

No. 750,293.

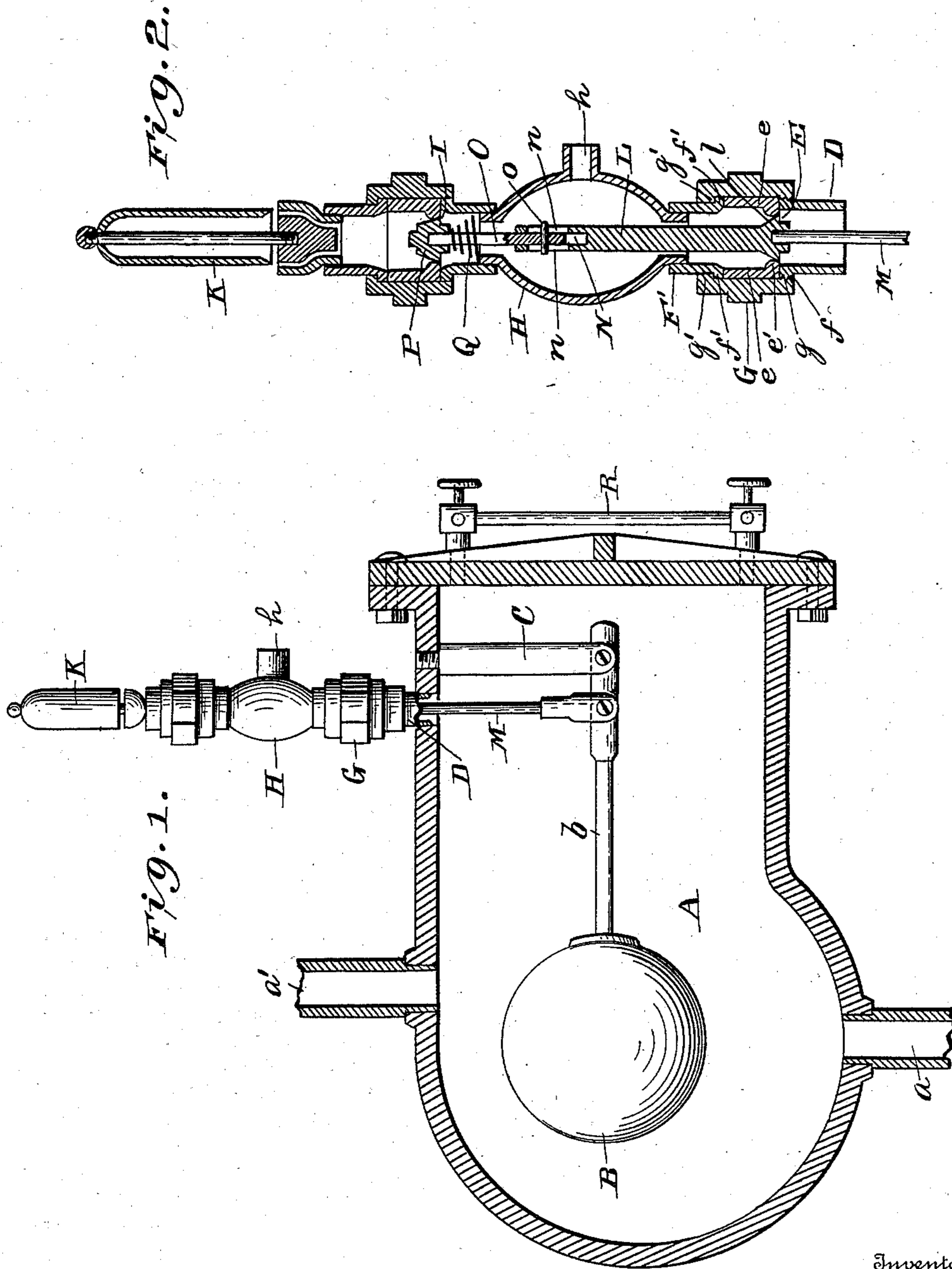
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A. M. MASTERS.

AUTOMATIC WATER FEED REGULATOR AND LOW WATER ALARM.

APPLICATION FILED JULY 31, 1902.

NO MODEL.



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AUTOMATIC WATER-FEED REGULATOR AND LOW-WATER ALARM.

SPECIFICATION forming part of Letters Patent No. 750,293, dated January 26, 1904.

Application filed July 31, 1902. Serial No. 117,854. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR M. MASTERS, a citizen of the United States, residing at Jacksonville, in the county of Morgan and State of Illinois, have invented certain new and useful Improvements in Automatic Water-Feed Regulators and Low-Water Alarms, of which the following is a specification.

My invention relates to devices for automatically regulating the amount of water fed to a steam-boiler, and has for its object to provide a device that will automatically regulate the height of the water in the boiler by opening a valve admitting the water to the boiler when it falls below a certain height and will also sound an alarm should by any chance the feed-water be cut off.

The advantages of my invention will fully appear hereinafter and by reference to the accompanying drawings, in which—

Figure 1 is a view in vertical section of my invention; Fig. 2, an enlarged view of the water-feed valve and alarm connections.

Referring to the drawings, in which similar reference characters indicate corresponding parts throughout both views, A represents a shell or casing connected by means of pipes *a* and *a'* with a boiler, (not shown,) the pipe *a* being connected to the lower part or water-space of the boiler, while *a'* is connected with the upper or steam space. It will be readily understood that by means of these connections the pressure in the shell or casing A will be the same as in the boiler, and consequently the water in the casing will be the same height as the water in the boiler.

B represents a float of any desired type and made of any preferred material, the stem *b* of which is pivoted to an arm C, suitably secured in the casing A.

D is the steam-feed pipe, having a valve-port E, consisting of a ring *e*, with an inwardly-extending flange *e'*, segmental in cross-section, which comprises the valve-seat. The ring *e'* is secured between two short sections of pipe F and F' by means of a union G, the pipe F having a screw-threaded shoulder *f* to fit screw-threads *g* in the lower end of the union,

while the upper end of the union has an inwardly-extending flange *g'* to hold the pipe F' against the top of ring *e*, said pipe having an annular shoulder *f'* to rest under said flange *g'*.

H represents the steam-chest, which is connected by means of pipe *h* with any suitable pump. Above steam-chest H is another valve-port I, which is identical in construction with valve-port E, above described. Above valve-port I is a whistle K of any desired construction.

L represents a valve-stem having a valve-face *l* integral therewith to seat in valve-seat *e'* and connected by means of rod M with the stem *b* of the float B. The upper end of valve-stem L has a bore N cut therein and longitudinal slots *n* cut through to the exterior of the valve-stem.

O represents a valve-stem slidably mounted in bore N and having a pin *o* extending through slots *n*.

P represents a valve-face on stem O, which registers with valve-seat in port I.

Q represents a coil-spring secured to the under side of valve-face P and having its bottom resting on the top of steam-chest H. The purpose of coil-spring Q is to hold valve-face P in the valve-port I until the pin *o* intercepts the top of slots *n*, when the valve-face P would be drawn away from its seat.

R represents the ordinary construction of water-gage glass.

The operation of my invention is as follows: As the water in the boiler and casing A falls the float B will follow the level of the water and valve-stem L will be drawn down, unseating valve-face *l* and permitting steam to flow into steam-chest H and thence through pipe *h* to the water-pump, and as soon as the water attains the proper level the valve-port E is closed and the steam cut off from the pump, thus stopping its operation. It will be readily understood that the opening and closing of valve-port E is quite frequent and the amount of water admitted at each opening of the valve very small, so that the boiler is not chilled, as it would be if the feed should be at infrequent

intervals and in large quantities. Should by any chance the water-feed pump not operate, the float B would continue to fall until the top of slots *n* would bear against pin *o* and withdraw valve-face P from port I, permitting steam to get to whistle K to warn the engineer of the danger.

Having thus described my invention, what I claim is—

10 1. In a water-feed regulator and low-water alarm, a steam-duct connected with a boiler, a valve-stem in said duct, two valve-faces on said stem, one connected with the water-supply pump, the other with an alarm, and means
15 to control the action of said valve-stem, substantially as shown and described.

2. In a water-feed regulator and low-water alarm, a steam-duct connected with a boiler, a float-controlled valve-stem therein, and two
20 valve-faces on said stem, one connected with the water-supply pump, the other with a suitable alarm, substantially as shown and described.

3. In a water-feed regulator and low-water
25 alarm, a vertical steam-duct connected with a boiler, a float-controlled valve-stem therein, a valve-face on said stem connected with the water-supply pump, a valve-stem loosely but
operatively connected with the first-mentioned
30 valve-stem, and a valve-face on said stem con-

nected with a suitable alarm, substantially as shown and described.

4. In a water-feed regulator and low-water alarm, a vertical steam-duct connected with a boiler, a valve-stem in said duct, means to
35 control the action of said valve-stem by the rise and fall of the water in the boiler, a valve-face on said stem connected with the water-supply pump, a valve-stem loosely but operatively connected with the first-named valve-
40 stem, and a valve-face on the last-named valve-stem connected with an alarm, substantially as shown and described.

5. In a water-feed regulator and low-water alarm, a casing connected with the boiler, a
45 float pivoted therein, a valve-stem connected with said float, a valve-face on said stem to seat in the water-feed-pump steam-supply valve-port, a valve-stem mounted in a bore in the end of the first-mentioned valve-stem, a
50 pin in said valve-stem fitting in slots in said first-mentioned valve-stem, and a spring to keep said valve-stem in position to close the valve, substantially as shown and described.

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

ARTHUR M. MASTERS.

Witnesses:

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