

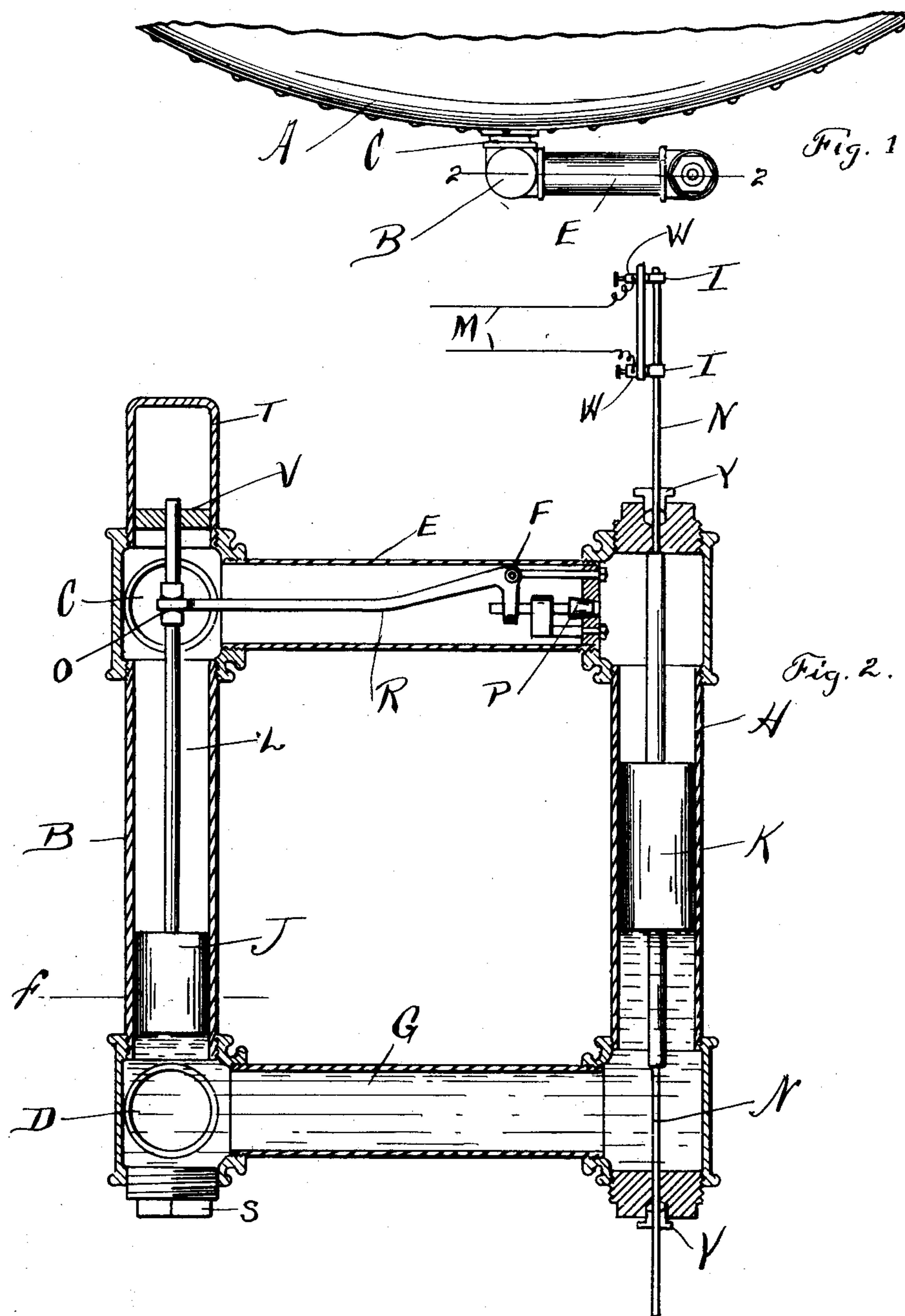
No. 685,971.

Patented Nov. 5, 1901.

G. CARLISLE.  
AUTOMATIC FEED WATER REGULATOR.

(Application filed June 26, 1901.)

(No Model.)



Witnesses.

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# UNITED STATES PATENT OFFICE.

GEORGE CARLISLE, OF ATTLEBORO, MASSACHUSETTS.

## AUTOMATIC FEED-WATER REGULATOR.

SPECIFICATION forming part of Letters Patent No. 685,971, dated November 5, 1901.

Application filed June 26, 1901. Serial No. 66,177. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE CARLISLE, a resident of Attleboro, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Automatic Feed-Water Regulators; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to devices for supplying water to steam-boilers to take the place of that which has been converted into steam and utilized; and it has for its object to provide a device of this character that will be automatic in its operation, requiring no care or attention on the part of the engineer or attendant, will be effective and certain of action and simple in construction, and will retain the level of the water in the boiler at a predetermined point without variation, and thus avoid the danger to "low water" in the boiler.

To this end my invention consists in the herein-described novel means for automatically controlling the volume of water in the boiler through the medium of the steam in the boiler, which is made to control the movements of a water-supply pump. It is fully described and illustrated in this specification and the annexed drawings.

Figure 1 is a top view of my apparatus with a portion of an upright boiler to which the feed-controller is attached. Fig. 2 shows a vertical section of the apparatus on line 2 2 in Fig. 1.

The construction and operation of my apparatus are as follows:

A represents the boiler, on one side of which the feed-controller is attached.

B is a vertical pipe of proper size in proportion to the size of the boiler. The pipe B is attached to the boiler A by two horizontal pipes C D, (see Fig. 2,) the first of which, C, is to be located above the normal water-line of the boiler, which should be at about the line *f*. The other connecting-pipe D should enter the boiler below said water-line.

The vertical pipe B is closed at its top by a screw-cup and at its lower end by a screw-plug and has a piston-float J, which is held on a rod L in a guide V at the top and is al-

lowed to move readily up and down in the pipe B.

Two pipes E G extend out horizontally from the pipe B, the pipe G from near the lower end and the pipe E from near the top of the pipe B, and these two pipes are connected at their outer ends by a vertical pipe H, which is closed at its upper and lower ends by screw-plugs having stuffing-boxes Y Y in their centers to accommodate a sliding rod N, that carries a float-piston K, similar to the float J in the pipe B before mentioned. A valve P is placed in the upper horizontal pipe E, preferably at or near its junction with the upright pipe H. This valve P is connected to the short vertical arm of a knee-lever R, which is held on a pivot at F and has its long arm connected to the rod L at O, so that when the float J rises or falls the valve P will be opened or closed. On the upper end of the rod N two collars I I are fastened and arranged to come in contact with two stationary electrodes W W at the same time and close an electric circuit arranged to start a feed-pump. (Not shown.)

The operation is as follows: When the water in the boiler is at a proper height, the floats J and K will be on a level with each other and the valve P will be open, so that the pressure will be equalized in the pipes B and H; but when the water in the boiler gets low the float J will sink down and close the valve P by the lever R. Then the pressure of the steam and water in the boiler and through the pipe G will raise the float K and its rod N until the collars I I come in contact with the electrodes W W and close the electric circuit through the wires M, which throws the feed-pump into operation until the water is raised in the boiler, so as to raise the float J and open the valve P and equalize the pressure in the two pipes and let the float K sink and stop the feed-pump by breaking the contact of the collars I I with the electrodes W W.

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

1. A water-feed controller consisting of a vertical pipe communicating with the boiler above and below the water-line, a float to operate in said pipe, a similar pipe connected to said vertical pipe by an upper and a lower



pipe, a float to operate in said similar pipe, a valve in said upper pipe controlled by the float in said vertical pipe, a rod for the float in said similar pipe, means connecting said  
5 rod with the feed-pump, substantially as described.

2. The combination of two pipes communicating with the boiler above and below the water-line, a float in each pipe, a pipe connecting the two pipes at their upper and lower  
10 ends, a valve to control one of the connecting-pipes and controlled by one of the floats, means connected with one of said floats to close or to open an electric circuit to start or  
15 stop the feed-pump, substantially as described.

3. A feed-controller consisting of a vertical

pipe having connections with the boiler above and below the water-line, a float to operate in said pipe, a similar pipe connected to said  
20 vertical pipe by an upper and a lower pipe, a float to operate in said similar pipe, a valve in said upper pipe controlled by the float in said vertical pipe, a rod for the float in said  
25 similar pipe, collars on one of said float-rods to close or open an electric circuit, to start or stop a feed-pump, substantially as described.

In testimony whereof I have hereunto set my hand this 19th day of June, A. D. 1901.

GEORGE CARLISLE.

In presence of—

BENJ. ARNOLD,

HOWARD E. BARLOW.