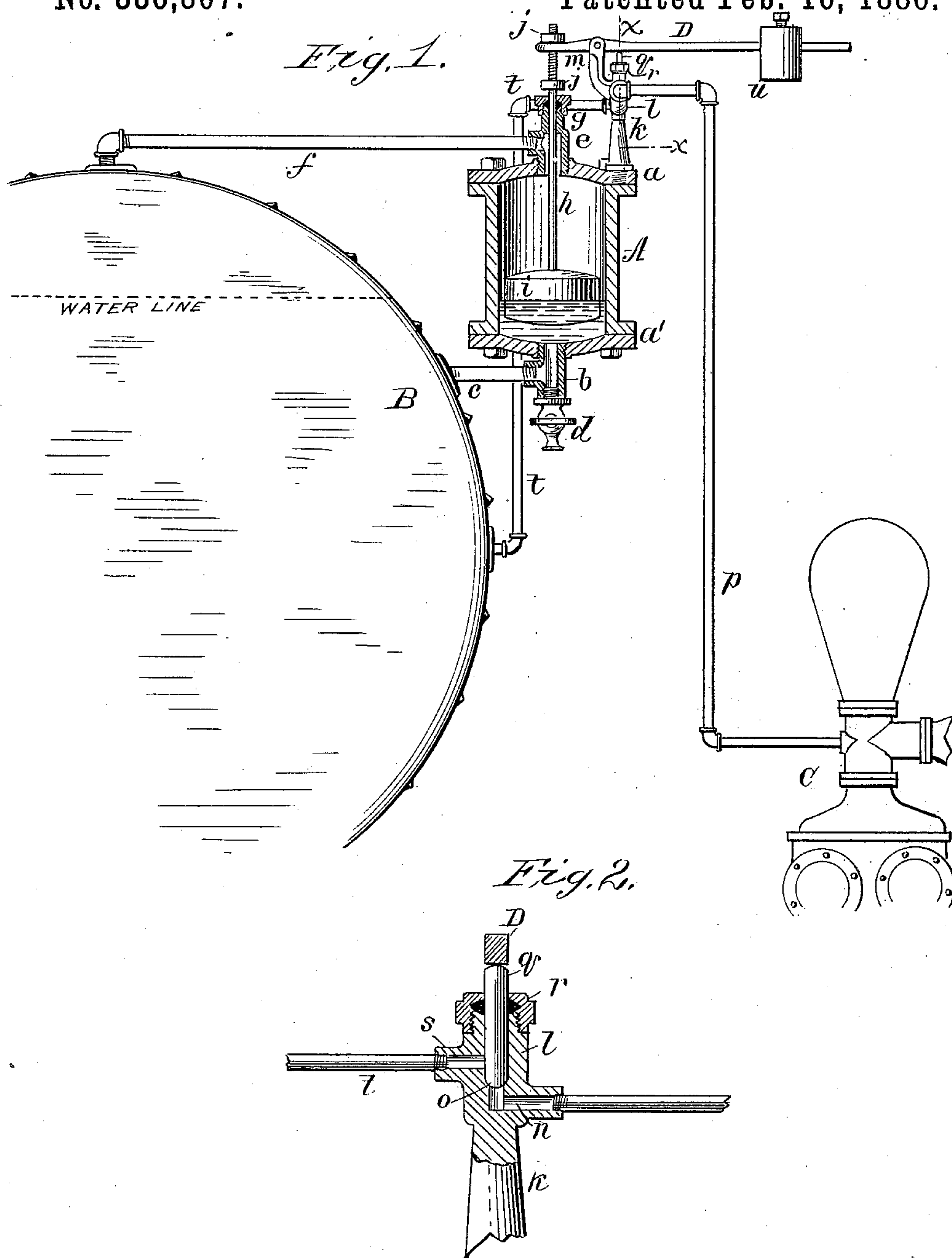


(No Model.)

L. P. FOSS.
FEED WATER REGULATOR.

No. 336,307.

Patented Feb. 16, 1886.



WITNESSES:

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LEONARD PETER FOSS, OF KALAMAZOO, MICHIGAN.

FEED-WATER REGULATOR.

SPECIFICATION forming part of Letters Patent No. 336,307, dated February 16, 1886.

Application filed December 2, 1885. Serial No. 184,467. (No model.)

To all whom it may concern:

Be it known that I, LEONARD PETER FOSS, of Kalamazoo, in the county of Kalamazoo and State of Michigan, have invented a new and useful Improvement in Feed-Water Regulators for Steam-Boilers, of which the following is a specification, reference being had to the annexed drawings, forming a part thereof, in which—

10 Figure 1 is a side elevation, partly in section, of my improved feed-water regulator. Fig. 2 is a vertical section of the regulating-valve, taken on line *x x* in Fig. 1.

15 Similar letters of reference indicate corresponding parts in the different figures of the drawings.

20 The object of my invention is to provide for steam-boilers a feed-water regulator which shall always maintain a uniform water-level in the boiler.

My invention consists in a valve inserted in the boiler-feed pipe and operated by a float working in a chamber connected with the boiler above and below the water-line. The 25 float-chamber A, which is of sufficient strength to withstand the boiler-pressure, is provided with heads *a a'*, the lower head, *a'*, being furnished with a T, *b*, which is connected with the boiler B below the water-line by a pipe, 30 *c*. The valve *d* is inserted in the T *b* for removing the water from the float-chamber when desirable. In the upper head, *a*, of the float-chamber A is inserted a T, *e*, which communicates with the steam-room of the 35 boiler through the pipe *f*, and the upper end of the T *e* is provided with a stuffing-box, *g*, through which passes a rod, *h*, carrying on its lower end a float, *i*, and having on its upper end adjustable nuts *j*. To the upper head, *a*, 40 is secured a pillar, *k*, supporting a valve-casing, *l*, and an arm, *m*. The valve-casing *l* has a passage, *n*, which terminates at the valve-seat *o*, and which communicates with the discharge of the boiler-feed pump C through the pipe *p*. 45 A valve, *q*, passes through a stuffing-box, *r*, in the top of the casing *l*, and is seated upon the seat *o*. Above the seat *o* there is a passage, *s*, which communicates by the pipe *t* with the water-space of the boiler. In the arm *m* is 50 pivoted a lever, D, carrying on its longer arm

a weight, *u*, and receiving in a slot formed in the shorter arm that portion of the rod *h* which is between the nuts *j*. The pump C works continuously and discharges under a pressure greater than the pressure of the 55 boiler, and the weight *u* is adjusted to counterbalance the float *i*. The water-level in the float-chamber A is always the same as that in the boiler B, so that the movement of the float *i* up and down will always correspond 60 with the rise and fall of the water in the boiler. When the water-level is high, the upper nut *j* leaves the shorter end of the lever D and permits the weight *u* to hold the valve *q* to its seat, thus preventing the en- 65 trance of water through the valve to the boiler; but when the water-level falls in the boiler it also falls in the float-chamber A, and the float *i* follows it, and when the upper nut *j* bears upon the shorter arm of the lever D 70 the weight *u* is counterbalanced, when the water under pressure from the pump C, passing through the pipe *p*, raises the valve *q*, and passes through the valve-casing and through the pipe *t* into the boiler until the float *i* is 75 again raised, so as to relieve the shorter arm of the lever D from the weight of the float. Should the water from any cause continue to rise in the boiler, a continued upward movement of the rod *h* will bring the lower nut *j* 80 into contact with the under surface of the shorter arm of the lever D, and by pressing the arm upward assist the weight *u* in holding the valve *q* to its seat.

By means of my improved regulator the 85 level of the water in the boiler will be constantly maintained at a uniform height, so that priming and the danger of low water will be avoided.

Having thus described my invention, what 90 I claim as new, and desire to secure by Letters Patent, is—

1. In a water-regulator for boilers, the combination of the float-chamber A, connected with the steam and water spaces of the boiler, 95 the float *i*, rod *h*, provided with nuts *j*, weighted lever *d*, valve *q*, valve-casing *l*, pipes *p* and *t*, and means for supplying water under pressure to the regulating-valve, as herein specified.

2. The combination, in a water-feed regula- 100

tor for boilers, of the float-chamber A, having the heads *a* and *a'*, T's *e* *b*, pipes *f* *c*, the float *i*, rod *h*, provided with nuts *j*, the valve-casing *l*, lever D, provided with the adjustable weight *u*, the valve *q*, pipe *t*, communicating between the valve-casing and the water-space of the boiler, and means for supplying water under pressure to the valve, substantially as herein specified.

LEONARD PETER FOSS.

Witnesses:

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