

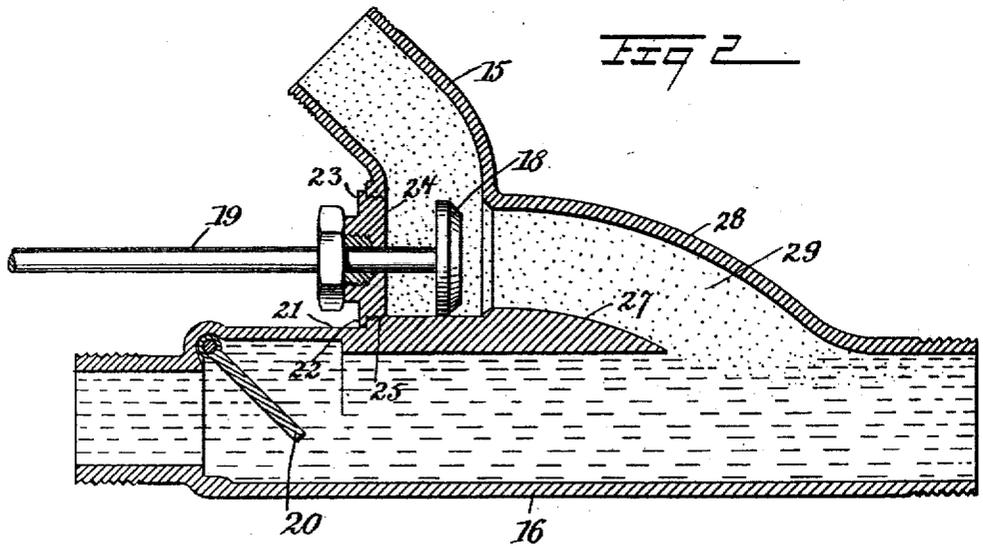
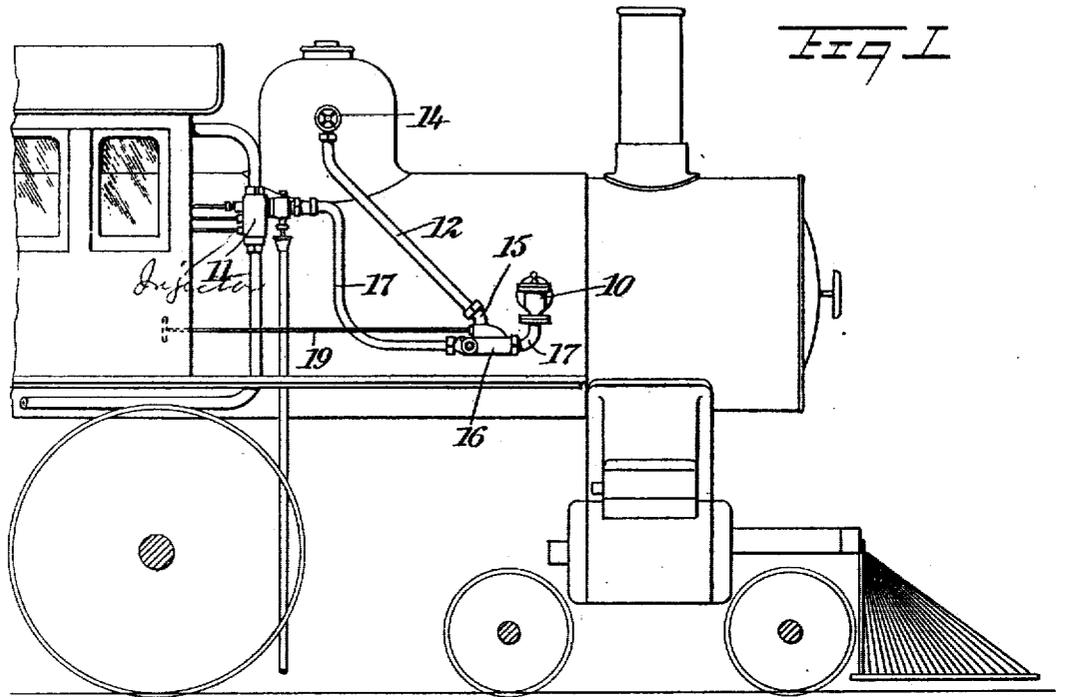
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PATENTED JULY 25, 1905.

B. E. EASTBURN & F. L. TAPIA.

FEED WATER HEATER.

APPLICATION FILED SEPT. 19, 1904.



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UNITED STATES PATENT OFFICE.

BENJAMIN E. EASTBURN AND FRANK L. TAPIA, OF MONTGOMERY,
ALABAMA.

FEED-WATER HEATER.

No. 795,591.

Specification of Letters Patent.

Patented July 25, 1905.

Application filed September 19, 1904. Serial No. 225,036.

To all whom it may concern:

Be it known that we, BENJAMIN E. EASTBURN and FRANK L. TAPIA, citizens of the United States, and residents of Montgomery, in the county of Montgomery and State of Alabama, have invented a new and Improved Feed-Water Heater, of which the following is a full, clear, and exact description.

This invention relates to a feed-water heater designed particularly for use with locomotives, but capable for use in other connections, as will be understood.

Briefly stated, the invention consists in a means for introducing boiler-steam into the feed-water between the injector or other means for forcing the feed-water and the point of entry of the feed-water into the boiler. In the specific example of the invention here given this means consists of a pipe leading from the steam-dome to a fitting interposed in the feed-water pipe and having a valve-controlled connection for the said pipe from the steam-dome, so that upon opening the valve of said connection steam is admitted from the dome into the feed-water, serving not only to raise the temperature thereof, but to accelerate its movement into the boiler.

Reference is to be had to the accompanying drawings, showing the preferred embodiment of our invention, in which drawings like characters of reference indicate like parts in both views, and in which—

Figure 1 is an elevation of a locomotive-boiler, showing our invention applied; and Fig. 2 is an enlarged section of the fitting for introducing the steam.

In Fig. 1, 10 may be taken to illustrate the check-valve through which the feed-water is introduced into the boiler, and 11 the injector.

12 indicates a pipe passing from the steam-dome and controlled by a globe or other form of a manually-operated valve 14. Said pipe 12 leads to a nipple 15, passing into a fitting or connection 16, which is interposed between the sections 17 of the feed-water pipe directly adjacent to the place of entry of the feed-water to the boiler. Said nipple 15 is commanded by a valve 18, the stem 19 whereof is preferably passed rearward into the cab, so that it may be conveniently reached by the

engine-driver. The fitting or connection 16 is fitted with a clack-valve 20, which seats against the return movement of the feed-water, said valve being pivoted at the rearward end of the member 21 of said fitting, which extends forwardly and is flanged at 22 to form a seat for the flange 23 of the bearing 24 for the stem of the valve 18, said bearing being threaded at 25 to screw into a threaded opening therefor in the fitting. That portion of the member 21 extending beyond the forward seat for the valve 18 is curved on its upper surface at 27 in correspondence with the upper curved portion 28 of the fitting, thus assisting in the provision of a free channel 29 for the passage of steam to the feed-water to be heated.

In the operation of the device the injector is started and feed-water is forced through the pipe and into the boiler in the usual manner. If it is desired to raise the temperature of the feed-water, the valves 14 and 18 should be opened and steam permitted to flow through the pipe 12 into the nipple 15 and fitting or connection 16, there mingling with the feed-water to raise the temperature of the same. It will therefore be observed that owing to the inclined disposition of the nipple 15 with respect to the fitting or connection 16, the inclination being toward the boiler-entrance 10, the steam passing through said nipple will accelerate the water movement and assist in forcing it into the boiler.

Various changes in the form, proportions, and minor details of our invention may be resorted to at will without departing from the spirit and scope thereof. Hence we consider ourselves entitled to all such variations as may lie within the terms of our claims.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. In a feed-water heater for locomotive-boilers, the combination with a feed-water pipe, and means for forcing the feed-water therethrough, of a fitting in communication with the boiler and said pipe, having there a valve preventing return of the feed-water and provided with a steam-controlling valve.
2. In a feed-water heater for locomotive-boilers, the combination with a feed-water

pipe, and means for forcing the feed-water therethrough, of a fitting in communication with the boiler and said pipe, having therein a valve preventing return of the feed-water, and provided with a steam-controlling valve, said fitting being also provided with a removable bearing for the stem of said last-named valve.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

BENJAMIN E. EASTBURN.
FRANK L. TAPIA.

Witnesses:

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