No. 737,985. PATENTED SEPT. 1, 1903.

R. H. WHITE.

FEED WATER REGULATOR.

APPLICATION FILED MAY 9, 1903.

NO MODEL.

Fig. 1.

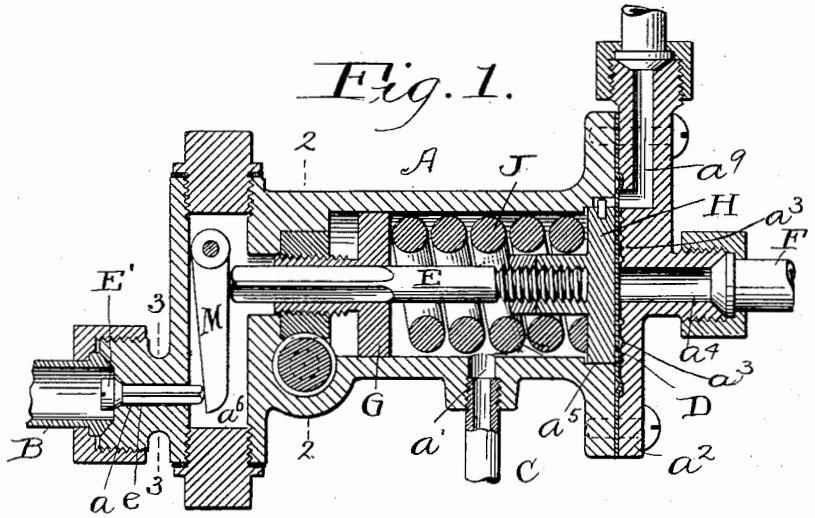


Fig. 2.

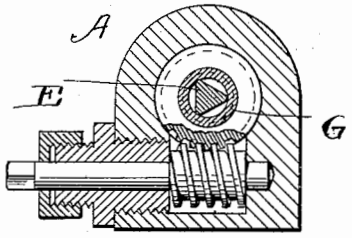
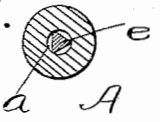


Fig. 3.



Witnesses.
E. B. Filchrist
N. L. Driscoll

Inventor.
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By his Attorneys,
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No. 737,985. Patented September 1, 1903.

UNITED STATES PATENT OFFICE.

ROLLIN H. WHITE, OF CLEVELAND, OHIO, ASSIGNOR TO THE WHITE SEWING MACHINE CO., OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

FEED-WATER REGULATOR.

SPECIFICATION forming part of Letters Patent No. 737,985, dated September 1, 1903.

Application filed May 9, 1903. Serial No. 156,353. (No model.)

To all whom it may concern:

Be it known that I, ROLLIN H. WHITE, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Feed-Water Regulators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention relates to feed-water regulators adapted especially for steam-generators of the flasher type, capable of being operated by the steam-pressure in the generator for the purpose of controlling the quantity of water fed to said generator.

This invention is an improvement upon the regulator device which forms the subject-matter of my application Serial No. 117,080, the object being primarily to provide a device which is more sensitive to the variations in the steam-pressure, and therefore more efficient in its operation, and one which will be more durable and more easily kept in good working condition.

The invention may be here summarized as consisting in the construction and combination of parts hereinafter described, as pointed out definitely in the claims.

In the drawings, Figure 1 is a central longitudinal section of a regulator embodying my invention. Fig. 2 is a transverse sectional view in the plane of line 2 2, and Fig. 3 is a transverse sectional view in the plane of line 3 3.

Referring to the parts by letters, A represents a valve-casing of convenient form, having in one end a valve-controlled inlet a, into which water may be pumped through a branch B of a pipe (not shown) which leads to the generator. The valve-casing has also an outlet a', from which the water which is admitted through the inlet a escapes, and the water so escaping may be conveyed through a suitable pipe, as C, either to the suction side of the pump or to the water-supply tank or anywhere else. The other end of the casing is closed by a cap-plate a^2, which clamps a flexible diaphragm D between itself and the end of the casing. Between the cap-plate and diaphragm is a chamber a^3, which when the device is connected up for use communicates freely with the steam-space of the generator through port a^4 by a pipe F. The other port a^9 is for the purpose of connecting a pressure-gage—a convenience, but not a necessity. A disk H lies in a rabbeted recess a^5 in contact with the diaphragm D, the rabbeted recess being a little wider than the disk is thick to permit the necessary movements. A compression coil-spring J, thrusting at one end against this disk and at the other against an adjustable disk G, opposes the pressure-induced movement of said disk. The construction and arrangement of the disk G and the means for adjusting it to vary the tension of the spring are as shown and described in said prior application referred to, as indeed are all of the parts heretofore explained. A rod E is screwed into disk H and freely passes up through a cylindrical hole in the disk G, the part which passes through said disk being triangular or of some other non-cylindrical shape, so as to permit the passage of the water. In the other end of the casing is a transverse recess a^6, which is closed at both ends by plugs K K. A lever M, pivoted to the casing, lies in this recess in contact with the end of the rod E and with the inner end of the triangular stem e of valve E'. The valve is conical and closes by moving inward against a seat on valve-casing around the hole a, through which the valve-stem passes.

Obviously the movements of rod E, induced by the steam-actuated diaphragm, will be multiplied by this lever, and as a result this valve will be opened wider by a given movement of the diaphragm than the valve shown in said prior application, which is connected directly with the disk H. This is of itself a distinct advantage, because there is less likelihood that any impurities in the water may become jammed between the valve and its seat, and, moreover, the impurities are not so liable to scratch and score the valve or its seat. Then, again, because the valve does open wider it is possible to make the opening a smaller than with the prior construction, and therefore the valve E' may be smaller. If, therefore, this valve or its seat become scored and scratched, permitting leakage, whereby it becomes necessary to grind them

from time to time, the smaller valve and seat may be the more easily ground, other things being equal. The smaller valve and seat will also be less expensive and may at slight initial expense be made of nickel-steel, which is preferred, which will most effectively resist the scratching action of the impurities in the water, and, finally, since the valve E′ is not connected with the lever M it may turn and does turn in use, thereby not only preventing wear in one place, but by turning upon its seat tending to grind out the scratches from both valve and seat.

Having described my invention, I claim—

1. In a water-regulator, the combination of a valve-casing having a water-inlet and a water-outlet, a longitudinally-movable rod, and means whereby the rod may be moved lengthwise by steam-pressure, with a valve for the water-inlet which moves inward to its seat and has a stem projecting into the casing, and a lever pivoted within the casing and engaging both with the valve-stem and with said rod, substantially as described.

2. In a water-regulator, the combination of a valve-casing having a water-inlet a water-outlet, and a steam-inlet, a flexible diaphragm between the steam-inlet and water-outlet, a valve for the water-inlet, a lever for operating said valve, and mechanism intermediate of said lever and diaphragm, substantially as described.

3. The combination of a casing having a water-inlet, a water-outlet, and a steam-inlet, with a flexible diaphragm secured across the casing between the steam-inlet and water-outlet, a longitudinally-movable rod adapted to be moved by said diaphragm, a valve for the water-inlet, and a lever transmitting motion from said rod to the stem of said valve.

4. In a water-regulator, the combination of a casing having a water-inlet, a water-outlet, and a transverse recess open at its end, plugs closing said ends, a lever in said recess pivoted to the casing, a valve for closing said water-inlet and having an inwardly-extended stem engaging with said lever, and means whereby steam-pressure may operate said lever, substantially as described.

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

ROLLIN H. WHITE.

Witnesses:
E. B. GILCHRIST,
E. L. THURSTON.