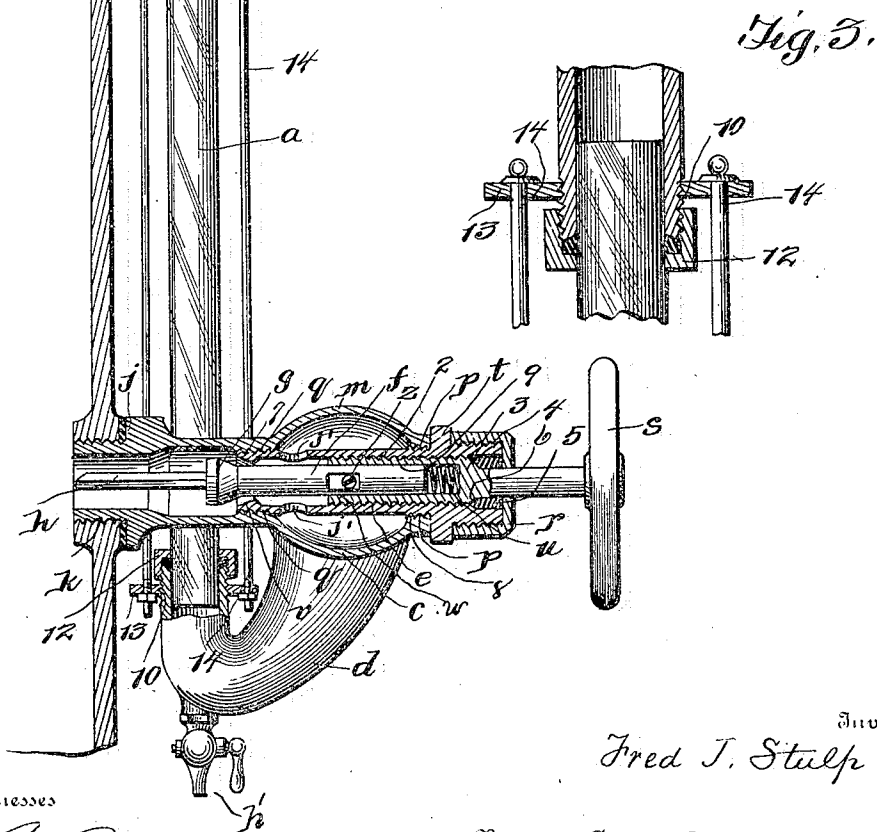
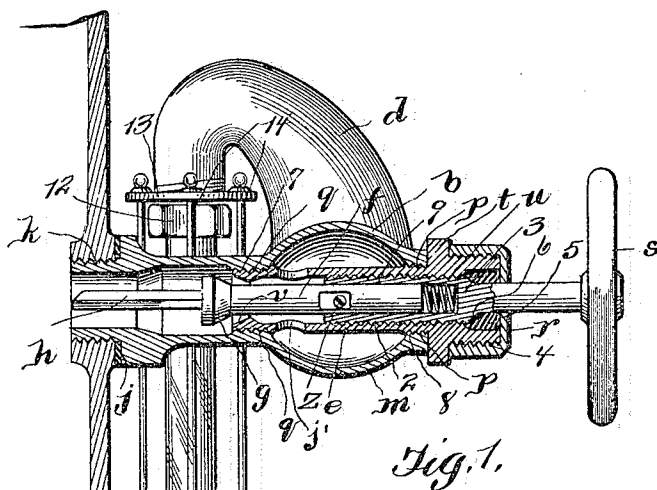


No. 809,859.

PATENTED JAN. 9, 1906.

F. J. STULP.
WATER GAGE.
APPLICATION FILED DEC. 17, 1904.

2 SHEETS—SHEET 1.



Witnesses

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George M. Anderson.

Inventor
Fred J. Stulp.

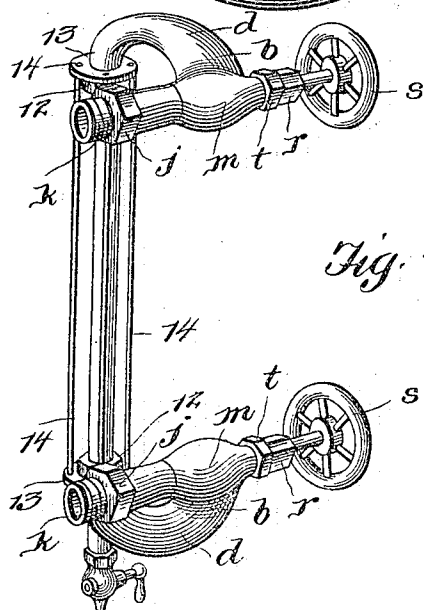
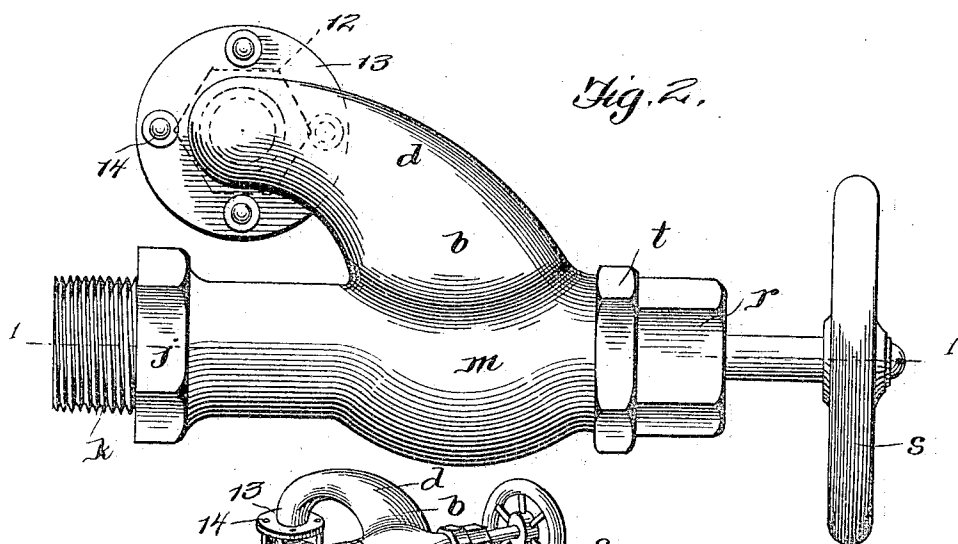
By E. W. Anderson—
his Attorney

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2 SHEETS—SHEET 2.



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his Attorney

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UNITED STATES PATENT OFFICE.

FRED J. STULP, OF MUSKEGON, MICHIGAN.

WATER-GAGE.

No. 809,859.

Specification of Letters Patent.

Patented Jan. 9, 1906.

Application filed December 17, 1904. Serial No. 237,219.

To all whom it may concern:

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

The invention relates to water-gages for boilers; and it consists in the novel construction and combinations of parts, as hereinafter set forth.

The object of the invention is to provide a single-valve water-gage of long range in comparison with the span of the attachment-hole in the boiler, the gage being self-regrinding, self-closing on fracture of the glass, self-cleaning, and having a removable valve-case.

In the accompanying drawings, illustrating the invention, Figure 1 is a section on the line 1 1, Fig. 2. Fig. 2 is a plan view of the invention. Fig. 3 is a detail view, and Fig. 4 is a perspective view, of the invention.

In the drawings illustrating the invention, the letter *a* designates the vertical glass gage-tube, which is connected to the upper horizontal boiler-attachment device *b* and the lower horizontal boiler-attachment device *c* by attachment to bent tubular extensions *d* of said devices, branching from said horizontal devices and having vertical end portions for connection with the gage-glass. Extending into the attachment devices are the removable valve-cases *e*, which receive the valve-stems and valves *g* at the inner ends of said stems. Each valve is provided with an extension plate or plates *h*, which are designed when the valve-stem is turned to clean that portion of the attachment device which is adjacent to the threaded boiler-opening to which the attachment device is secured. The waste-cock is indicated at *h'*.

Each attachment device is formed with a threaded end *k* next to its wrench-seat *j* for engagement with the threaded opening of the boiler. Its outer portion is of swell form, as indicated at *m*, and it is provided with an interior thread at each end of the swell in the tubular portion, the diameter of the threaded

outer portion or mouth (indicated at *p*) being greater than that of the threaded portion *q* at the inner end of the swell.

Extending into each attachment device is a valve-case *e* of tubular form and having three short exterior screw-threads and one long interior screw-thread. The long interior screw-thread 2 is designed to engage the hollow outer section 3 of the valve-stem, which receives in a telescoping manner the inner section *f* of the stem carrying the valve *g*. The screw-thread 4 at the outer end of the valve-case is located outside of the wrench-collar *t* of the valve-case and is designed to engage the packing-nut *r*, through which the valve-stem extends to receive the operating-handle *s*. Within the packing-nut the packing is placed in a recess 5 between the packing-nut and the shoulder 6 of the hollow section of the valve-stem. The screw-thread 7 at the inner end of the valve-case is cut below the surface of the tube, and the middle screw 8, just inside the collar *t*, is formed exterior to the general tubular surface, so that the valve-case is made removable from the gage-body. When the valve-case is secured home, the collar *t* engages the ground face of the mouth of the attachment device in a steam-tight manner. A packing-ring may be interposed, if necessary. When the valve-case is screwed into the attachment device, the thread 7 engages the inner threaded portion *q* of said device and the screw-thread 8 engages the outer threaded portion *p*. The valve-seat *v* is shown at the inner end of the valve-case. It is of beveled form and is designed to engage the beveled face of the valve.

The valve-stem is sectional, as above stated, and the inner section *f* is movable in the chamber or bore 9 of the outer section, said inner section being held in extended position by means of a spring *u* within the chamber. The inner stem *f* is slotted at *w* to receive a guide-pin *z*, which is secured to the outer section and is designed to limit the movement of extension and to prevent movement of rotation of the inner section with reference to the outer section. Lateral openings *j* in the valve-case serve to allow communication with the chamber of the swell *m* from the hollow portion of the valve-case next the valve-seat.

From the side of the swell *m* extends the hollow bent tubular portion or gooseneck *d*, said bent portion terminating in a vertical threaded end or mouth 10, designed to receive

the end of the glass gage-tube, the latter being secured thereto by a packing-nut 12. The gooseneck of the upper attachment device extends laterally and upward and that of the lower attachment device extends laterally and downward, these bent extensions ranging oppositely beyond the levels of the attachment devices, so that the gage-tube has an extent which is greater than the distance between the main tubular portions of said devices by several inches. In this manner a long range is given to the glass gage-tube for visible indications of height of water in the boiler.

Guard-plates are shown at 13 and guard-rods in connection therewith at 14.

The valve *v* serves both as a check-valve and as a main or stop valve. Although the valve-stem is sectional, there is perfect control of the valve through the handle or hand-wheel. Should the glass gage-tube break, the pressure from the boiler will force the valve against its seat, the spring in the hollow section yielding under the pressure of the inner stem-section *f*. The outer section constitutes the controlling portion of the stem and the inner section the automatic portion.

Should it be desired to blow water through the gage, the upper valve is closed against its seat and the valve-stem of the lower valve is screwed in far enough to prevent the check-valve from entirely closing. Upon opening the waste-cock water will be blown through the lower attachment device. When the lower valve is closed and the upper valve screwed in sufficiently to prevent closing, upon opening the waste-cock steam will be blown through the upper attachment device. Whenever either hand-wheel is turned, the cleaner-plate or mud-scraper projecting from the automatic check-valve will operate to clean the passage-way from the boiler. In order to clean or grind the valve or its seat, the waste-cock is opened, this action immediately causing both check-valves to be closed on their seats. Either valve-stem being now turned as if to screw the valve inward from its seat will cause the valve to turn on its seat, because of the yielding of the spring at the end of the movable section of the valve-stem and the internal pressure on the valve from the boiler.

In order to give more freedom of movement to the inner valve-stem section, this portion of the stem may be grooved upon its surface.

The invention is designed to provide a reliable self-cleaning and automatically-closing water-gage. Should it at any time need repairing, it is provided with a removable valve-case having a valve-seat and parts, so that the engineer can readily take the gage apart, leaving the glass gage-tube attached to the boiler, as well as the boiler-attachment devices, which are not disturbed. In this manner a good joint is always maintained between the boiler and gage and between the boiler-attach-

ment devices and the glass. The long range of this gage is designed to give several inches more glass for inspection of the water-level.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A water-gage for boilers having in combination a gage-glass of greater length than the distance between the horizontal attachment-holes of the boiler, and horizontal boiler-attachment devices for said glass having bent tubular extensions branching therefrom having vertically-threaded end portions for connection with said glass, substantially as specified.

2. A water-gage for boilers having in combination a gage-glass, and horizontal boiler-attachment devices for said glass having bent tubular extensions branching therefrom having vertically-threaded end portions for connection with said glass, substantially as specified.

3. A water-gage for boilers having in combination a gage-glass, and horizontal boiler-attachment devices for said glass having bent tubular extensions branching therefrom having vertically-threaded end portions for connection with the glass, valves, and valve-controlling stems projecting through the outer ends of said attachment devices, substantially as specified.

4. A water-gage for boilers having in combination the gage-glass, boiler-attachment devices having vertical portions for connection with the glass and horizontal portions for connection with the boiler, removable valve-cases in said horizontal portions, and valves in said cases, substantially as specified.

5. A water-gage having in combination the gage-glass, boiler-attachment devices therefor having horizontal threaded portions for connection with the attachment-holes of a boiler, said horizontal portions having bent tubular extensions provided with terminal vertical portions for connection with said glass, removable valve-cases in said horizontal portions, and valves in said cases, substantially as specified.

6. A water-gage for boilers, having a swell-chambered boiler-attachment device, and, in connection therewith, a removable valve-case communicating with the chamber of the attachment device, and a valve in said case having a sectional valve-stem, substantially as specified.

7. A water-gage for boilers, having a chambered boiler-attachment device, and in connection therewith a threaded removable valve-case communicating with the chamber of said attachment device, a valve in said case having a hollow threaded controlling-valve-stem section, a spring within the same, and an automatically-movable valve-stem section, engaging said spring, substantially as specified.

8. In a water-gage for boilers, an internally-threaded boiler-attachment device, a

5 valve having an externally-threaded valve-stem and a removable internally and externally threaded valve-case engaging said attachment device and valve-stem, substantially as specified.

10 9. In combination with a boiler-attachment device of a water-gage having interior threads at each end of its chambered portion, of a removable tubular valve-case having at its inner end a subsurface thread, at its outer end of a wrench-seat collar, and a packing-nut thread and adjacent to said collar a superficially-projecting thread, substantially as specified.

10. A long-range water-gage for boilers

consisting of horizontal boiler-attachment de- 15
vices having bent extensions terminating in
vertical mouth portions, a glass gage-tube
connected to said extensions, threaded remov-
able valve-cases in said attachment devices,
sectional automatic stop-valves, and means 20
for operating said valves as check-valves, sub-
stantially as specified.

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

FRED J. STULP.

Witnesses:

JOHN H. WIERSEMA,
JACOB WIERSEMA.