

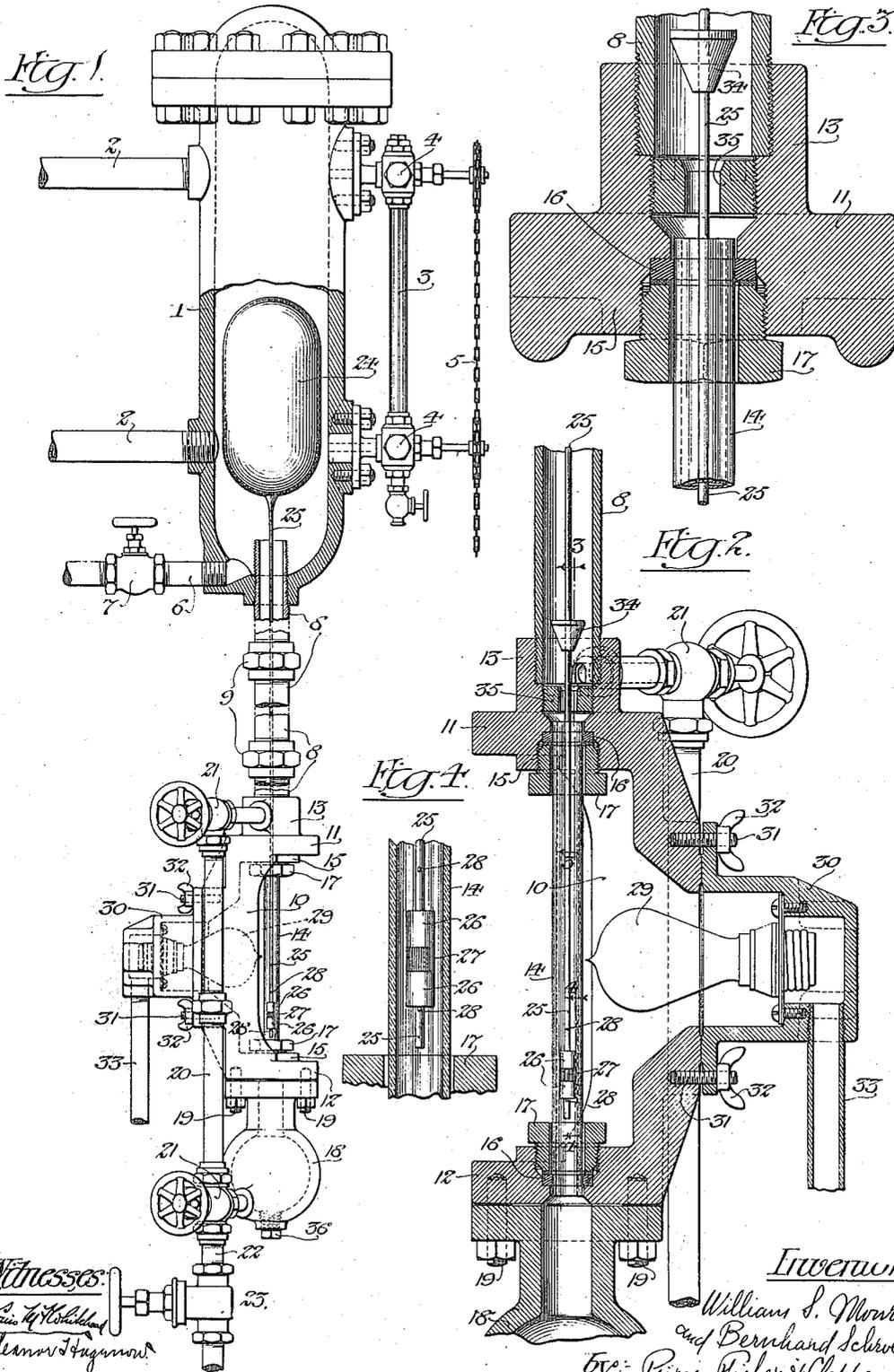
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WATER GAGE FOR BOILERS.

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UNITED STATES PATENT OFFICE.

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WATER-GAGE FOR BOILERS.

1,148,523.

Specification of Letters Patent.

Patented Aug. 3, 1915.

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To all whom it may concern:

Be it known that we, WILLIAM S. MONROE and BERNHARD SCHROEDER, citizens of the United States, and residents of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Water-Gages for Boilers, of which the following is a full, clear, and exact description.

The invention relates to water gages for boilers and more particularly to water gages for large vertical boilers, in which the water level is at a considerable height above the floor of the boiler room, so that it cannot be readily ascertained by the ordinary gage.

The invention seeks to provide simple and effective means for indicating the water level at a point adjacent to the floor and consists in the features of improvement hereinafter described, illustrated in the preferred form in the accompanying drawings and more particularly pointed out in the appended claims.

In the drawings, Figure 1 is a view in elevation, with parts broken away and parts shown in section. Fig. 2 is a vertical section of the lower portion of the improved gage. Figs. 3 and 4 are detail sections on the lines 3-3 and 4-4, respectively, of Fig. 2.

The upper portion of the improved gage comprises a float chamber 1 which is adapted to be connected by pipes 2 to the boiler at points above and below the water level thereof. The float chamber 1, like an ordinary water column, may be provided in the ordinary manner with gage cocks and with the usual gage glass 3 having valved connections 4 at its ends with the water column.

In the construction shown, the hand wheels of the gage glass valves 4 are provided with chains 5 so that they may be conveniently operated from the low level of the floor of the boiler room.

Preferably the lower rounded end of the water column or float chamber 1 is provided with a blow-off pipe 6 controlled by a valve 7.

The float chamber is provided with an extension which preferably comprises a vertical pipe 8 connected to its lower end, the upper end of which is threaded into the lower end of the float chamber. The upper end of the pipe preferably extends above the lower wall of the float chamber to guard against the entrance of scale and sediment into the pipe. To facilitate assembling the

parts of the improved gage, the depending or extension pipe 8 is preferably formed of sections connected by couplings 9, and these sections may be of any desired length in order to bring the lower portion of the apparatus at any desired low level.

On the lower end of the pipe 8 is mounted a cast metal bracket 10. This bracket is open at one side and is provided at its upper and lower portions with laterally projecting flanges 11 and 12. The upper flange is provided with a boss 13 which is threaded upon the lower end of the pipe 8. The flanges 11 and 12 of the bracket 10 are provided with openings in line with the pipe 8 for receiving a gage glass 14. The flanges of the bracket are also provided with suitable stuffing boxes 15 of the usual sort for receiving packing rings 16 and stuffing box glands 17 to thereby securely hold the gage glass 14 in place and insure tight joints at its ends.

A liquid containing extension is secured to the lower flange 12 of the bracket. This extension is preferably in the form of an enlarged sediment chamber 18 and is connected to the flange 12 by bolts 19. The float chamber 1, pipe 8, gage glass 14 and extension or sediment chamber 18 form an extended water column, the lower portion of which may be located at any desired low level adjacent the floor of the boiler room. This water column is provided with a by-pass pipe 20 extending around the gage glass 14. Valved connections 21 connect the by-pass pipe 20 with the lower portion of the pipe 8 and with the lower portion of the sediment chamber 18. The lower end of the by-pass pipe is also preferably provided with a blow-off pipe 22 having a valve 23 therein.

A hollow metal float 24 is arranged within the chamber 1 and a rod 25 connected to its lower end extends downwardly through the pipe 8 and into the gage glass 14. At its lower end, it is provided with an indicator which is visible through the gage glass in such a manner that the water level may be readily ascertained. In the form shown, the indicator comprises two sleeves 26 of white opaque glass and an intermediate sleeve 27 of red glass mounted upon the lower end of the rod 25 and held in place by pins 28. To render the indicator more clearly visible, the back of the bracket 10 is preferably provided with an opening within which is arranged an electric light 29. This light is

carried by a cup-shaped holder 30 which is secured to the rear face of the bracket 10 by bolts 31 and wing nuts 32. The cup-shaped lamp-holder 30 is preferably provided with a pipe 33 through which the electrical conductors extend to the lamp.

Inasmuch as the gage glass 14 is arranged at a low level, large amounts of water and steam would escape if this glass should break, particularly if the boiler was operated at a high pressure. To avoid this escape of water and steam, a conical valve 34 is fixed to the float rod 25 and a seat 35 is threaded into the boss 13 of the bracket 10 at a point below the lower end of the pipe 8. The valve and valve seat are so arranged that the valve will not engage the seat when water is maintained in the boiler at any usual level, but if the gage glass should break, the pressure on the valve will immediately force it into engagement with its seat and thus prevent the escape of water and steam. The blow-off valves 7 and 23 are, of course, usually closed, but may be opened from time to time to discharge the scale and sediment from the float chamber 1 and from the sediment chamber 18 at the lower end of the extended water column. The valves 21 at the upper and lower ends of the by-pass 20 are maintained open. If the gage glass 14 should break, the valve 34 is seated on the part 35, as stated. To replace the glass, the upper valve 21 is closed to cut off the lower portion of the water column from its upper portion. A new glass can then be inserted. To facilitate the insertion of a new glass, the lower end of the float chamber 18 is provided with an opening normally closed by a plug 36. When the glass is properly inserted, the upper valve 21 is opened to equalize the pressure above and below the valve 34 so that the normal operation of the gage is resumed.

It should be noted that the supporting devices or stuffing boxes for holding and supporting the upper and lower ends of the gage glass are connected by the body of the bracket 10 to thereby prevent the boiler pressure from displacing the gage glass at the lower end of the extended water column. Furthermore, the by-pass pipe 20 equalizes the pressure above and below the gage glass.

It is obvious that changes may be made in the details set forth without departure from the essentials of the invention as defined in the claims.

We claim as our invention:—

1. A water gage for boilers comprising a float chamber, a pipe secured to said chamber and depending therefrom, a gage glass in line with said pipe, a bracket fixed to the lower end of said pipe and having upper and lower integral flanges provided with stuffing

boxes for supporting the upper and lower ends of said gage glass, said bracket being open at one side, an electric lamp holder carried by said bracket on the opposite side of said gage glass, a float in said chamber, and a rod depending from said float through said pipe and gage glass and having an indicator on its lower end within said gage glass, substantially as described.

2. A water gage for boilers comprising an extended water column having a float chamber at its upper end, a gage glass interposed in the lower end of said water column, a float in the upper end of said water column, an indicating rod depending from said float and having its lower indicating end exposed within said gage glass, a valve seat in said water column above said gage glass, a valve on said rod arranged to cooperate with said valve seat, a by-pass pipe extending around said gage glass, the upper end of said pipe being connected to said water column above said valve seat, substantially as described.

3. A water gage for boilers comprising an extended water column having a float chamber at its upper end, a gage glass interposed in the lower end of said water column, a float in the upper end of said water column, an indicating rod depending from said float and having its lower indicating end exposed within said gage glass, a valve seat in said water column above said gage glass, a valve on said rod arranged to cooperate with said valve seat, a by-pass pipe extending around said gage glass, the upper end of said pipe being connected to said water column above said valve seat, said by-pass pipe having a cut-off valve at its upper end, substantially as described.

4. A water gage for boilers comprising a float chamber, a pipe depending therefrom, a bracket connected to said pipe, a gage glass carried by said bracket in line with said pipe, said bracket having stuffing boxes for supporting the upper and lower ends of said gage glass, a sediment chamber secured to said bracket below said gage glass, a valve seat above said gage glass, a float in said float chamber, a rod depending from said float and having a valve above said valve seat and an indicator exposed within said glass, a by-pass pipe connected at its upper end to said first mentioned pipe above said valve seat and at its lower end to said sediment chamber and cut-off valves interposed in the upper and lower ends of said by-pass pipe, substantially as described.

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