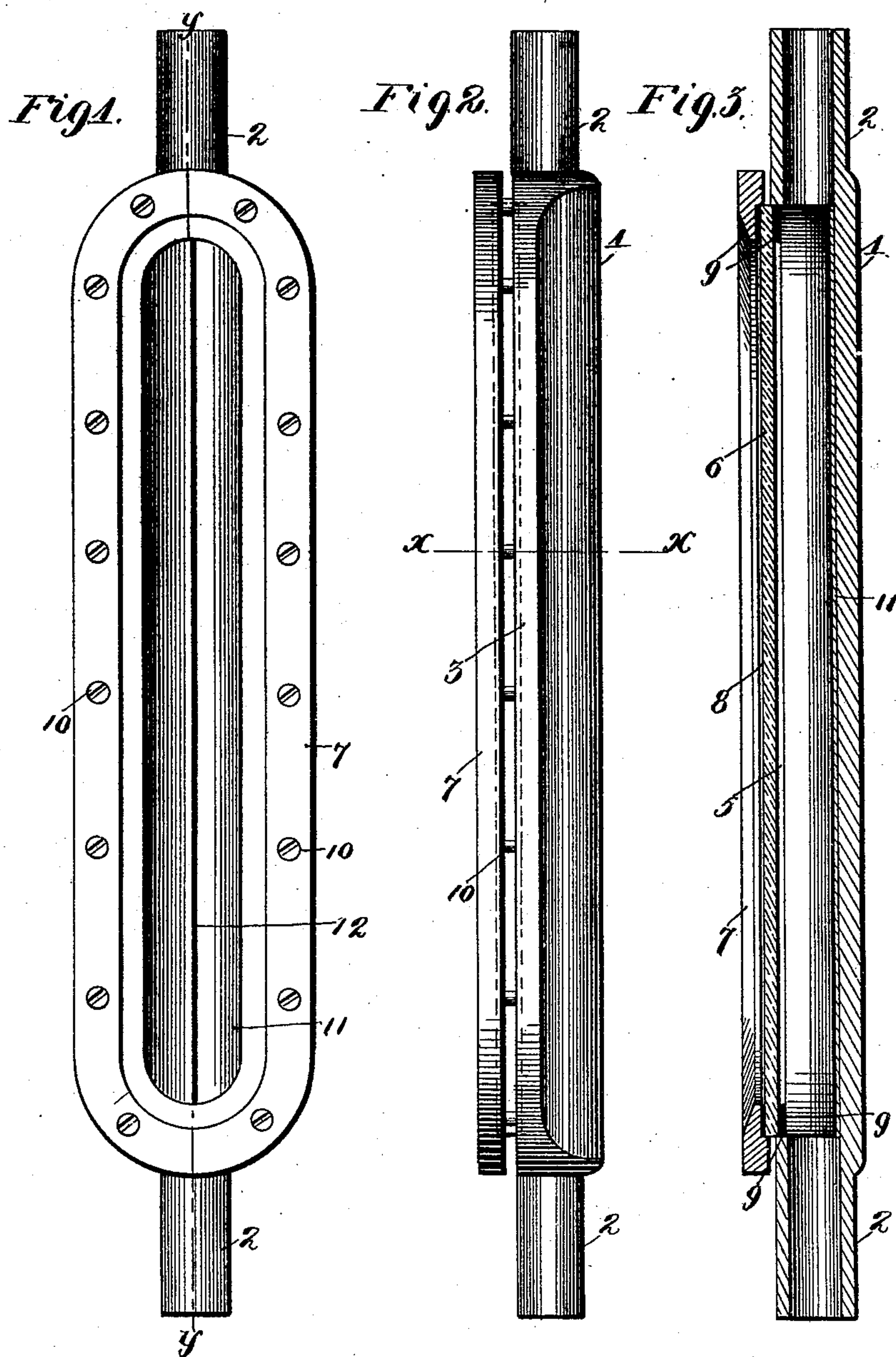


(No Model.)

G. VETTER & H. BROECKER.
WATER GAGE.

No. 500,444.

Patented June 27, 1893.



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UNITED STATES PATENT OFFICE.

GEORGE VETTER AND HENRY BROEKER, OF ST. LOUIS, MISSOURI.

WATER-GAGE.

SPECIFICATION forming part of Letters Patent No. 500,444, dated June 27, 1893.

Application filed February 24, 1893. Serial No. 463,643. (No model.)

To all whom it may concern:

Be it known that we, GEORGE VETTER, a citizen of the United States, and HENRY BROEKER, a subject of the Emperor of Germany, residing at St. Louis, State of Missouri, 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, forming a part hereof.

Our invention has relation to improvements in water gages and consists in the novel arrangement and combination of parts more particularly set forth in the specification and pointed out in the claims.

In the drawings Figure 1 is a front elevation of our complete invention. Fig. 2 is a side elevation of the same. Fig. 3 is a vertical longitudinal section taken on the line $y-y$ of Fig. 1, and Fig. 4 is a transverse section taken on the line $x-x$ of Fig. 2.

The present invention is designed to overcome certain disadvantages inherent in the prevailing cylindrical types of glass water gages. As is well known the ordinary water gages, particularly those attached to locomotives, steamship boilers, and the like,—owing to the frequent jars to which such gages are subjected and to the concussions they receive during the travel of the engines,—become disarranged and are liable to breakage. The same are also liable to crack when subjected to extremes of temperature, a cylindrical glass being particularly sensitive to changes of temperature. Again, the prevailing types of gage are difficult to repair when out of order or when the same become clogged, and it is also impossible to clean the same when emergency requires. To overcome these and similar objections we have designed a gage which in detail may be described as follows:

Referring to the drawings, 1 represents a preferably semi-cylindrical case or casting forming the rear portion of the gage, having formed integral therewith at either end pipe connections 2, 2, with the boiler, the manner of connecting the same to the boiler being well understood and requiring no explanation. The said casting is provided with an exterior flange 3, the same being continuous and of oblong shape. The said flange has a series of

screw threaded openings 4. Along the edge of the semi-cylinder, there is sunk into the flange a continuous groove 5, best shown in Fig. 4; within this groove snugly fits an oblong piece of glass or other transparent material 6.

Secured to the flange 3 of the rear portion and forming the front of the gage, is an oblong metallic plate 7 the said plate having an opening of sufficient size to expose to view the glass 6, and formed adjacent to said opening and along the inner edge of said plate is a groove 8 corresponding to the groove 5 and located opposite thereto also for receiving the glass 6.

The glass is of sufficient thickness to separate the casting 1 and the plate 7 a slight distance apart and for the following purpose: Before the glass 6 is inserted into the grooves 5 and 8 suitable packing 9 is placed in the grooves on either side of the glass, the said packing being sufficiently elastic to afford a tight water joint when the plate 7 is tightly screwed against the glass toward the flange 3 of the casting 1. The plate 7 has screw threaded openings opposite the openings 4 in the flange 3 and suitable screws 10 are passed therethrough and preferably with their heads made flush with the surface of the plate 7, thus tightly securing the several parts together. The space between the plate 7 and the flange 3 of the casting 1 of course always permits a ready and perfect tightening of the several parts; and it is readily seen that if the plate 7 and the flange 3 met before the several parts were tightly secured, the packing 9 could not be sufficiently compressed to form a tight joint.

The interior surface of the casting 1 is provided with a suitable silicious glaze or enamel 11 the purpose of which is to prevent to a large degree corrosion due to the action of hot water and steam, and also to afford a durable back ground for the gage line 12 which in practice we generally form in the shape of a red stripe or line.

It will be seen from the foregoing description that the several parts of our device can be readily replaced and that the gage can be readily taken apart in case of any accident. Moreover the glass used therein being a flat

piece and held in place by elastic packing, stands the concussions it may receive during the travel of the engine without danger of cracking, and permitting the escape of hot water and steam. It will be readily seen that the greater portion of the gage is metallic and durable, and only the front portion thereof is glass, and that is protected as already outlined. The metal within is protected from corrosion by enamel and hence the device forms a gage of a superior quality.

Having described our invention, what we claim is—

1. A water gage composed of a suitable rear casting, pipe connections leading therefrom to the boiler, a glass covering the front open face of the casting, and means for securing the glass to said casting, substantially as set forth.
2. A water gage composed of a suitable rear case or casting, pipe connections at either end leading to the boiler, a continuous flange around the front open face of the casting, a sunken continuous groove along the inner edge of said flange, a glass of suitable thickness fitted within said groove, a plate similar in form to the said flange, a continuous groove in said plate of a size corresponding to the groove in the casting, and also embracing the said glass, openings located in the flange and plate and located opposite one another, suitable packing interposed on either side of the glass within the grooves, and suitable bolts or screws passed through the openings for se-

curing the several parts, substantially as set forth.

3. A sectional water gage composed of a suitable rear case or casting, pipe connections at either end thereof, the casting having an interior semi-cylindrical surface, a glass or other transparent material covering the front face of said surface, a coating of enamel on said surface, and a gage line of suitable color marked on said surface, substantially as set forth.

4. A water gage composed of a casting semi-cylindrical in form, a continuous oblong flange 3 forming the front face thereof, a continuous interior groove 5, a glass 6 fitting in said groove for a portion of its thickness, a front plate 7 having a continuous groove 8 fitting also a portion of the thickness of said glass, suitable packing 9 interposed in said grooves on either side of said glass, a sufficient air space being left between the flange 3 and the front plate 7, screw-threaded openings in the flange 3 and plate 7 located opposite one another, and suitable screws driven flush with the surface of the plate 7 for securing the several parts, substantially as set forth.

In testimony whereof we affix our signatures in the presence of two witnesses.

GEORGE VETTER.
HENRY BROEKER.

Witnesses:

C. F. KELLER,
EMIL STAREK.