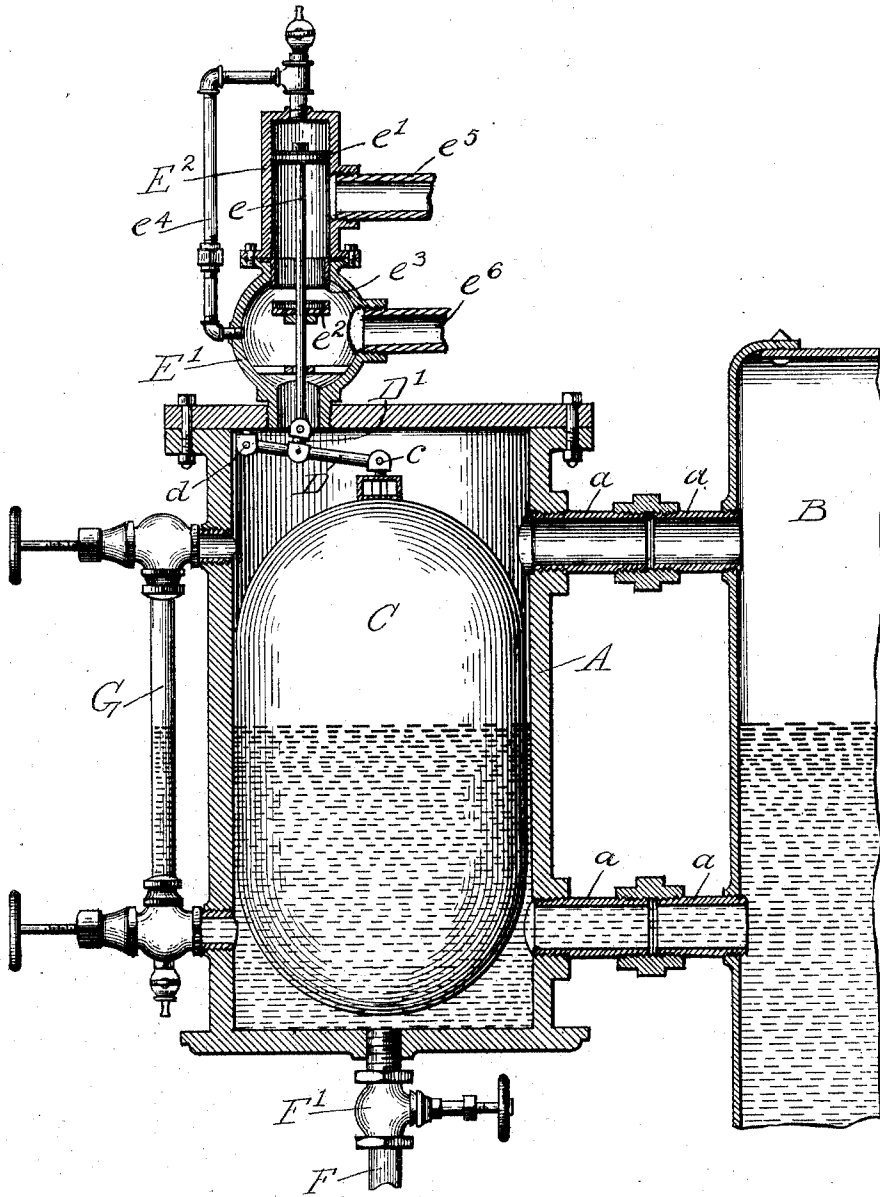


No. 759,131.

PATENTED MAY 3, 1904.

A. W. ROWINSKY.
FEED WATER REGULATOR.
APPLICATION FILED JULY 24, 1903.

NO MODEL.



Witnesses:

J. B. Weir
O. M. Herrick

Inventor:

Alvin H. Rowinsky
by Henry H. Hart
Attorney.

UNITED STATES PATENT OFFICE.

ALVIN W. ROWINSKY, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF
TO JAMES McCREA, OF CHICAGO, ILLINOIS.

FEED-WATER REGULATOR.

SPECIFICATION forming part of Letters Patent No. 759,131, dated May 3, 1904.

Application filed July 24, 1903. Serial No. 166,813. (No model.)

To all whom it may concern:

Be it known that I, ALVIN W. ROWINSKY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Feed - Water Regulators, of which the following is a specification.

This invention has for its object to provide an improved apparatus for automatically controlling the admission of feed-water to steam-boilers and the like in such manner as to preserve a practically constant water-line in the boiler, and this whether the supply of feed-water is had from a boiler feed-pump or from some extraneous source of supply, such as the mains of the city waterworks system.

To this end the invention consists in the matters herein set forth, and particularly pointed out in the appended claims, and will be fully understood from the following description of the construction illustrated in the accompanying drawing, which shows a sectional elevation of a feed-water regulator embodying my improvements and showing the manner in which the same is attached to a boiler.

In said drawing, A designates a close tank or chamber connected to a boiler B by pipes *a*, which open communication between the tank and boiler at points both above and below the normal water-line. Within the tank A is a float C, capable of free vertical movement, but connected at its top *c* with one end of a swinging lever D. The other end of this lever is pivotally attached to the tank A at *d*, while between its ends the lever is connected by a pivotal link D' with the stem *e* of a regulating-valve E. This latter is a balanced valve provided with two valve pistons or plates *e'* and *e''*. One of these pistons, *e''*, moves freely within the globular base portion E' of the valve, but is adapted to rise against the lower edge of the cylindric valve-seat *e''*. The other piston, *e'*, which is herein shown as slightly smaller in area than the plate *e''*, fits closely within the upper end of a cylindric chamber E², which surmounts the globular base E, and a by-pass *e⁴* leads from said globular base to the upper end of the cylinder E²

for the purpose of admitting pressure upon the top of the piston *e'* to balance the action of the valve.

A pipe *e⁵* is connected with the cylindric chamber E² of the valve at a point between the two valve plates or pistons *e'* and *e''*, and a pipe *e⁶* is connected with the globular base portion E' of the valve below the lower valve plate or piston *e''*. Where a steam-pump is employed, one of these pipes, preferably the lower pipe *e⁶*, is connected to the steam space or dome of the boiler, while the other pipe leads to the steam-chest of the boiler feed-pump.

Obviously the steam for operating the pump might be allowed to enter the valve through its connection with the tank instead of through the separate pipe *e⁶*; but I have found that this manner of drawing off the steam causes a fluctuation in pressure in the upper part of the tank which effects the buoyancy of the float C and causes unnecessary and undesirable vibrations in the flow of the feed-water. Then when the valve-stem is pulled down by the float, so as to draw the valve plate or piston *e''* away from its seat *e''*, the steam passes from the pipe *e⁶* through the valve E and pipe *e⁵* to the pump, and the latter is started in operation. When, however, the valve is raised by the float, so as to force the valve or piston *e''* against this seat *e''*, the flow of steam is cut off and the pump stops.

The discharge-pipe from the pump leads into the boiler in the usual manner, (not herein illustrated,) and the operation of the pump consequently tends to raise the water-level and float, so as to close the valve E and stop the pump. On the other hand, the constant drawing off of the steam from the boiler tends to lower the water-level and float, so as to open the valve E and operate the pump, and as a result the pump is kept running just enough to offset the evaporation of the boiler and maintain the water-level at a substantially constant point.

The advantage of introducing the steam to the base of the valve rather than to its upper portion is that in such case the oil, which is usually fed into the valve with the steam,

finds its way through the by-pass e^4 into the top of the valve and lubricates the upper valve-piston more perfectly than where the direction of flow of the steam is reversed and the oil is fed in below the piston e^4 through the upper pipe e^5 . Where, however, the valve is used to control the flow of water alone, as in cases in which the water-supply is derived under pressure from the city mains, the problem of lubricating the valve disappears, as the water itself furnishes a sufficient lubricant, and in such cases the flow of water is preferably into the valve through the upper pipe e^5 and out of the valve into the boiler through the lower pipe e^6 , which latter in this event leads into the boiler below its water-line.

Various changes may obviously be made in the details of the construction shown without departing from the broad spirit of the invention claimed, and it will be understood that the usual accessories, such as a water-glass G and a blow-off pipe F and valve F', will also be provided, these, however, having in themselves no particular bearing on the improvements herein set forth.

I claim as my invention—

1. An automatic feed-regulator for boilers comprising a tank communicating with the boiler, a float within the tank, a valve mounted on the tank, a valve-stem in the valve extending down into the tank and connected with the float, a valve-plate on the stem adapted to be seated against the lower end of a cylinder forming the upper portion of the valve-casing, a piston on the valve-stem fitting within the upper end of said cylinder, a pipe entering the cylinder between the valve-plate and piston and below the lowermost position of the latter, and a by-pass connecting the lower part of the valve-casing below the valve-plate with the upper end of the valve-cylinder above the valve-piston, substantially as described.

2. An automatic feed-regulator for boilers comprising a tank communicating with the

boiler, a float within the tank, a valve mounted on the tank, a valve-stem in the valve extending down into the tank and connected with the float, a valve-plate on the valve-stem adapted to be seated against the lower end of a cylinder forming the upper portion of the valve-casing, a piston on the valve-stem fitting within the upper end of said cylinder, a pipe entering the cylinder between the valve-plate and piston and below the lowermost position of the latter, a pipe entering the lower part of the valve-casing beneath the valve-plate, and a by-pass connecting the lower part of the valve-casing below the valve-plate with the upper end of the valve-cylinder above the valve-piston, substantially as described.

3. An automatic feed-regulator for boilers comprising a tank communicating with the boiler by separate pipes above and below the water-line, a float within the tank, a valve mounted on the exterior of the tank, a valve-stem in the valve extending down into the tank, a lever within the tank connected with the float and valve-stem, a valve-plate on the valve-stem adapted to be seated against the lower end of a cylinder forming the upper portion of a valve-casing, a piston upon the valve-stem fitting within the upper end of said cylinder, a pipe entering the cylinder between the valve-plate and piston and below the lowermost position of the latter, a pipe entering the lower part of the valve-casing below the valve-plate, and a pipe connecting the lower part of the valve-casing below the valve-plate with the upper end of the valve-cylinder above the valve-piston, substantially as described.

In testimony that I claim the foregoing as my invention I affix my signature, in presence of two subscribing witnesses, this 14th day of July, A. D. 1903.

ALVIN W. ROWINSKY.

Witnesses:

HENRY W. CARTER,
K. A. COSTELLO.