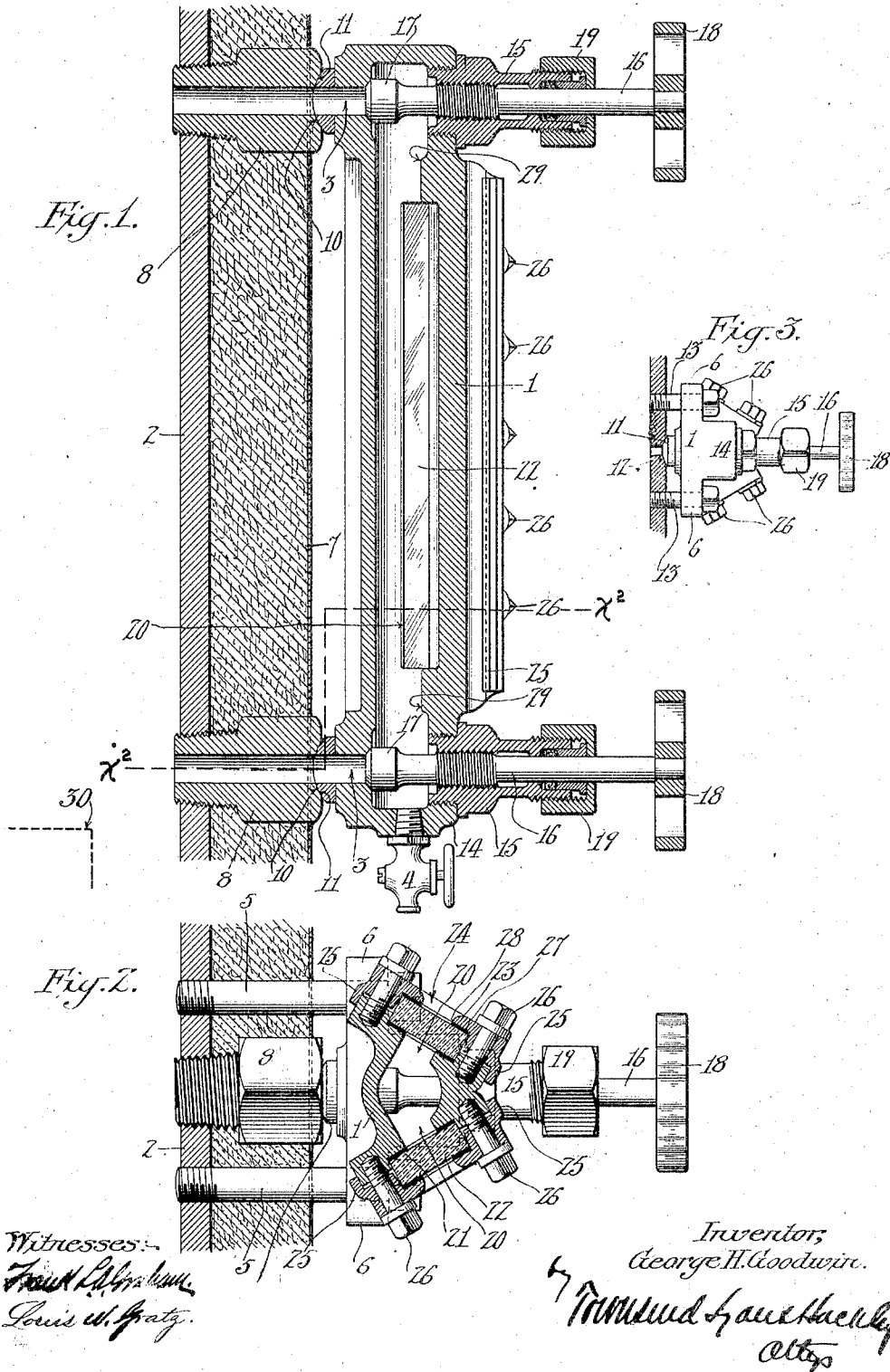


G. H. GOODWIN.
WATER GAGE.
APPLICATION FILED MAY 18, 1908.

967,634.

Patented Aug. 16, 1910.



UNITED STATES PATENT OFFICE.

GEORGE H. GOODWIN, OF LOS ANGELES, CALIFORNIA.

WATER-GAGE.

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Specification of Letters Patent. Patented Aug. 16, 1910.

Application filed May 18, 1908. Serial No. 433,604.

To all whom it may concern:

Be it known that I, GEORGE H. GOODWIN, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Water-Gage, of which the following is a specification.

My invention relates to water gages and more particularly to gages that are used upon locomotives, and forms what I shall call a duplex high pressure water gage.

The main object of the invention is to provide a water gage in which a single, unitary, integral member supports and connects the various parts and passages of the gage whereby the expense, trouble and danger arising from the use of joints in the connections between the parts are avoided. The use of such joints is open not only to the objection of the liability of leakage thereat, but in some cases the packing of the joints has been found to exude into the passages clogging the same so that water is held in the glass and indications are for sufficiency of water in the boiler, when, as a matter of fact, the water is dangerously low. By eliminating all such joints and gaskets the gage is not only simplified and cheapened, but its operation is rendered absolutely reliable and certain.

Another object is to provide simple and efficient means for securing the gage in position, whether the boiler is provided with a jacket or not.

The accompanying drawings illustrate the invention, and referring thereto:—Figure 1 is a longitudinal sectional view of one form of water gage embodying my invention, showing the same in position upon the end of a boiler. Fig. 2 is a cross sectional view of the same taken on the line x^2-x^2 of Fig. 1, the nipple and bolts being shown in elevation. Fig. 3 is an end elevation of the gage, showing the means of securing it in position when the boiler is not jacketed.

Referring more particularly to the drawings, 1 indicates the main or body portion of the gage which is hollow and of any suitable length, and communicates with the boiler 2 of the locomotive through suitable passages 3. A drain cock 4 in the lower end of the body may be opened when it is desired to blow out the gage to clean it. The gage is secured in position in any suitable manner, preferably, by means of studs 5 which project through perforated ears 6 at

the ends of the body and engage with the head of the boiler by means of their screw threaded ends. When the boiler is jacketed, as shown at 7, extension nipples 8 are used for projecting through the jacket and communicating with the boiler at their inner ends, which are preferably screw threaded. The outer ends of the nipples are preferably provided with the usual hexagonal head for the engagement of a wrench therewith, and each one is provided with a cup like seat 10 in which the rounded inner end of a joint ring 11 is seated, the outer face of the joint ring engaging with the inner side of the body 1 so as to form a steam tight engagement therewith, the joint ring being perforated to register with the perforations of the nipple and of the body respectively. When the nipples are not used, the joint ring is seated directly in a depression 12 in the boiler head, as shown in Fig. 3, the bolts 13 being made correspondingly shorter to compensate for the omission of the nipples.

Each end of the body is provided with a boss or projection 14 in which is seated a tubular bonnet 15 in alinement with the passage 3 for the valve stem 16. The inner end of the stem 16 is provided with a suitable head or valve 17 for closing said passage, and the outer end is provided with a hand wheel 18. An ordinary stuffing box 19 is provided for the stem 16 on the outer end of the bonnet 15.

The hollow body is substantially triangular in cross section, as shown more particularly in Fig. 2, with one side substantially parallel with the head of the boiler and the other two sides slotted longitudinally as shown at 20. The slots 20 extend nearly from end to end of the body, and each one is shouldered, as shown at 21, for the reception of a glass 22.

The hollow body 1 is formed as an integral, unitary member, the hollow or space within the member extending to or beyond the laterally extending passages 3 at each end so that there are no joints in the connection or means of communication between said passages. This not only reduces the liability of leakage and the cost of construction and assembling the gage, but has a further advantage in that the faces of said body which rest on the joint ring 11 can be made true to one another once for all and accurate fitting is therefore insured.

An elongated cap 23 is provided for each

glass and has its central portion slotted longitudinally as shown at 24, so as to register with the slot 22 of the body, and thereby permit an unobstructed view of the water upon the interior of the body or gage. Each cap 23 is provided upon each edge with a flange or lip 25 which is adapted to fit over the edges of two of the sides of the body, and thereby properly position the cap upon the sides, and bolts 26 are passed through the caps into the body and hold them in this position. Gaskets 27 are placed between the shoulders 21 of the body and corresponding shoulders 28 upon the inner faces of the caps 23 for the purpose of forming water tight joints between the glasses 22 and the metallic fittings.

The rear wall of the body 1 is shouldered at 29, which serves to throw water away from the glass when blowing out the gage, and thus prevents marring or pitting the glass.

By constructing a high pressure gage in this manner, a very strong and durable structure is secured, owing to the strength of the body, and also on account of the thick glass which may be used.

It will also be noted that the two glasses are set at such an angle to each other and to the head of the boiler that the engineer and fireman can each one observe the position of the water within the gage from his side of the cab, and thereby insure greater security, from the neglect of both of them, to note the condition of the water.

The device can be readily secured in position, and by tightening up the bolts through the perforated ears at the ends of the body, steam and water tight joints can be secured, and at the same time the gage can be quickly removed for the purpose of repair &c.

The longitudinal passage 20 and the two end passages 3 are both formed in a single casting, so that the passages 3 are permanently fixed an absolute distance apart. The longitudinal chamber and passages 3 form a U-shaped conduit or chamber the three legs of which are inseparable and have no joints. This is a novel construction in this art and, in addition to producing the results indicated, enables the body 1 to be clamped or forced by pressure against the

boiler or jacket, as by bolts 13, without the least danger of changing the relation between passages 3 and longitudinal chamber 20.

The passages 3 and passages in the nipples 8 are large, and thus will not become filled up with crust or scale as quickly as they would if smaller.

It is a requirement that gages must show one half inch of water in the glass when there is three inches of water over the crown sheet. Other forms of gages which are longer than mine necessitate their lower connection with the boiler being at a level below the crown sheet, and with such gages, when the water is low it does not show in the glass, and the engineer will frequently shut the upper valve to see if water will appear, whereupon pressure in the boiler forces water up into the glass through the bottom connection, which of course shows that there is water in the boiler but does not tell how much there is over the crown sheet, and some engineers will run on the hazardous assumption that there is enough water. In my construction, the gage is so short that the lower connection may be located about five eighths of an inch above the crown sheet, indicated by dotted line at 30, which makes it impossible to blow water up into the glass in the above described manner and thus a greater degree of safety is secured.

Having described my invention, I claim:—

In a duplex water gage, the combination with a jacketed boiler, of two hollow nipples therein, the outer end of each of which is provided with a seat, an elongated hollow body provided with two elongated sight openings set at an angle to each other and provided with a passage and perforated ears at each end, valve mechanism for controlling said passages, a perforated joint ring between each seat and a corresponding end of the body, and bolts through said ears and said jacket into the head of the boiler.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 9th day of May 1908.

GEORGE H. GOODWIN.

In presence of—

GEORGE T. HACKLEY,
FRANK L. A. GRAHAM.