

(No Model.)

W. O. GUNCKEL.
BOILER FEED REGULATOR.

No. 394,569.

Patented Dec. 18, 1888.

Fig. 1 -

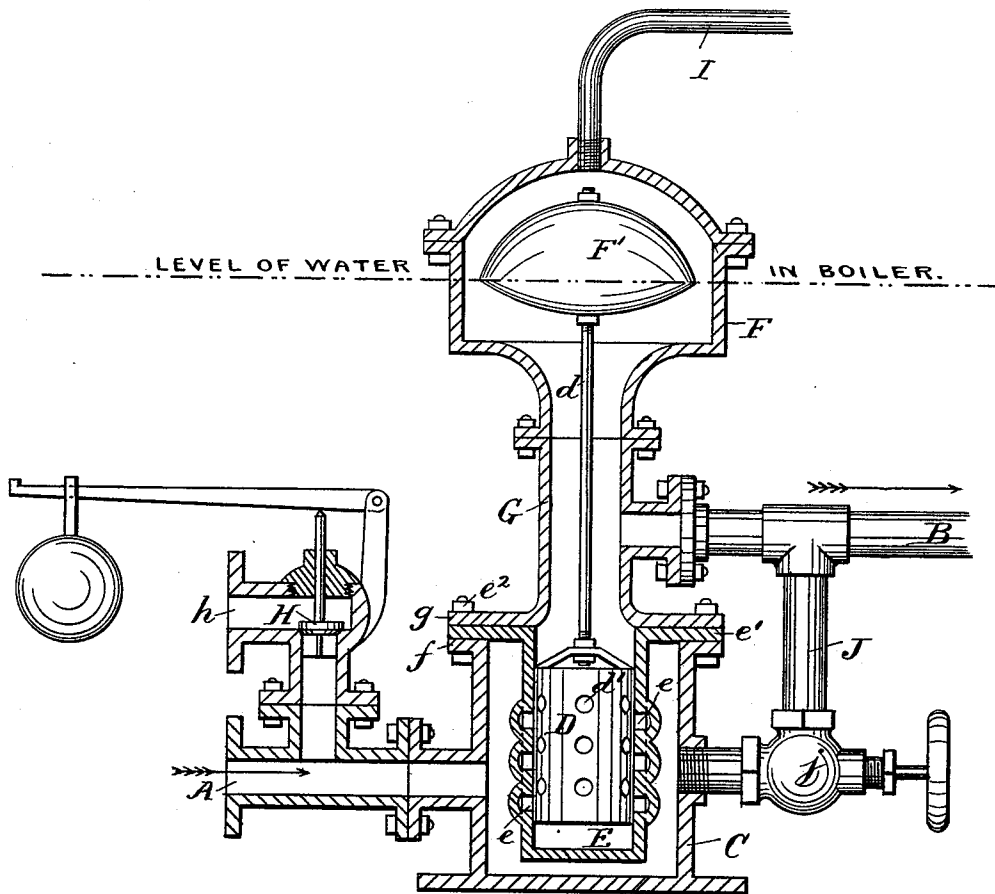
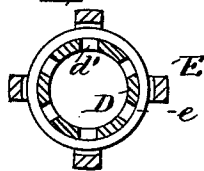


Fig. 2 -



Witnesses.

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By his Attorney

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UNITED STATES PATENT OFFICE.

WINFIELD O. GUNCKEL, OF TERRE HAUTE, INDIANA.

BOILER FEED-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 394,569, dated December 18, 1888.

Application filed March 2, 1888. Serial No. 265,901. (No model.)

To all whom it may concern:

Be it known that I, WINFIELD O. GUNCKEL, a citizen of the United States, residing at Terre Haute, in the county of Vigo and State of Indiana, have invented certain new and useful Improvements in Boiler Feed-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.

This invention relates to regulators which are adapted to keep the water in a steam-boiler at substantially a uniform level; and it consists in the novel construction and combination of the parts, as hereinafter fully described and claimed.

In the drawings, Figure 1 is a vertical section through the regulator. Fig. 2 is a cross-section through the regulating-valve and its cylinder.

A is the pipe through which the feed-water is pumped into the regulator, and B is the pipe through which the water passes from the regulator into the boiler.

C is the casing of the balanced regulating-valve D, which works within the cylinder E.

F is the casing for the float, and G is a junction-piece connecting the float-casing with regulating-valve casing. The cylinder E is provided with annular orifices *e* in its sides, and has a flange, *e'*, at the top, which is secured by the bolts *e*² between the flanges *f* and *g* of the float-casing and the junction-piece, respectively.

H is a safety-valve secured to the inlet-pipe A, and *h* is the overflow-pipe. This safety-valve may be a weighted lever-valve, as shown, or it may be a spring-valve of any approved construction used for a boiler safety-valve.

F' is the float, which is a hollow vessel of copper or other thin sheet metal, and *d* is a rod which connects the bottom of the float with the top of the regulating-valve D. A series of holes, *d'*, is provided in the sides of the regulating-valve, which holes register with the annular orifices *e* in the cylinder.

I is a pipe which connects the top of the float-casing with the steam-space of the boiler.

J is a pipe which connects the delivery-pipe B with the water-space of the casing C; and *j*

is a stop-valve which is ordinarily kept closed, so that no water passes through the pipe J into the boiler.

The delivery-pipe B is connected to the junction-piece G above the regulating-valve, and the regulator is placed, with regard to the boiler, so that the float is supported in line with the level of the water in the boiler.

The feed-pump is caused to operate continuously and pumps the water through the pipe A, the annular orifices *e*, the holes *d'*, the junction-piece G, and the pipe B into the boiler. As the level of the water rises in the boiler, it raises the float and with it the valve D. This closes or partially closes the holes *d'*. The pump continues to force more water through the pipe A, and the safety-valve is raised. The water passes out by the overflow-pipe *h*, and is conducted back into the hot well of the pump. When the water in the boiler gets low, the valve D falls and admits more water through it into the pipe B. The stop-valve *j* can be opened, if there should ever be occasion to pump water direct into the boiler, without passing it through the regulating-valve.

What I claim is—

1. In a boiler feed-regulator, the combination of a balanced valve working in a cylinder and provided with holes registering with orifices in the cylinder, a casing for the said valve and its cylinder, an inlet-pipe for the feed-water, a safety-valve connected to the said pipe, a float connected to the regulating-valve, a casing for the float connected to the said valve-casing and in communication with the steam-space of the boiler, and a feed-water delivery-pipe connected to the regulator on the opposite side of the regulating-valve from the inlet-pipe, substantially as and for the purpose set forth.

2. In a boiler feed-regulator, the combination of a balanced valve working in a cylinder provided with annular orifices which register with holes in the said valve, a casing for the said valve and its cylinder, an inlet-pipe for the feed-water connected to the said casing, a safety-valve connected to the feed-pipe, a float connected to the regulating-valve, a casing for the float communicating with the steam-space of the boiler, a junction connecting the float-casing with the regulating-

valve cylinder, and a delivery-pipe connected to the said junction-piece, substantially as and for the purpose set forth.

3. In a boiler feed-regulator, the combination of a balanced valve provided with holes and working in a cylinder having annular orifices registering with said holes, a casing for said valve and its cylinder, an inlet-pipe for the feed-water, a safety-valve connected to said pipe, a float connected to the regulating-valve, a casing for the float communicating with the steam-space of the boiler and connected to the regulating-valve casing, a feed-water delivery-pipe, and a pipe provided with a stop-valve and connecting the inlet water-space with the delivery, so that water may be pumped direct into the boiler if desired, substantially as set forth.

4. In a boiler feed-regulator, the combination of a balanced valve provided with holes,

a valve-cylinder having a flange at one end and orifices registering with said holes, a casing inclosing the valve-cylinder, an inlet-pipe connected to the said casing, a safety-valve connected to the inlet-pipe, a flanged junction-piece bolted to the valve-casing and holding the valve-cylinder centrally therein, a delivery-pipe connected to the junction-piece, a float provided with a rod extending through the junction-piece and connected to the regulating-valve, and a casing for the float connected to the said junction-piece and in communication with the steam-space of the boiler, substantially as described and shown.

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

WINFIELD O. GUNCKEL.

Witnesses:

P. B. O'REILLY,

C. T. NOBLE.