W. NELSON.

WATER GAGE.

APPLICATION FILED MAY 6, 1908.

906,736. Patented Dec. 15, 1908.

Fig. 1.

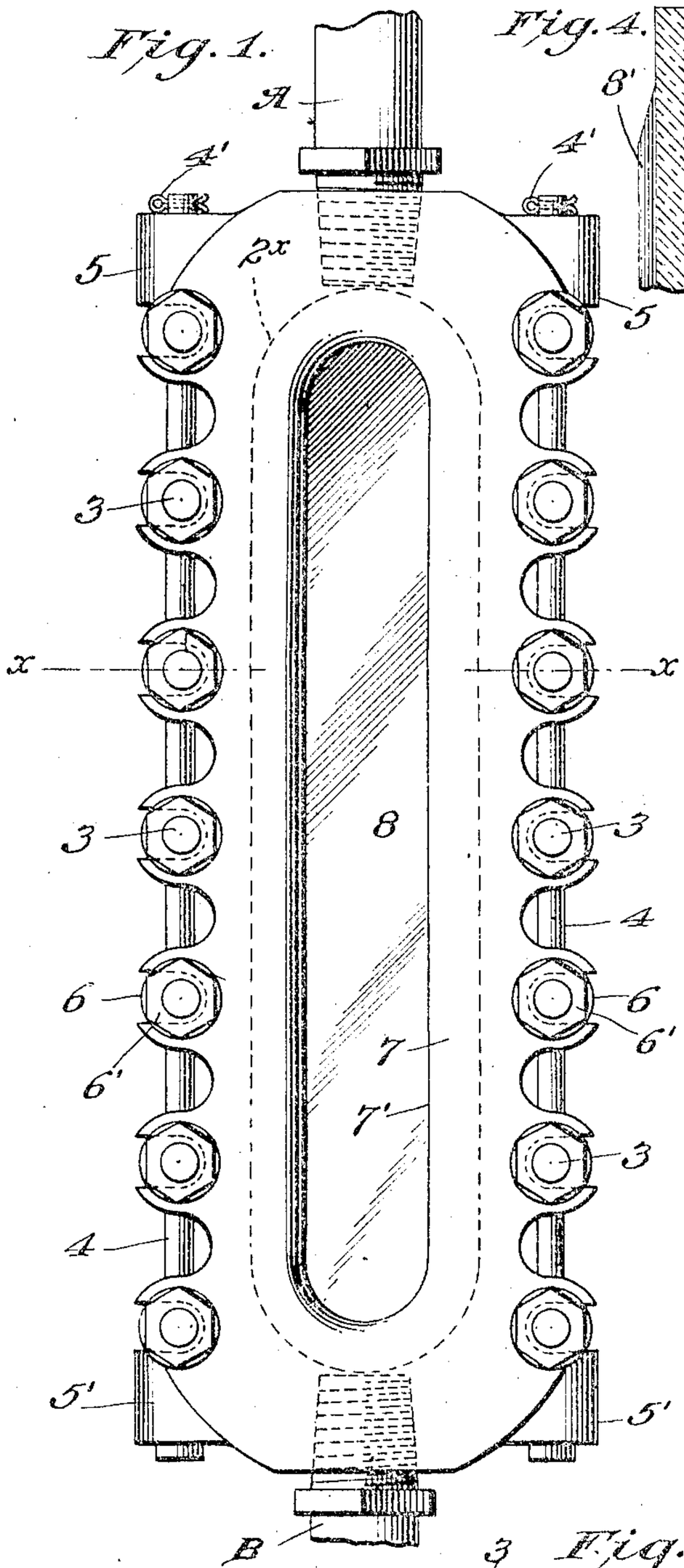


Fig. 4.

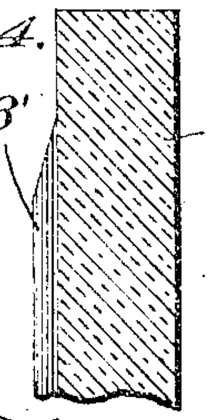


Fig. 2.

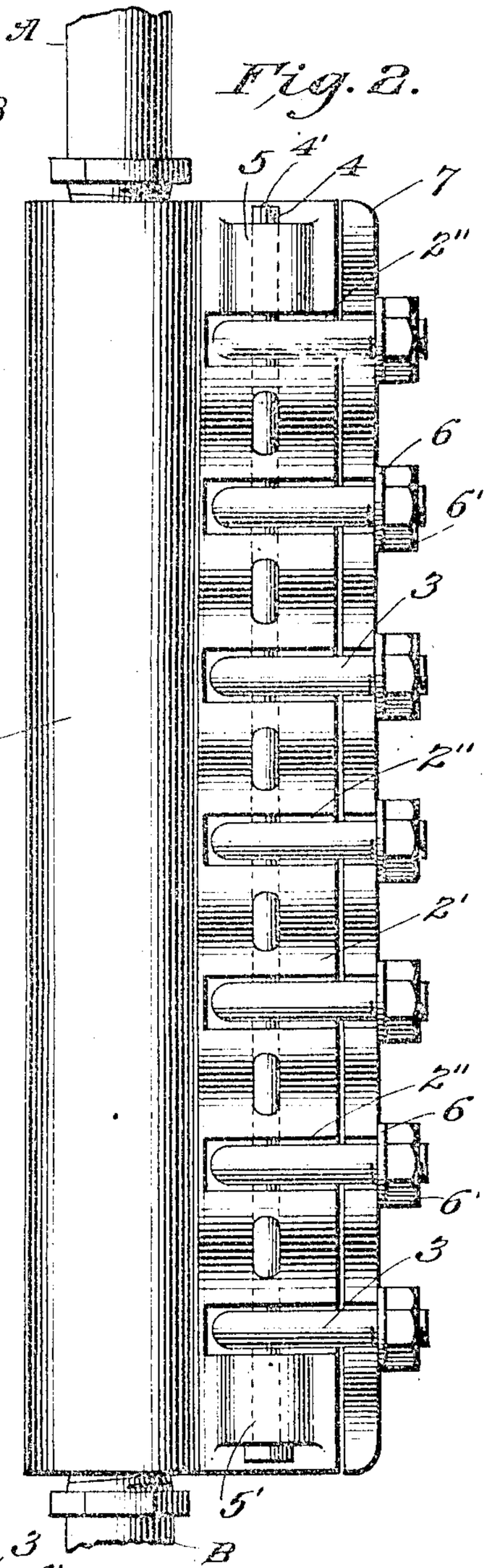
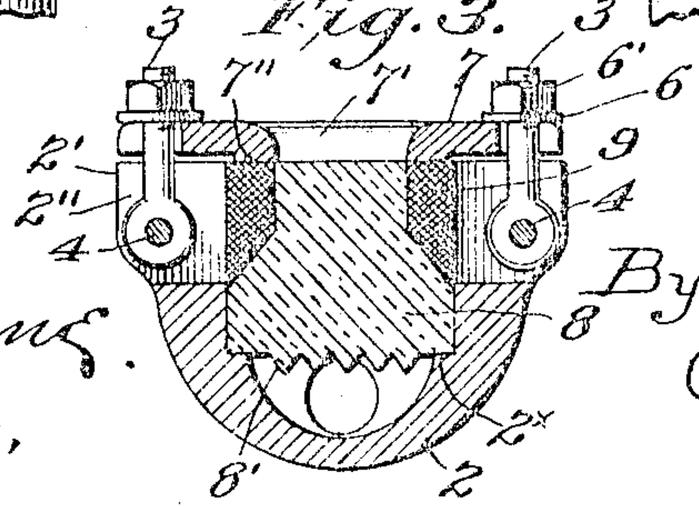


Fig. 3.



Witnesses

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WATER-GAGE.

No. 906,736. Specification of Letters Patent. Patented Dec. 15, 1908.

Application filed May 6, 1908. Serial No. 431,081.

To all whom it may concern:

Be it known that I, WILLIAM NELSON, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Water-Gages, of which the following is a specification.

My invention relates to water-gages and more particularly to those gages of that type wherein a heavy sight glass is provided which is removable or changeable, provision being made for effectively packing the joint between the glass and the body of the gage.

The object of my invention is to provide a gage in which the sight glass may be removed without the necessity of disassembling the various parts of the gage, removing the body of the gage from its connections with the boiler or to provide a gage in which the pressure exerted on the sight glass by the packing ring, its tightening bolts and the steam and by water pressure is transmitted in such manner that the glass shall not be broken when forced against the packing or the packing forced inward. A still further object being to provide a gage in which the glass has a solid bearing on its rear edge, and wherein the sight glass may be readily reversed end for end, when its upper portion has become scored or frosted by the action of the chemicals carried in solution and the steam.

To these ends my invention consists in the arrangement of the several parts and the details of construction shown in the accompanying drawings and more particularly stated in the claims.

In the drawings wherein I have shown one embodiment of my invention, Figure 1, is a front elevation of my improved gage. Fig. 2, is a side elevation thereof. Fig. 3, is a section on a line *x*—*x* of Fig. 1, and Fig. 4, is a fragmentary longitudinal section of one end of the sight glass.

Like characters throughout the several views designate like parts.

In the drawings 2, designates a casing or body forming the rear portion of the gage, preferably semi-cylindrical in section and having gradually thickened walls towards its front. This body portion is closed at the top and bottom-save for the boiler connecting pipes A and B. The body 2, is extended on both sides towards the front as shown in Fig. 2, to a depth sufficient to receive the sight glass 8. The walls of this extended portion 2′, are thickened laterally and are slotted at regular intervals as at 2″, the slots extending rearward any sufficient distance, but preferably as shown to the junction of the body 2, with the extended side walls. In these slots 2″, are pivoted a series of eye-bolts 3, one in each slot, the ends of said bolts being screw threaded and provided each with a washer 6, and a nut 6′. All the eye-bolts 3, on each side are pivoted to a common pivot rod or bolt 4. These rods at their upper and lower ends pass through lugs 5, 5′, projecting out from the upper and lower ends of the extended sides 2′, of the body.

The rods 4, are preferably headed at their lower ends and provided at their upper ends with a cotter key 4′. It is, however, obvious that I may use other means for fastening the rods in place.

The face-plate 7, of the gage is of a shape to fit over the front of the gage body and against the front face of the side extensions 2′. The front of the plate 7, is formed with a central longitudinal slot or opening 7′, the outside face of the margin of which is rounded. The inside face of the face-plate has an inwardly projecting rib 7″, immediately surrounding the opening 7′. The purpose of such rib will be hereinafter stated. Both lateral margins of the face plate 7, are slotted as shown in Fig. 1, each of said lateral slots corresponding with one of the slots 2″, these slots being adapted to receive the shank of the eye-bolt 3. The slots as will be evident are smaller in width than the diameter of the washer 6, and nut 6′, and thus when the eye-bolts are moved to the positions shown in Figs. 1 and 2, the face plate will be held in position against the side extensions of the gage and when the nuts 6′, are screwed up the face plate will be forced inward.

The sight glass 8, is of the usual character in general features. Its inside face is ribbed as at 8′, and its sides, at the front of the glass, are rabbeted, the rear end of the rabbet being inclined rearwardly and outwardly. The rear margin of the glass fits against a shoulder $2^{\times}$, formed on the inside of the body portion 2. This shoulder is indicated by dotted lines in Fig. 1.

The packing ring 9, fits into and is carried by the peripheral rabbet around the outer edge of the glass 8, the inner edge of the packing being inclined outwardly so as to fit

against the inclined rear wall of the rabbet. This construction tends to force the packing outwardly when it is pressed inward against the glass. In order to press the packing inward against the glass and thus wedge it outwardly against the walls of the gage, I have provided the inside face of the face-plate with the rib 7″, which engages with the outer edge of the packing ring.

As will be seen in Fig. 4, the ribs 8′, on the sight glass 8, project outwardly from the general level of the inside face of the glass and are not formed below the general level of the glass as is usually the case. The ends of these ribs are beveled downward to the inside face of the glass. This construction prevents any collection of particles at the lower ends of the corroded portion of the glass, whereas, where the ribs are formed below the general surface, closed recesses, or pockets, are provided which catch and hold particles which may be in suspension in the water or steam.

The operation of my invention is apparent. The sight glass above the water level is attacked by the steam and in a comparatively short time is so corroded and scored that it becomes nearly opaque and practically useless. Under these circumstances it is necessary to insert a new glass within the gage or to reverse the glass. In other constructions of which I am aware, a face-plate has been used which has been attached to the body of the gage by means of bolts and nuts, the glass being held in position by this face-plate. In order to remove the glass under these circumstances, each and every nut has to be removed or each screw taken out. This is a comparatively long job whereas with the construction which I have devised, it is only necessary to slightly loosen the nuts 6′, on each side of the gage when the eye-bolts may be turned upon their pivot rods, and the face plate immediately removed, the packing ring is then withdrawn and the glass taken out. The packing ring if it is worn may be renewed without trouble and the glass easily replaced.

It is to be noted particularly that with the glass in place as shown in Fig. 3, the pressure of the steam and water behind the glass constantly tends to force the glass outwardly and away from the shoulder 2×, thus there is no pressure of the glass upon this shoulder. At the same time the pressure of the glass upon the packing by reason of the wedge-like inside edge of the packing and the wedge-like end of the packing recess is transmitted transversely through the glass, that is in the direction in which the glass is best fitted to stand the strain.

It will be seen that my invention provides a gage wherein the glass is readily removable without the necessity of unscrewing a multiplicity of nuts and removing the bolts thereof, that the glass is held positively in place while the outward pressure of the same acts to force the packing against the walls of the glass, that the pressure of the steam is transmitted transversely to the body of the glass, hence avoiding all danger of cracking it, and that I have provided a sight glass which will not retain particles within the corrugations thereof.

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

1. In a gage, a body portion forming the rear of the gage, a removable sight glass, packing between the edges of the sight glass and the body portion, a longitudinally slotted face-plate adapted to fit against the body portion and the face of said packing, and having a series of transverse slots in both edges and means pivoted to the body portion adapted to enter said slots and removably engage the face-plate and to hold the same to the body portion of the glass.

2. In a gage, a body portion forming the rear of the gage and having extended transversely slotted sides, a removable sight glass insertible between the extended sides and removable therefrom, a packing between the glass and the extended sides of the body portion, a slotted face-plate adapted to fit against the front of said extended sides and the packing, and a series of bolts pivoted within the slots of the extended sides of the body portion and adapted to engage with the face-plate to hold the same in place against the front of the extended sides and the packing when turned in one position, and to be turned away from said face plate to leave the face plate free to be removed.

3. In a gage, a body portion forming the rear of the gage and having forwardly extending sides, said sides having a series of slots therein, a series of bolts provided with nuts at their free ends pivoted in the slots of said extended sides, bars one on either side forming the common pivot of said bolts, a sight glass, packing therefor and a face-plate adapted to fit over said sight glass, the lateral edges of said face-plate being slotted for the reception of said pivot bolts, whereby the face-plate may be forced against the body portion to hold the glass in place.

4. In a gage, a body portion forming the rear of the gage having sides extending forwardly, bars removably supported on said sides, a series of bolts pivoted on said bars, a removable sight glass, packing surrounding the edge of said sight glass between it and the extended sides of the gage, and a longitudinally slotted face-plate having a rib on its inside surface adapted to contact with the packing, said face plate having a series of transverse slots on either side adapted to receive said pivoted eye-bolts whereby the face-plate may be held against the body por-

tion and against the packing to hold the packing and the glass in place.

5. In a gage, a body portion forming the rear of the gage and having extended sides, bars mounted on both sides of the body portion, eye-bolts on both sides of the gage pivotally mounted on said bars, a sight glass having a rabbet, the end wall of said rabbet being inclined outwardly, a packing ring adapted to be held within said rabbet having an inclined edge contacting with the inclined end wall of the rabbet, and a face-plate longitudinally slotted and fitting over the front of the gage and having transverse slots adapted to receive said eye-bolts whereby the face plate may be supported upon the front of the gage, said face-plate having a rib on its inside surface adapted to contact with the edge of said packing.

6. In a gage of the character described, a sight glass having a plurality of ribs on its interior face, said ribs being shorter than the total length of said glass and raised above the general level of the glass, the ends of said ribs being inclined downwardly and towards the ends of the glass to the main surface thereof.

7. In a gage, a body portion forming the rear of the gage, a sight glass having a rabbet around its periphery, the end wall of said rabbet being inclined outwardly and rearwardly, a packing located within said rabbet having a rearward inclined edge coacting with the inclined end wall of the rabbet whereby when the packing is forced inward against the inclined wall it will be wedged outward against the body of the gage, and a longitudinally slotted face plate fitting over said packing, and means for forcing said face plate inward.

8. In a gage, a semi-cylindrical body portion having water connections from its upper and lower ends, the sides of said body portion being extended forwardly and said sides having a series of slots therein, outwardly extending lugs at the upper and lower ends of the gage on both sides thereof, removable pivot bars carried on said lugs, a sight glass removably carried between said extended sides forming the front of the gage, said body portion having a shoulder on its inside against which the rear corners of the sight glass rest, packing surrounding the sight glass between it and the extended sides and a face-plate longitudinally slotted having a rib on its inside surface adapted to contact with the edge of the packing, said face-plate having transverse slots in which the free ends of said eye-bolts are received whereby the face-plate is held in position upon the front of the gage and against said packing.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM NELSON.

Witnesses:
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