





# UNITED STATES PATENT OFFICE.

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## WATER-FEED FOR BOILERS.

SPECIFICATION forming part of Letters Patent No. 782,752, dated February 14, 1905.

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*To all whom it may concern:*

Be it known that I, WALTER M. LANE, Sr., a citizen of the United States, residing at Easton, in the county of Talbot and State of Maryland, have invented new and useful Improvements in Water-Feeds for Boilers, of which the following is a specification.

My invention relates to new and useful improvements in water-feeds for boilers; and its object is to provide a simple and inexpensive device of this character which is adapted to automatically supply water to a boiler, the power utilized for forcing the water being steam generated therein.

A further object is to so construct the feed that the steam subsequent to its use for forcing the water into the boiler is discharged into the water-tank, so as to heat it before it is discharged into the feeder.

With the above and other objects in view the invention consists in providing a water-tank in which is located a casing containing a float. This casing has an inlet-opening from the tank and has an outlet communicating with the boiler of the engine to which the feeder is connected. A steam-pipe extends from the dome of the boiler to the casing and has a cut-off valve therein, which is adapted to be automatically open when the float rises within the casing, but which is automatically closed when the float drops to a predetermined level. An exhaust-pipe extends from the casing to the tank inclosing the same, and this exhaust-pipe is also provided with a cut-off valve which is adapted to be automatically opened by the float when the same drops to a predetermined level and is automatically closed when the float moves upward within the casing. The exhausted steam is directed into the tank and serves to heat the contents thereof prior to their discharge into the casing.

The invention also consists in the novel construction and combination of parts, which will be more fully hereinafter described and claimed, and illustrated in the accompanying drawings, in which—

Figure 1 is a section through my improved water-feeder, the same being shown connected to a traction-engine, which is illustrated by

dotted lines; and Fig. 2 is an enlarged section through the upper valves and their casings.

Referring to the drawings by numerals of reference, 1 is a water-tank of any suitable form and size and having an inlet 2, which is normally open. Arranged within this tank is a casing 3, having an outlet-pipe 4 extending from the bottom thereof to a boiler, and this pipe is preferably provided with a check-valve 5, whereby communication between the casing and the boiler may be cut off, if desired. A steam-pipe 6 extends from the dome of the boiler to the top of the casing 3, and arranged within this pipe at a point removed from the casing is a cut-off valve 7, having a stem 8, which is at all times within the path of a tripping-arm 9, adjustably secured upon a rod 10. This rod is slidably mounted within the top of the casing 3 and extends upward from a float 11, which is arranged within said casing. Located adjacent the casing 3 and within the pipe 6 is a valve 12, having a spring-pressed stem 13, which is normally in the path of a trip-arm 14, adjustably mounted on the rod 10, and extending from this valve 12 is an exhaust-pipe 13<sup>a</sup>, which preferably opens into the lower end of the tank 1.

The tank 1 is adapted to be filled with water, and this water is supplied to the casing 3 through the valved inlet 15, and as casing 3 is connected by pipes 4 and 6 with the interior of the boiler it will be understood that the water within the casing 3 will be on the same level with the water in the boiler at all times. As the water within the boiler falls to a predetermined level the float 11 moves downward therewith and brings the arm 9 in contact with stem 8 and causes said stem to rotate and close the valve 7. Steam is thus prevented from passing into the casing 3 from the dome of the boiler, and as the valve 12 is simultaneously opened by means of the arm 14 water will flow by gravity from the tank 1 into the casing 3, through the valved inlet 15. The float 11 will thus be carried upward within the casing 3, and steam within said casing is forced outward through the pipe 13<sup>a</sup> and into the tank, where it is used to heat the water contained therein. When the float reaches a predetermined level,



the arm 14 will contact with the stem 8 and force it upward, thereby opening valve 7 and permitting steam to enter the casing 3 through pipe 6. This steam will press downward upon the water and force it outward through the pipe 4 and into the boiler. This operation of the feeding apparatus is repeated, and it will be seen that the boiler can be continuously provided with a desired quantity of water without the necessity of employing a pump or other similar mechanism for forcing the water into the boiler.

The casing 3 forms a reservoir for the feeder, and the steam admitted thereto serves to heat the water prior to its discharge into the boiler. It will thus be seen that all the steam is utilized. Hot water cannot be used with injectors and is forced with difficulty by pumps. The apparatus herein shown and described, however, will supply water of any temperature to the boiler.

The apparatus is very simple and inexpensive and can be readily attached to a boiler of any kind.

In the foregoing description I have shown

the preferred form of my invention; but I do not limit myself thereto, and I am aware that modifications may be made therein without departing from the spirit or sacrificing any of the advantages thereof, and I therefore reserve the right to make such changes as fairly fall within the scope of my invention.

Having thus fully described the invention, what is claimed as new is—

A feed for boilers, comprising a tank, a casing therein communicating with the tank, an outlet from the casing adapted to be connected to a boiler, a steam-inlet pipe opening into the casing, a valve therein, an exhaust-pipe extending from the casing and opening into the tank, a valve therein, a float within the casing, and means operated by the float for alternately opening and closing the valves.

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

WALTER M. LANE, SR.

Witnesses:

CHAS. G. PEARCE,

W. S. WILSON.