(No Model.)

F. J. STULP.

ATTACHMENT FOR WATER GAGES.

No. 506,564. Patented Oct. 10, 1893.

Fig. 1.

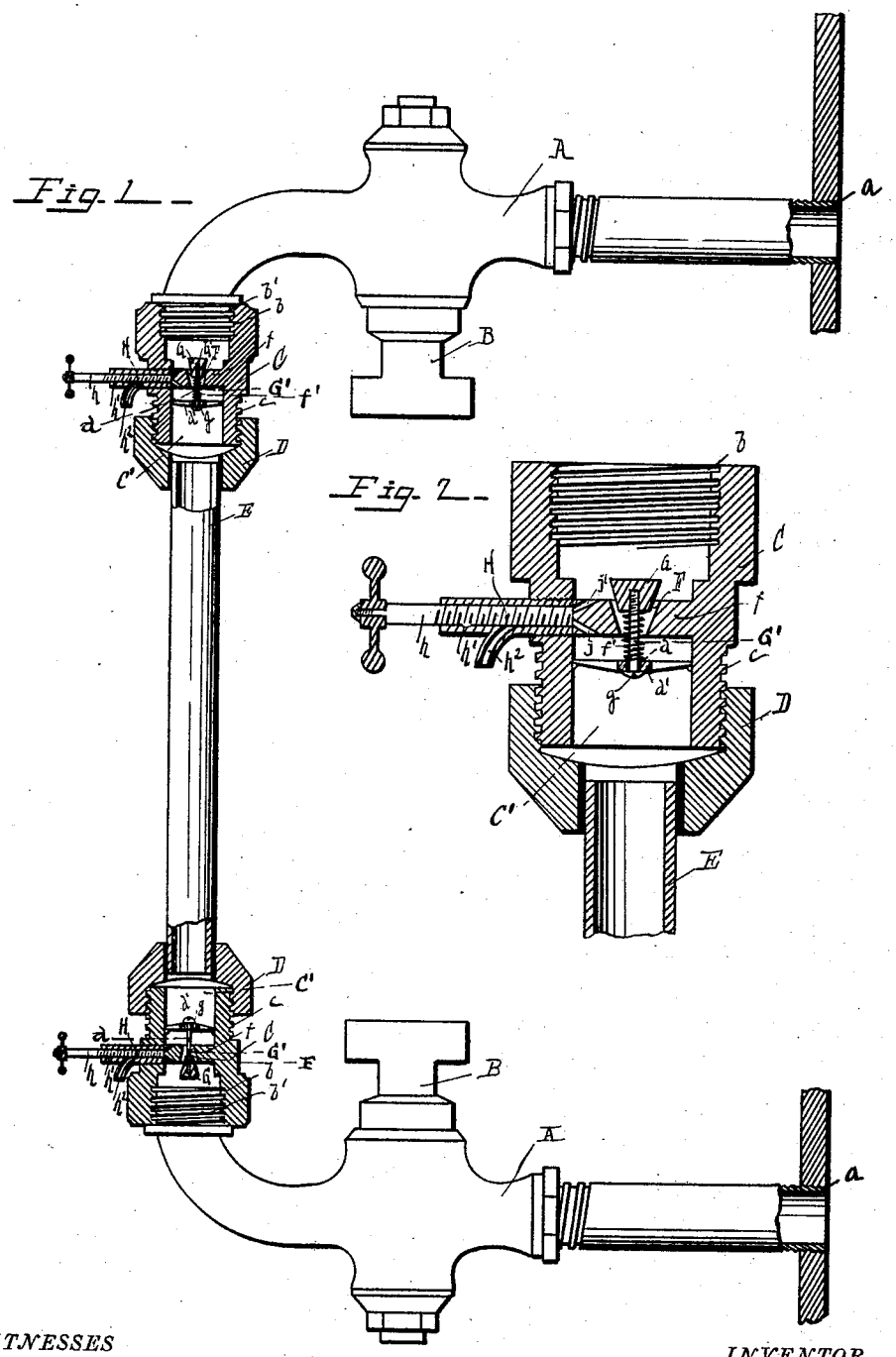

Fig. 2.

WITNESSES

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ATTACHMENT FOR WATER-GAGES.

SPECIFICATION forming part of Letters Patent No. 506,564, dated October 10, 1893.

Application filed May 11, 1893. Serial No. 473,876. (No model.)

To all whom it may concern:

Be it known that I, FRED. J. STULP, a subject of the Queen of Holland, and a resident of Muskegon, in the county of Muskegon and State of Michigan, have invented certain new and useful Improvements in Attachments for Water-Gages; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Figure 1 of the drawings is a side elevation showing attachment to boiler plate and partly in section and Fig. 2 is an enlarged view of the attachment in vertical section.

This invention has relation to water gages, an object being to provide an improved gage of this character, the valves of which will automatically close, upon the breakage of the glass from any cause, thereby preventing the escape of steam and water and the dangers incident thereto, experienced with the common gages. Heretofore all automatic check valves for gages of this character have been of such construction as to require the gage cocks to be made especially therefor, which has prevented their being applicable to the ordinary gages in use, so that upon their adoption, the ordinary gages are cast aside entirely. The expense and loss resulting from the change have therefore prevented to a considerable extent the adoption of the improved gages.

A further object of this invention is therefore to provide an automatically closing valve of such a character that it may be readily applied to the old forms of gages in ordinary use, while it is none the less applicable in the construction of new gages in which it is embodied.

A further object is to provide a gage with valves of such a character that the check valve seats and valves may be taken apart for regrinding or cleaning, without the necessity for putting out the furnace fires, and bringing the water in the boiler below the lower gage cocks, as is necessary with the ordinary gages, having automatic check valves.

A further object is to provide a gage with valves of such character that they may be controlled independently of the main valves or shut-offs of the gage. Heretofore in gages of this character, upon the insertion of a new glass, it has been necessary to open the check valves by means of the main valves or shut-offs.

With the gages heretofore in use and provided with automatic check valves, in blowing through the gage for purposes of testing and cleaning as is frequently required, it has been necessary to first close the main valve partly, so as to prevent the check valves from closing, and in many cases these main valves are closed either too far, or not far enough. Furthermore, when testing either the upper or lower valve passage to ascertain if it is open or in good condition, it has been necessary to close either the upper or lower valve, closing the upper valve to try the lower passage, and closing the lower valve to try the upper passage; and in many cases the operator has seen the glass break before his face, for the reason that he neglected to open the lower valve before closing the waste cock, the dry steam causing the glass to break almost immediately.

A further object of the invention is therefore to provide a gage with valves of such a character that in blowing through the gage, both the waste or blow-off cocks may be opened at one time, or independently of each other, without danger of accident.

Other objects of the invention will hereinafter appear.

With these objects in view, the invention consists in the novel construction and combination of parts, all as hereinafter described, and pointed out in the claims.

The gage, as shown in Fig. 1 of the accompanying drawings, is connected to the boiler plate at both upper and lower ends, by means of the nipples *a*, *a*, screwed into said plate, and the cocks A, A, which have the main valves B, B, therein.

C, C, designate the check valve attachments. As both the upper and lower attachments are the same in construction, but one will be described in detail, similar reference letters applying to corresponding parts in both. The attachment comprises the valve case or nut C, formed with a longitudinal opening or passage therethrough, having the female inter-

nal thread *b* at one end portion, to receive the male threaded portion *b'* of the cock A; and the male external thread *c* at the opposite end portion, to receive the packing nut D which stuffs or packs the glass E. In the passage or opening C', about midway of the ends thereof, is a valve seat casting *f*, which may be integral with the case or nut C, as shown, or it may be secured therein in any suitable manner, and which has a central valve seat F.

G dssignates the check valve, which seats vertically in said seat F, and which is carried by a pin or short stem G'. Said pin or stem has a guide bearing in a central aperture *d* of a spider *d'*, which may be cast integral with the case, or be formed separately and secured therein by suitable means. Said pin or stem has a grooved head *g*, to permit the application of a suitable tool thereto in case it is desired to grind the valve in its seat. Coiled around said stem or pin is a spring *f'*, bearing at one end against the spider *d'*, and at the other end against the valve G. Said spring may however be omitted.

H designates the waste cock, which as shown, consists of a plug *h* having a threaded engagement with the walls of an opening *h'* leading outwardly from the valve seat, said plug normally closing the waste opening or discharge spout h^2. Other suitable forms of cocks may however be provided. The said valve seat casting has an oblique opening *j* formed therein, said opening leading in from the under face thereof at one side in an oblique upward direction, and coming out at the edge portion thereof against the inner end of the opening *h'*. A similar passage *j'* leads in from the upper face of the casting, and comes out adjacent to the opening *j*. The location of these openings is such that they are normally both closed by the inner end of the screw-plug *h*, and there is no communication thereby between the opposite sides of the valve seat casting, but such communication can readily be afforded by opening the waste cock to a slight extent.

The main valves B, B, are normally left open, the check valves being also held out of their seats by the equalization of the pressure at both sides thereof. Should the glass break, the check valves are immediately closed, owing to the fact that the equalization of pressure therein is destroyed, and no steam or water is allowed to escape from the boiler. When a new glass is inserted, these valves will not immediately open, for the reason that the glass has not been filled, and the pressure has not been equalized; but by simply opening the waste cock, a sufficient distance to allow a communication through the passages *j*, *j'* (not sufficiently to uncover the discharges h^2) the glass fills, and the valves fall back from their seats. This operation is entirely independent of the main valves B, B, which are always left open, except in case it should be desired to clean or regrind the check-valves, or to take the gage apart. In this event, said valves are closed, and being between the boiler and the gage, the gage may be taken apart under any boiler pressure, and without putting out the fires.

In blowing off the gage, both the waste cocks may be opened at the same time, or at different times (leaving the main valves open). When both the waste cocks are opened at once, it will be observed that the check-valves will not close, owing to the equalization of pressure through the passages *j*, *j'*.

If it is desired to test the check-valves at any time, it may be done by opening either one of the waste cocks, leaving the other one closed. If the valves are all right, the valve in connection with the closed cock will close, and vice versa.

If it is desired to blow plenty of water through the glass, it may be done by venting the lower waste cock, and opening the upper cock to its full extent. This will keep the lower check-valve open, and allow the water to rise in the glass and discharge with the steam.

The valve attachment may be applied to any of the ordinary styles of gages by simply securing it on where the ordinary nut is used for packing the glass.

Should the threads be different, a bushing may be employed to match the thread of the old gage.

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

1. An automatic check-valve attachment for water gages, consisting of the valve case having means for its connection with the glass and with the boiler pipe, a valve seat therein, a valve normally held away from its seat, and passages formed in the valve seat casting to one side of said valve seat, and means for controlling said passages, substantially as specified.

2. In an automatic check-valve for water gages, the combination with the valve and the valve seat casting, said casting having the central valve seat, and the oblique passages therein, said passages extending into said casting obliquely from the opposite faces thereof, of the waste opening with which said passages communicate, and the waste-cock normally closing the mouths of said passages, substantially as specified.

3. An automatic check-valve attachment for water gages, said attachment comprising the nut or casing having the longitudinal opening therein, and the threaded connections at its end portion, the valve seat casting in the said opening, the valve seat and vertically seating valve, the oblique passages leading into the said casting from the opposite faces thereof, the waste opening with which said passages communicate, and the waste cock arranged to control the mouths of said openings, substantially as specified.

4. An automatic check valve attachment for water gages, said attachment comprising the

casing having a longitudinal opening therein, and means for its connection with the glass and boiler pipes, the valve seat in said opening, the vertically seating valve, its stem, the guide bearing for said stem, and the oblique passages to the side of the valve seat, and the waste cock controlling said passages, substantially as specified.

5. In a water gage, the herein described automatic check valve device, comprising the casing having a longitudinal opening therein, and threaded portions for its connection to the other parts of the gage, a valve seat in said opening, a vertically seating check valve, its pin or stem having a grooved head, the guide bearing for said pin or stem, the spring coiled around said pin or stem, and bearing at its respective ends against said valve and guide bearing, the oblique passages in the valve seat casting, the waste opening with which said passages communicate, and the waste cock arranged to control said passages, substantially as specified.

6. In a water gage for boilers, the combination with the check valves arranged to close automatically upon the breakage of the glass and normally closed passages around said valves, of main or shut-off valves between said check valves and the boiler, substantially as specified.

7. In a water gage for boilers, the combination with the check valves arranged to close automatically upon the breaking of the glass, and normally closed passages around said valves of the boiler connections comprising the nipples and the cocks, provided with the shut-off valves located between the boiler and the check-valves, substantially as specified.

8. In a water gage for boilers, the combination with check-valves arranged to close automatically upon the breakage of the glass, of normally closed passages around said check valve and waste cocks arranged to control said passages, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

FRED. J. STULP.

Witnesses:
JOHN M. KAPP,
JOHN D. VAN DER WERP.