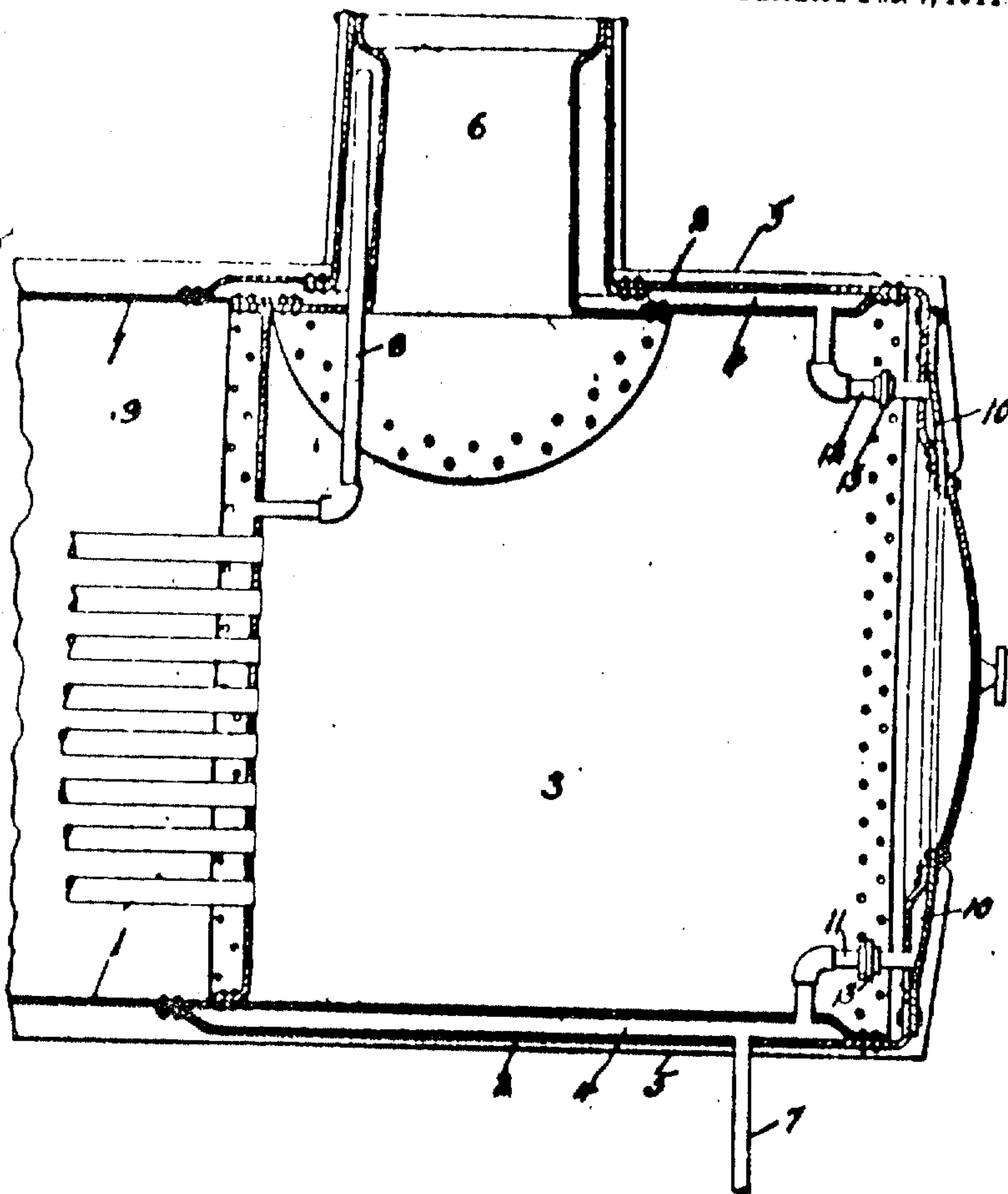


B. C. MONROE.
FEED WATER HEATER FOR LOCOMOTIVES.
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888,747.

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Witnesses:

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FILED
PUBLIC

983,747. FEED-WATER HEATER FOR LOCOMOTIVES. BENJAMIN C. MONROE, Tuscola, Ill. Filed Feb. 23, 1910. Serial No. 545,310.

To all whom it may concern:

Be it known that I, BENJAMIN C. MONROE, a citizen of the United States, residing at Tuscola, county of Douglas, and State of Illinois, have invented certain new and useful Improvements in Feed-Water Heaters for Locomotives, of which the following is a specification.

This invention relates to feed water heaters for use more particularly upon locomotives and engines, and positioned usually as shown adjacent the locomotive smoke box for utilizing the heat traveling therethrough.

The essential object is to provide a device which will receive the cold water and heat the same preparatory to depositing it within a boiler; the same being accomplished by means of a supplemental water chamber or receptacle constructed as hereinafter set forth.

The invention consists in the features of construction and combination of parts hereinafter described and claimed.

In the drawing is disclosed in longitudinal sectional elevation the front end of a locomotive, showing particularly the improved feed water heater attachment applied thereto.

Attached to the front end of the locomotive boiler shell or casing 1 is an outer auxiliary feed water heater or chamber 2, which, as indicated, is adjacent to, and surrounds the locomotive smoke box 3 and front end of the boiler. The water space 4 is thus formed thereabout adjacent the engine body and an asbestos filling 5 is usually secured about the water heating device, so as to protect the same.

As shown, the water space 4 not only partially or entirely surrounds the smoke box but in addition extends up within the locomotive smoke stack 6 through which the heated smoke and gases travel.

An inlet pipe 7 from an injector serves to keep the water space of the heater suitably filled, and an escapement or overflow pipe 8 carries away the heated water into the locomotive boiler 9, preferably at a point below the normal water level therein. If desired, the water space may be made to also include the intermediate space at the front end of the smoke box as indicated at 10, the water

being supplied thereto and circulating therein by means of upper and lower water pipes 11 and 12, which may be formed in two sections united together by suitable connections 13, so as to permit the parts to be disconnected when necessary.

In use and operation the water is fed into the heating chamber 2 through the injector inlet pipe 7, and after the water therein is heated by reason of the hot gases and smoke passing through the adjacent smoke box and out through the smoke stack, the heated water is carried through the overflow pipe 8, down to the locomotive boiler 9, thus facilitating in the generation of steam as a motive power.

Obviously this improved feed water heater can be applied to locomotives or other engines, providing the same is constructed in such a way as to utilize the heat contained in the gases and smoke for heating the water therein.

Without specifically limiting myself to the aforesaid construction, I claim:

In a feed water heater for locomotives, in combination with a boiler, smoke chamber, and a smoke stack, a concentric shell surrounding the forward end of the boiler shell and of a diameter larger than the diameter of the boiler shell whereby a space is provided between the outer shell and boiler shell forming a water chamber, the outer end of the boiler shell being provided with an outwardly extending flange engaging the outer shell, the outer shell being provided with an inwardly extending flange engaging the boiler shell, fastening means located at the engaging points, a cylindrical shell surrounding the shell of the smoke stack, the upper end of the smoke stack shell being provided with an outwardly extending flange adapted to engage the walls of the outer shell, the lower end of the outer shell being provided with an outwardly extending flange engaging the walls of the shell surrounding the boiler, fastening means located at the engaging points, a circular water chamber located in front of the smoke chamber and extending to a point adjacent the upper and lower edges of the smoke chamber, a connection between the upper and lower portions of the concentric water chamber and the chamber in front of the smoke chamber, a connection between the chamber surrounding the forward end of the boiler and the chamber surrounding the stack, a water inlet pipe entering the lower portion of the chamber between the outer shell and boiler and a pipe extending from the interior of the boiler to a point adjacent the upper terminus of the chamber surrounding the smoke stack whereby the water is forced entirely around the sides and front of the smoke chamber and up to a point

practically to the top of the smoke stack before it is discharged into the boiler whereby the water is subjected to a substantially long period of heating before entering the boiler, substantially as described.

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Witnesses:

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