(No Model.)

J. A. CREELMAN.

FEED WATER REGULATOR.

No. 306,062. Patented Oct. 7, 1884.

Fig. 1.

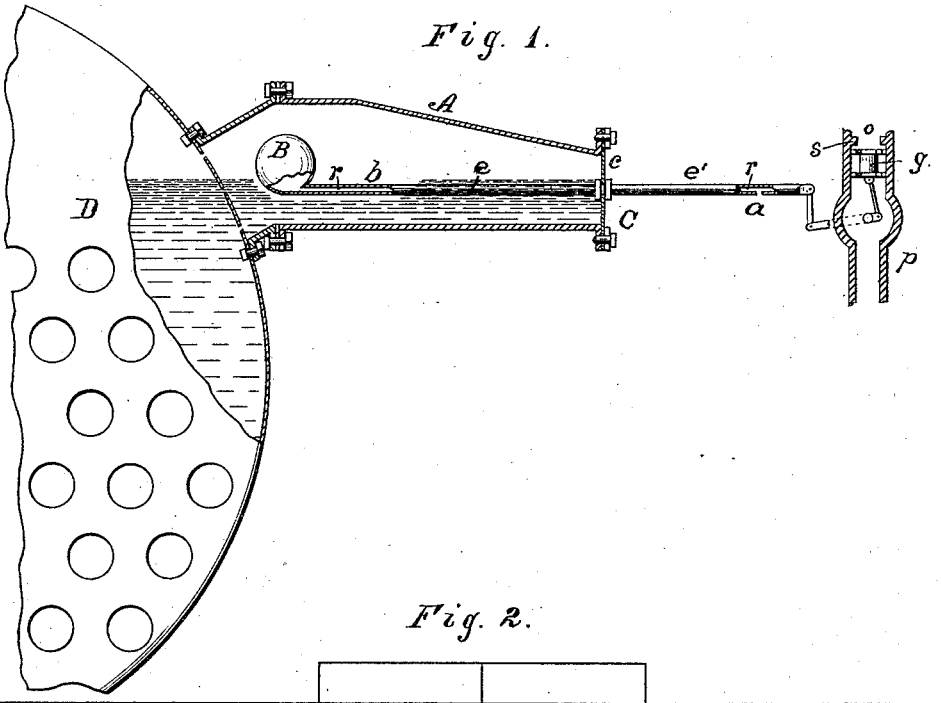
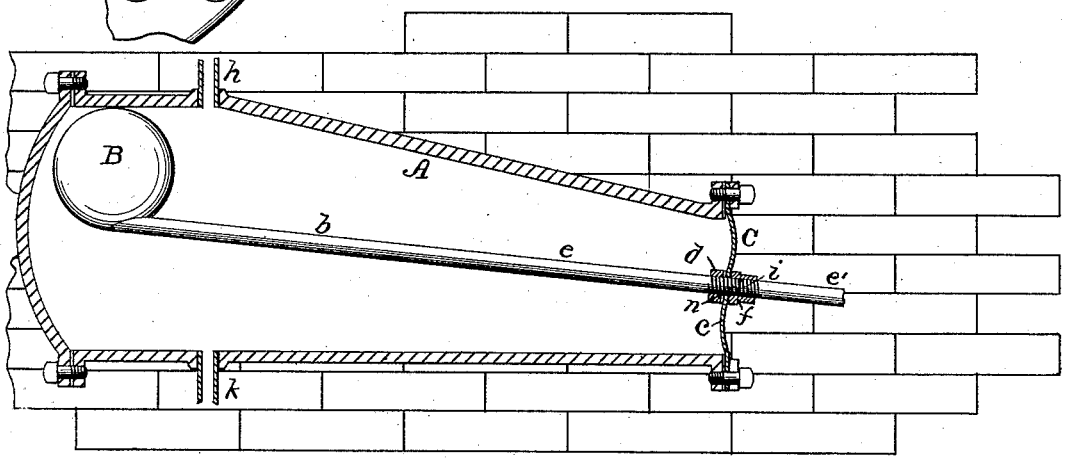


Fig. 2.



Attest:
Geo. W. Tuttle.
H. A. Walsh.

Inventor:
J. A. Creelman
By E. B. Whitmore, Atty.

UNITED STATES PATENT OFFICE.

JOHN A. CREELMAN, OF ROCHESTER, NEW YORK.

FEED-WATER REGULATOR.

SPECIFICATION forming part of Letters Patent No. 306,062, dated October 7, 1884.

Application filed February 13, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. CREELMAN, of Rochester, in the county of Monroe and State of New York, have invented a new and useful Improvement in Feed-Water Regulators, which improvement is fully set forth in the following specification and accompanying drawings.

My invention relates to that class of feed-water regulators for steam boilers or tanks in which a float resting upon the surface of the water operates a regulating-valve in the supply-pipe; and it consists in parts and their combination, substantially as hereinbelow fully described, and more particularly pointed out in the claims.

Floats resting upon water have heretofore been used for the purpose of regulaing the flow of feed-water to a steam boiler or tank; but it is found, particularly when used under a pressure of steam, that water in small quantities passes through the shell of the float and gradually accumulates therein, causing the latter to become water-logged and inactive.

One essential part of my invention is to provide means by which the float may be constantly drained of the water oozing through its walls, and thus kept light and buoyant; and the second part of the invention consists in a new and novel method of passing the arm holding the float through one of the walls or sides of the chamber containing the float without the aid of a stuffing-box, as has heretofore been used to make the joint tight.

Referring to the drawings, Figure 1 is a side elevation of my improved feed-water regulator, (shown conveniently attached to a steam-boiler,) with most of the parts vertically and centrally sectioned, and parts broken away; and Fig. 2, an enlarged view of the main parts of the invention, showing more clearly the operation of some of the same, the shell inclosing the float being vertically and centrally sectioned, as in Fig. 1.

Referring to the parts, A is an elongated case or inclosure, preferably of cast-iron, made to hold the float B and water to float it, which case is made water-tight, except as to the necessary openings by which it is connected to the boiler or tank, the water of which is to be regulated by the float. The float B is held within the case or inclosure at the end of a hollow arm or pipe, *b*, the bore *r* of which pipe communicates with the void or interior of the float at the bottom thereof, as is clearly shown in Fig. 1. The pipe or arm *b* passes, substantially horizontally, out through an elastic or yielding side or plate, *c*, of the case A; and at any convenient point without the case, as at *a*, a perforation is made, from which construction of parts it will be clearly understood that any water finding its way into the interior of the float will flow downward into the bore *r* of the pipe *b*, and out at the opening at *a*, and thus keep the float exhausted, or at all times cleared of internal water. The bore *r* of the pipe forms a continuous communication for the water, leading from the interior of the float to a point without the case or inclosure.

The pipe or arm *b* is composed of two similar pieces, *e* and *e'*, joined at *i* just outside of the plate *c*. (Shown in Fig. 2.) At the joined ends each of these pieces is provided with a screw-thread. A screw-nut, *d*, is placed upon the threaded part *e*, leaving a projecting end, *n*, of said part, which end is inserted, from the inside of the case, out through an opening at the middle of the plate *c*. An outer screw-nut, *f*, is screwed upon the end *n* of the part *e* outside of the plate, and made to press the plate firmly between it and the opposing nut *d*. The part *e'* being screwed into the outer end of the nut *f*, all the parts are rigidly united and the arm or pipe *b* made practically continuous from the float out through the wall of the inclosure into the space beyond. The plate *c*, I prefer to make of elastic sheet-brass properly secured to the open end C of the case A, which, from its yielding nature, bends or wrinkles from the strain brought upon it by the arm *b* as the float is carried up or down by the action of the water. A disk of packing is placed between the inner nut, *d*, and the plate *c* to render the joint water-tight.

The outer end of the arm or pipe *b* is connected by means of suitable rods and levers with a valve, *g*, designed to open or close the opening *o* in the feed-pipe *p*, through which the water flows to the boiler.

s is the valve-seat, and it will be seen that when the float is carried upward by the rising water in the boiler the valve will be forced upward against the seat and cut off the supply of water. A moving downward of the float,

from a decline of the water in the boiler, will open the valve and allow the water to flow into the boiler.

The case A may be connected directly with the boiler D at the water-line, with perforations *u* through the shell of the boiler, to permit water to flow into the case; or it may be placed at any convenient point in the vicinity of the boiler, at the proper level with reference to the water-line of the same, and with proper pipe-connections therewith.

Fig. 2 shows the case just outside the masonry surrounding the boiler, with pipes *h* and *k* leading, respectively, to the steam-space and water-space of the boiler; or in a low-pressure boiler, used for house-heating, &c., the float may be placed directly in the boiler, if convenient, upon the water thereof, with the arm *b* projecting outward through a plate, *c*, forming an integral part of the shell of the boiler.

It is plain that any desired form of float may be used with this invention, and any suitable form of valve employed in the feed-pipe *p*, which valve, with its connections with the arm *b*, forms no part of my invention.

What I claim as my invention is—

1. In a feed-water regulator for steam-boilers, a case, A, for the float, provided with a yielding plate, *c*, forming a part of the shell or wall of the inclosure, and an arm, *b*, for holding the float, passing out through the plate and secured rigidly thereto, said arm being tubular, so as to furnish an opening, *r*, through which to convey away the water that may accumulate in the float, substantially as and for the purpose set forth.

2. In a feed-water regulator for steam-boilers, a case or inclosure, A, for the float, provided with a yielding plate or part, *c*, forming a part of the shell or wall of the inclosure, and an arm, *b*, for the float, passing out through the plate and secured rigidly thereto, by means of the yielding of which plate the float is permitted to move up or down with the rise or fall of the water, substantially as described.

3. In a feed-water regulator for steam-boilers, the combination of an inclosed float, B, and a supporting-arm, *b*, therefor, passing through and rigidly secured to a yielding plate, *c*, forming a side of the inclosure, and a regulating-valve, *g*, for the feed-water, with means to connect said valve and arm, so that the valve may be opened or closed by the movement of the float, substantially as set forth.

JOHN A. CREELMAN.

Witnesses:
E. B. WHITMORE,
M. A. WALSH.