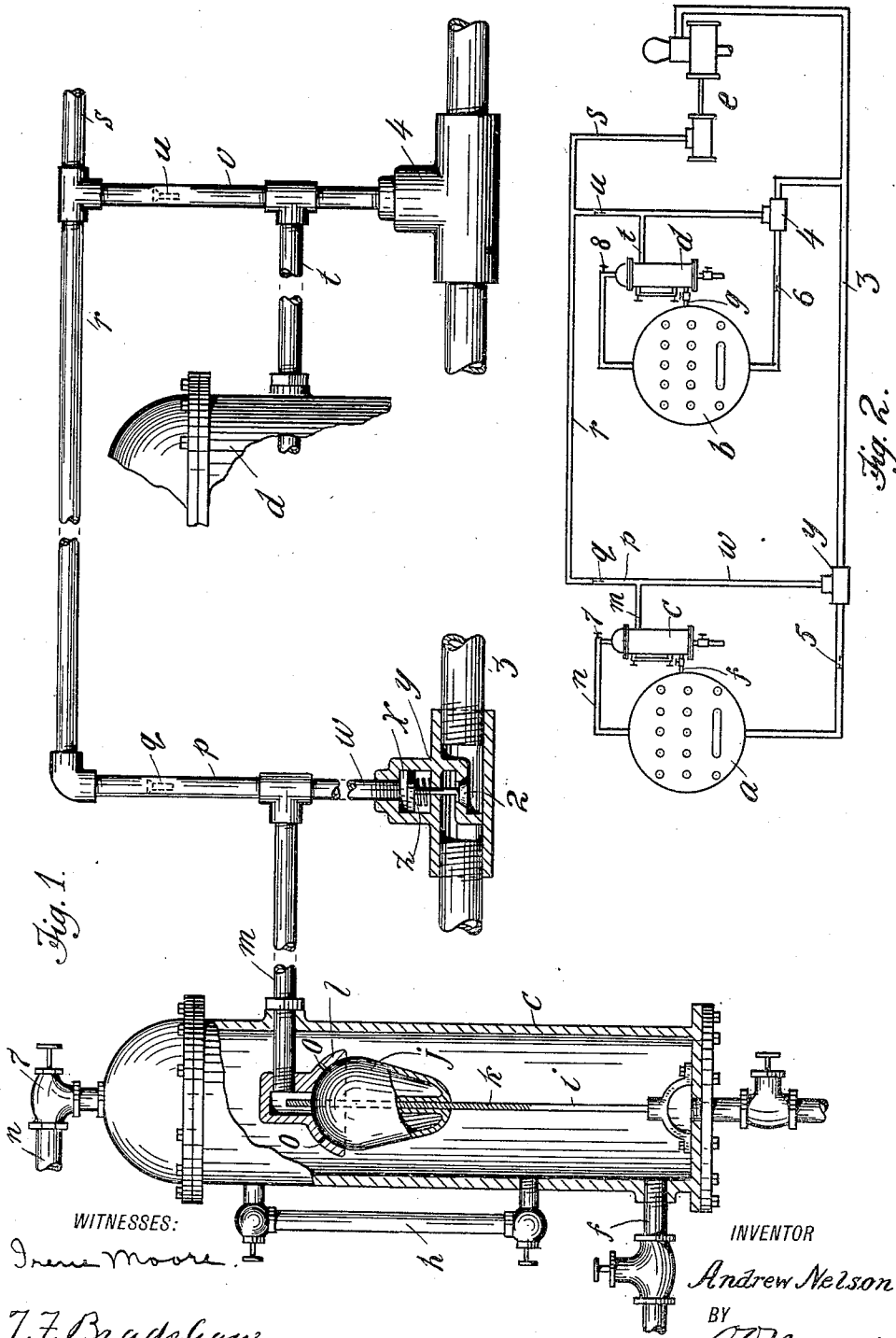


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 STEAM BOILER FEEDING DEVICE.
 APPLICATION FILED SEPT. 26, 1911.

1,055,485.

Patented Mar. 11, 1913.



WITNESSES:
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ANDREW NELSON, OF PORTLAND, OREGON.

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1,055,485.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ANDREW NELSON, a citizen of the United States, residing at Portland, in the county of Multnomah and State of Oregon, have invented certain new and useful Improvements in Steam-Boiler-Feeding Devices, of which the following is a specification.

My invention relates to means for governing the feeding of water to the boiler units of a steam plant, and the object of my invention in the first instance is to provide means for connecting a plurality of boiler units with a single injector or pump.

My second object is to automatically govern the flow of water from said pump to each boiler unit.

A further object is to provide means for utilizing steam from each boiler for operating said pump and for actuating said governing means.

These objects and the further advantages of my invention are clearly set forth in the following description and illustrated in the appended drawing, of which:

Figure 1 illustrates, partly in section, the construction of the principal parts of my device, and Fig. 2 is a diagrammatic view of a water feed system embodying my invention.

In the drawing *a, b* represent the boilers, *c, d* the water columns, and *e* the pump. The boilers are by pipes *f, g* connected with the water columns, and the water level is registered in the water gage *h* in the usual manner. Centrally mounted in each water column is a perpendicular rod *i* on which a float *j* is free to slide. Rod *i* snugly fits the central perforation of float *j*, and is preferably provided with screwthreads *k*, adapted to prevent the mineral sediments of the water from forming a scale on the rod, and thereby to interfere with the free action of the float. The upper surface of the float is by the pressure of the water caused to seat in the flaring mouth *l* of a pipe *m* which extends through the wall of the water column. From the top of the water column leads a pipe *n* to the steam chamber of the boiler.

As the water level in the boiler and column sinks, float *j* is also caused to sink, permitting the steam entering the column through pipe *n* to escape into pipe *m*. Mouth *l* of pipe *m* is provided with a plurality of very fine apertures *o*, which per-

mit the steam to exert a light pressure on the top of the float, thereby insuring the instantaneous unseating of the float, when the water level drops.

The steam passes from pipe *m* through pipe *p*, past check valve *q*, and through pipes *s, t* to the pump. Or from the second column *d* through pipes *t* and *v*, past check valve *u*, and by pipe *s* to the pump. From column *c* and pipe *m* the steam is also free to pass into chamber *x* of valve mechanism *y*, thus creating a pressure on the spring-held stem-head *z* of valve 2 sufficient to unseat said valve, whereby water from the pump, flowing through pipe 3, is free to pass said valve and to enter boiler *a*. In the same manner the water from the pump is caused to pass valve 4 and to enter boiler *b*. Check valves 5, 6, interposed between the boilers and the valves *y, 4*, prevent back-pressure from the boilers.

From the foregoing description it is seen, that the two boiler units are supplied from a single pump, and it is obvious that I can add as many boiler units as conditions require. The system of check valves shown prevent any disarrangement of the steam or water circulation, and it is readily seen, that the pump is supplied with steam power at the rate such power is required, each boiler delivering its own quota of steam.

The construction thus described is very substantial and precludes any damage to the steam plant, inasmuch as any disarrangement of the working parts results in the continuous flow of steam and water, which will be indicated by the rise of water in gage *h*, and which can be checked by closing one of the valves 7, 8. Failure to close said valves in time only results in the flooding of a boiler.

I claim:

1. In a feed regulator system, the combination of a plurality of boilers adapted for different degrees of steam pressure, a single pump common to all of said boilers, automatic mechanism connected with said pump and said boilers for the purpose of actuating said pump by steam from either boiler, and means connected with said pump for selectively directing the flow of water from said pump into the boilers including an automatic valve having connection with the steam space of the boiler of lowest pressure.
2. A feed regulator system comprising a plurality of boilers, a steam controlled hy-

draulic pump common to all of said boilers, means controllable by the water levels of the respective boilers for throwing said pump into action, and mechanism for selectively directing the flow of water from said pump into one of said boilers to the exclusion of the other, said mechanism comprising branches leading to the boilers and of which one branch is provided with a check valve and the other branch is provided with an automatic valve having connections whereby it may be operated by steam from its respective boiler.

3. A feed regulator system comprising a plurality of boilers adapted for different degrees of steam pressure, a steam controlled pump common to all of said boilers, means controllable by the respective levels of water in the different boilers for supplying steam from said boilers to said pump for the purpose of actuating the latter, and mechanism for selectively directing water from said pump into the boilers, including connections to the boilers from the pump, and a steam

controlled valve in the said connections which lead to the boiler of lowest pressure.

4. In a feed regulator system, the combination of high and low pressure boilers, a single pump common to the boilers, valved connections between the steam spaces of the boilers and said pump and including an automatic mechanism at each boiler controlled by the level of the water therein, and a water connection leading from the pump and having branches extending into the boilers, said branches of the low pressure boiler including an automatic valve actuated by the steam from said boiler, and said branch of the high pressure boiler including a check valve adapted to be held closed by the pressure of the boiler when the said steam actuated valve is open.

In testimony whereof I have hereunto set my hand.

ANDREW NELSON.

Witnesses:

T. F. BRADSHAW,
IRENE MOORE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."