

C. A. TANNER & A. P. SAXER.
WATER LEVEL INDICATOR.
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1,011,270.

Patented Dec. 12, 1911.

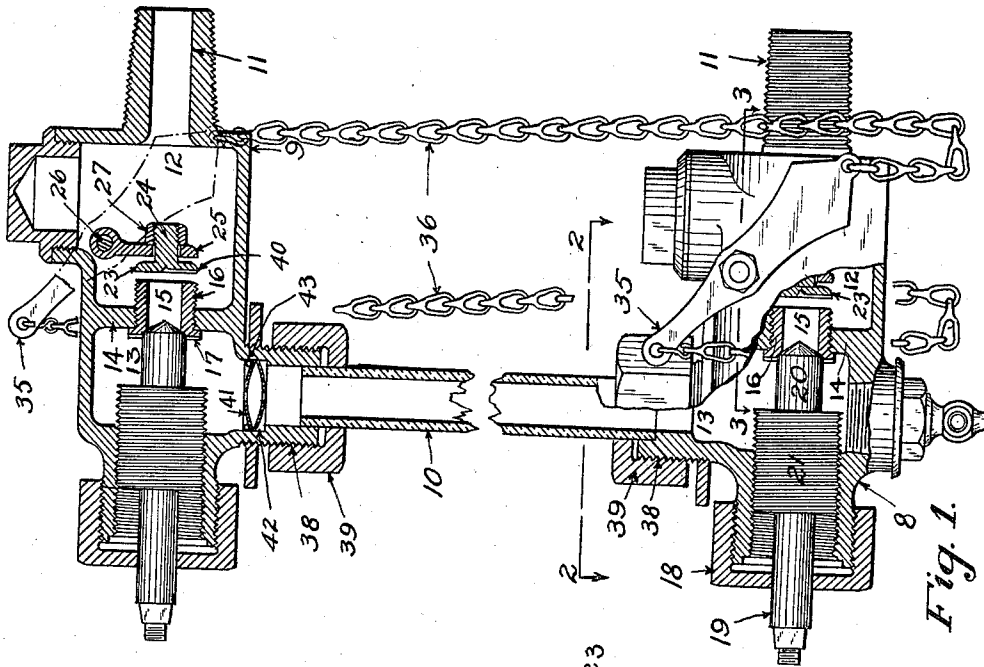


Fig. 1.

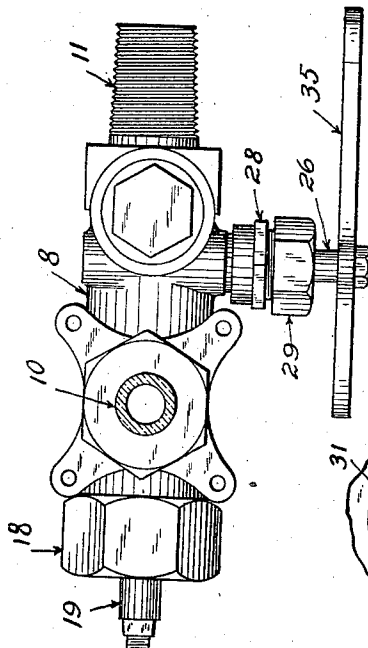


Fig. 2.

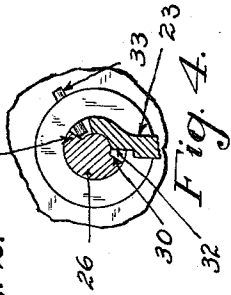


Fig. 4.

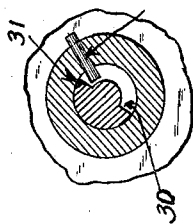


Fig. 5.

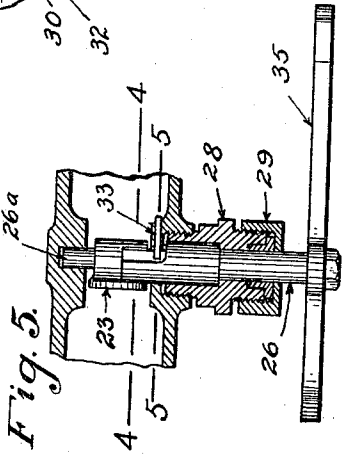


Fig. 3.

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UNITED STATES PATENT OFFICE.

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WATER-LEVEL INDICATOR.

1,011,270.

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To all whom it may concern:

Be it known that we, CHARLES A. TANNER and ALBERT P. SAXER, both residents of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Water-Level Indicators, of which the following is a specification.

This invention relates to gages, and more particularly to what are known as water gages or glasses, such as used on steam boilers, steam and water heaters and other devices.

The invention relates more particularly to that character of devices which is arranged to automatically prevent the escape of water and steam in the event the glass breaks.

The principal object is to provide an arrangement of check valve and operating means by means of which the check valve cannot be positively closed, but by means of which it can be positively opened to blow out the glass, and swung entirely out of the way so as to permit the passage of a reamer through the fixture and into the boiler or other device; and to provide means for sounding an audible alarm in case the glass breaks to attract the attention of the engineer should he be out of the engine room, as well as other improvements which will hereinafter appear.

In the accompanying drawings Figure 1 is in part a side elevation and in part a longitudinal section of the water gage; Fig. 2 is a horizontal section on the line 2—2, Fig. 1; Fig. 3 is a transverse horizontal section on the line 3—3, Fig. 1; and Figs. 4 and 5 are sectional details on the lines 4—4 and 5—5, Fig. 3.

The gage comprises two substantially similar fixtures or casings marked 8 and 9, respectively, with the interposed glass 10, all as is usual in gages of this kind. The fixtures 8 and 9 are each provided with a hollow sleeve 11 preferably threaded externally for attachment to the steam boiler water leg or column or other device. Each fixture is provided with a chamber with which the sleeve 11 communicates, said chamber being divided into an inner portion 12 and an outer portion 13, by means of transverse partition 14 which is provided with an opening or port 15 forming a communication between these chambers. The

port 15 preferably is formed in a removable bushing 16 threaded in the opening in the partition 14, as shown, and provided on its outer face with lugs or notches 17 for receiving a tool or other device for screwing the same into and out of the partition. The casings are provided at their outer ends with openings of sufficient size for the insertion and removal of the bushings 16, as shown. As shown, each of these openings is closed by means of a stuffing box member 18 surrounding the stem 19 of a valve 20 adapted to close the outer end of port 15, said valve having an enlarged portion 21 threaded in the opening in the outer end of the casing. This opening is in direct line with the port 15, and with the opening of sleeve 11 so that a tool, such as a reamer, can be inserted entirely into the boiler by merely removing the stuffing box 18 and the valve 20 and swinging the check valve, hereinafter described, out of the way.

To prevent the escape of steam and water when the glass breaks we provide an automatically closing check valve in the form of a disk 23 adapted to seat against the inner end of bushing 16. This disk is provided with a stem 24 which passes loosely through an opening in a suspending hinge member 25 and on its outer end is provided with a nut 27 or equivalent means for holding it from falling out. The hinge member 25 at its upper end is provided with an eye which is loosely hung on a stem or shaft 26 so that the latter forms a hinge or pivot on which the check valve 23 is suspended and swings. The stem 26 has its inner end seated in a socket in the casing, as shown in Fig. 3, and said stem passes out through a side opening in the casing and through a bushing 28 screwed into the casing and forming a bearing for said stem, and through a stuffing box 29 on the outer end of bushing 28. The stem 26 is cut away on one side to provide oppositely disposed shoulders 30 and 31. The eye of the suspending hinge member 25 is provided with a shoulder 32 adapted to cooperate with the shoulder 30 when the stem 26 is rotated in the proper direction so that thereby the suspending hinge member 25 and valve 23 are swung upwardly in the chamber 12, and the valve swung up entirely above the path of a reamer or other tool which may

be passed through the fixture as above described, so that the disk valve 23 is not in any way injured by the use of such tool. To prevent the valve being positively closed, we provide a stop 33 in the form of a pin driven into a hole in the casing and adapted to make contact with the shoulder 31 on the stem 26 and prevent rotation of the stem in that direction sufficiently far to cause the shoulder 31 to make contact with the shoulder on the eye of the suspending hinge member and positively close the check valve.

In order that both check valves may be operated simultaneously we connect to the outer end of each of the stems 26 a cross member 35, and connect one of the ends of each of said cross members by a chain or similar means 36 so that by pulling down on the same both check valves are simultaneously lifted. The opposite end of each cross bar 35 is counterweighted so as to automatically rotate the stem 26 backwardly to neutral position and permit the check valves to fall by gravity to the position shown in Fig. 1.

Each of the fittings is provided with a lateral sleeve 38 for receiving therebetween the glass 10, said glass being held in position by means of packing nuts 39.

The check valves 23 are loosely mounted in the suspending hinge member 25 so that they readily find their seats to close the port 15. The upper one of these valves is provided in its face with a groove 40 to permit steam to escape in a small quantity when the glass breaks. We may also provide at the upper end of the glass a device for giving an audible alarm, shown in the form of a common type of whistle 41 seated in a recess 42 in the fitting and held in place by an expansible spring ring 43. This alarm, however, is not essential and may be omitted in cases where the restricted area of the opening therethrough would interfere with the proper operation of the gage.

The gage described is of simple construction and cheap to manufacture. It provides automatic check valves for closing the passage through the fixtures whenever the gage glass breaks, and provides positive means for holding said check valves open when it is desired to blow out the glass, the last named means being such that the valves can be swung entirely out of line with the opening from the outside so as to permit a reamer or other tool to be passed through the fixture.

What we claim is:

1. In a water gage, the combination of two fixtures each provided with a chamber and with an attaching sleeve communicating with the inner portion of said chamber and with an opening at the outer end of

the chamber in line with said sleeve, a lateral sleeve communicating with the outer portion of the chamber, a partition dividing said chamber and provided with a port therethrough forming a communication between the inner and outer portions of the chamber and in line with the attaching sleeve and the opening in the outer end of the fixture, whereby a tool can be inserted from the outside through the fixture and attaching sleeve, a check valve arranged to close the inner end of the port through the partition, said check valve being hinged in a manner to permit it being lifted upwardly entirely out of the path of a tool inserted through the fixture, and means connected to said valve and arranged to positively open the same.

2. In a water gage, the combination of two fixtures each provided with a chamber and with an attaching sleeve communicating with the inner end of the chamber and with an opening through the outer end of the fixture in line with said sleeve, a lateral sleeve communicating with the outer portion of the chamber, a partition dividing said chamber and provided with a port therethrough to provide communication between the inner and outer portions of the chamber and in line with the attaching sleeve and the opening in the outer end of the fixture, whereby a tool can be inserted from the outside through the sleeve, a cut-off valve for closing the outer end of the port through the partition, said valve having a threaded connection in the opening in the outer end of the fixture, a check valve arranged to close the inner end of the port through the partition and hinged in a manner to permit it to be moved entirely out of the path of a tool inserted through the fixture, and means connected to said valve and arranged to positively open the same.

3. In a water gage, the combination of two fixtures each provided with a chamber and with an attaching sleeve communicating with the chamber at the inner end thereof and with an opening at the outer end of the chamber in line with said sleeve, a lateral glass-connecting sleeve communicating with the outer portion of the chamber, a partition dividing the chamber and provided with a port therethrough forming a communication between the inner and outer portions of the chamber and in line with the attaching sleeve and with the opening in the outer end of the fixture, whereby a tool can be inserted from the outside through the fixture and attaching sleeve, a check valve arranged to close the inner end of the port through said partition, a suspending member for said check valve hinged in the upper part of the fixture and arranged to swing the check valve upwardly

out of line with a tool passed through the fixture, and means connected to said suspending member and arranged to positively open said check valve.

5 4. In a water gage, the combination of two fixtures each provided with a lateral sleeve for the connection of a glass therebetween and with an attaching sleeve and with a chamber communicating with said sleeves, a partition dividing said chamber and provided with a port therethrough and providing communication between the attaching sleeve and the lateral sleeve, a check valve adapted to close one end of the port through said partition, a stem forming a hinge pin for said check valve, said stem having one side cut away to form oppositely facing shoulders, a shoulder on the valve arranged to co-operate with one of the shoulders on the stem to lift the valve, and a stop on the casing arranged to make contact with the other shoulder on the stem and prevent rotation in a direction to close the valve.

5 5. In a water gage, the combination of two fixtures each provided with a lateral sleeve for attachment of the glass and with an attaching sleeve and with a chamber communicating with said sleeves, a partition dividing said chamber and provided with a port forming a communication between the attaching and lateral sleeves, a check valve adapted to close the inner end of said port through the partition, a suspending member to which said valve is attached, a stem mounted in the upper portion of the fixture and forming a hinge pin for the suspending member, said stem having one side cut away to form oppositely facing shoulders, a shoulder on the suspending member arranged to coöperate with one of the shoulders on the stem to lift the valve, and a stop on the casing arranged to make contact with the other shoulder on the stem

and prevent rotation in a direction to close the valve.

6. In a water gage, the combination of two fixtures each having a lateral glass-connecting sleeve and an attaching sleeve and provided with a chamber connecting said sleeves, a check valve in the chamber arranged to close communication between the sleeves, a stem forming a hinge for each of said check valves, said stem and valve being provided with coöperating shoulders adapted to make contact when the stem is rotated in one direction to lift the valve, coöperating stops on the stem and casing to limit the rotation of the stem in the opposite direction, counterweighted cross arms secured to the outer ends of the stems and arranged to bring said stems back to normal position, and connections between said cross arms for simultaneously operating both of said stems.

7. In a water gage, the combination of two fixtures each provided with a chamber and with a lateral sleeve communicating with said chamber, a glass tube connecting said lateral sleeves, a check valve in each of the fixtures arranged to close communication through the chambers therein, the check valve of the upper fixture being provided with a by-pass, and a whistle located in the upper fixture between said check valve and the upper end of the glass, whereby when the glass breaks the steam escaping through the by-pass and broken glass causes an audible alarm.

In testimony whereof, we have hereunto set our hands.

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Witnesses:

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