

(No Model.)

W. GLADSTONE.  
FEED WATER REGULATOR.

No. 504,574.

Patented Sept. 5, 1893.

Fig. 2.

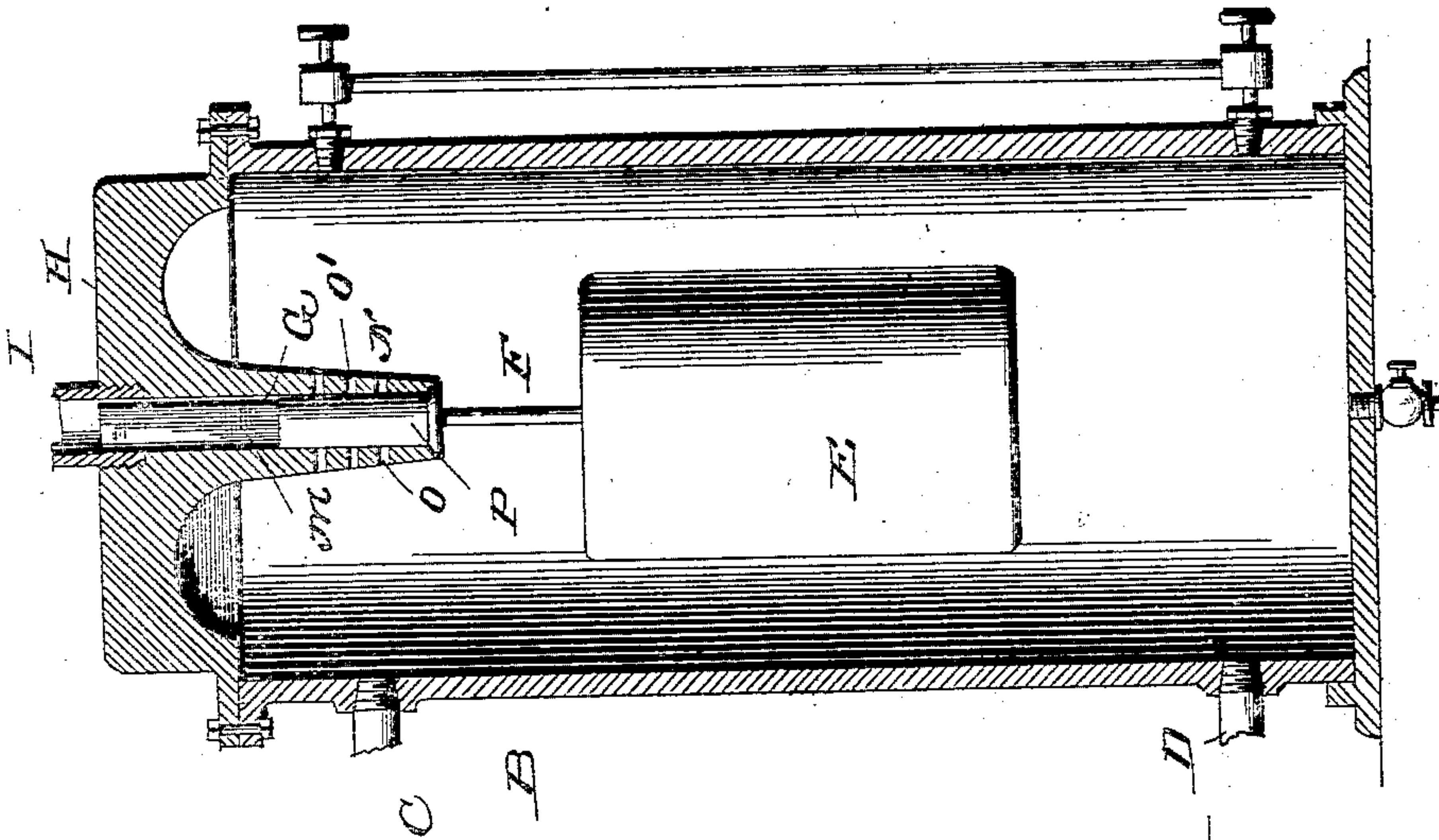


Fig. 3.

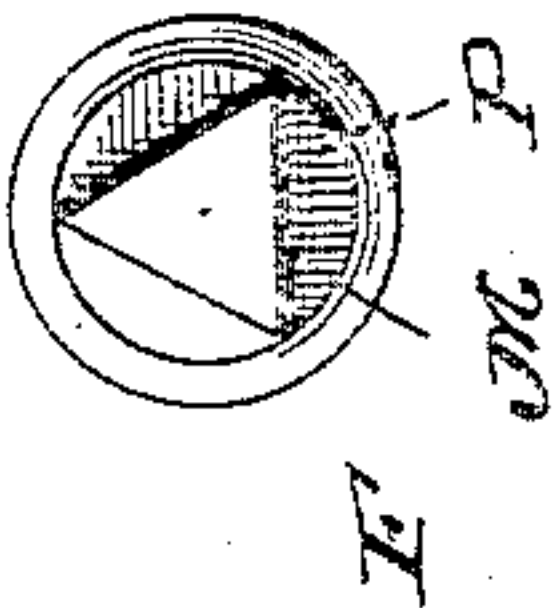
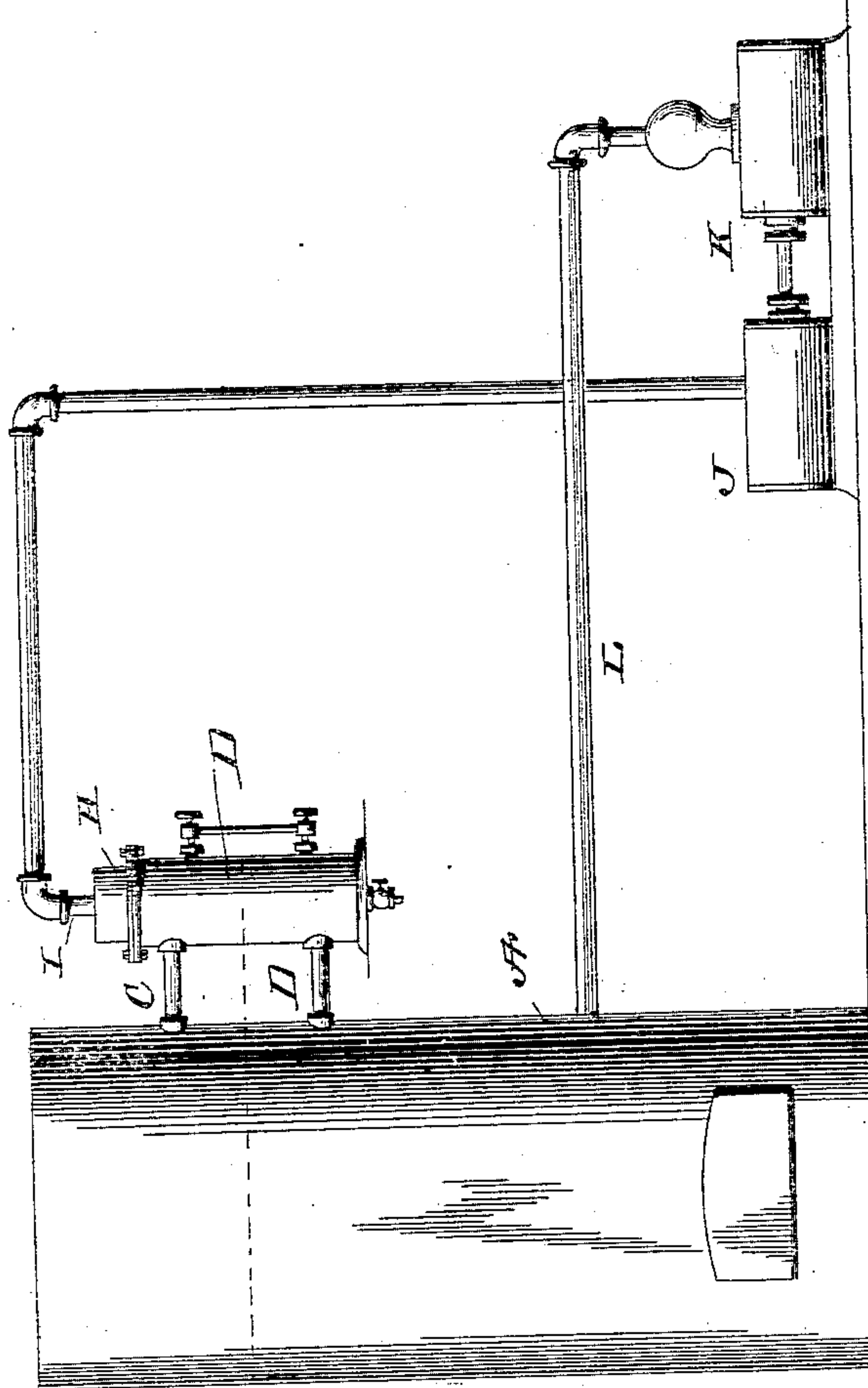


Fig. 1.



Witnesses

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# UNITED STATES PATENT OFFICE.

WILLIAM GLADSTONE, OF SAN FRANCISCO, CALIFORNIA.

## FEED-WATER REGULATOR.

SPECIFICATION forming part of Letters Patent No. 504,574, dated September 5, 1893.

Application filed March 2, 1893. Serial No. 464,377. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM GLADSTONE, of San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Feed-Water Regulators; and I do hereby 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.

My invention relates to devices for supplying or injecting water into 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 of explosion due to "low water" in the boiler—that is to say to an insufficiency of water in the boiler and to the sudden development of steam by the contact of a volume of water with an abnormally large area of the heated boiler surface.

To these ends 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.

The novelty resides in the peculiarities of construction, and the combination, arrangements, and adaptation of parts, all as more fully hereinafter described, shown in the drawings, and then particularly pointed out in the appended claim.

The invention is clearly illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part of this specification, and in which—

Figure 1 is a side view or elevation of an ordinary boiler, with my invention attached, showing the position of the pump and connections. Fig. 2 is a vertical section of the gage and valve and Fig. 3 is a transverse section of the upper portion of the valve stem.

Reference being had to the above figures, A represents an ordinary steam boiler, and B represents a cylindrical vessel connected to the upper portion of A by means of the short connecting pipes C and D, one at the upper and the other at the lower portion of B.

Situated within the cylindrical vessel B is the water float E, which is provided with the stem F, the latter being adapted to fit in the cylindrical hole or bore G through the cap H of the vessel B.

Connected with the upper portion of the bore G by means of the pipe I is cylinder J of the steam pump K, the water from which is conducted to the boiler A by means of the supply pipe L.

In Fig. 3 I have represented a transverse section of the upper portion of the stem F, which is triangular in cross-section.

It is obvious that when the water in the boiler A falls below a certain level, the water in vessel B falls a corresponding amount and consequently the float E and stem F fall.

In order to supply a suitable bearing for the stem F I have constructed the cap H with a central projection N, which has a transverse series of holes O, O', &c., passing through it. It will be readily seen that when the water in the vessel B has fallen sufficiently to lower the float E until the portion M of the stem F has reached the hole O, steam from the boiler A passes through pipe C into the vessel B and through the hole O and between the sides of the triangular portion of the stem and the surface of the bore G whence it is conducted to the cylinder J by means of pipe I, thus causing the pump to force water into the boiler until the float and stem have risen sufficiently to close the opening O by means of the cylindrical portion P of the stem F. It is obvious that the lower the float E falls the greater amount of steam will be conducted to the pump, thereby increasing the amount of water forced into the boiler A.

The construction and arrangement of the several parts of my automatic feeder being thus made known the operation and advantages of the same will, it is thought, be readily understood.

Having thus fully described my invention,

what I claim, and desire to secure by Letters Patent, is—

The combination with the boiler A, of a feed regulator, consisting of a casing or cylinder 5 B, located near the top of said boiler, a cap H, mounted on the top of said casing or cylinder B and having a central depending tubular projection N of conical form, which is provided with a series of openings O, O', a 10 stem F having a float on the lower end thereof, and an upper enlarged cylindrical portion P with a lower flange which is adapted to move in the tubular projection N, to regulate

the flow of the steam through the openings O, O', and an upper portion M connected to 15 the upper end of the said cylindrical portion P of the said stem F, substantially as described.

In testimony whereof I have signed this specification in the presence of two subscrib- 20 ing witnesses.

WILLIAM GLADSTONE.

Witnesses:

WILLIAM E. PARK,  
CHAS. C. ELSASSER.