(No Model.)

J. W. PEARCE.

FEED WATER HEATER.

No. 323,957. Patented Aug. 11, 1885.

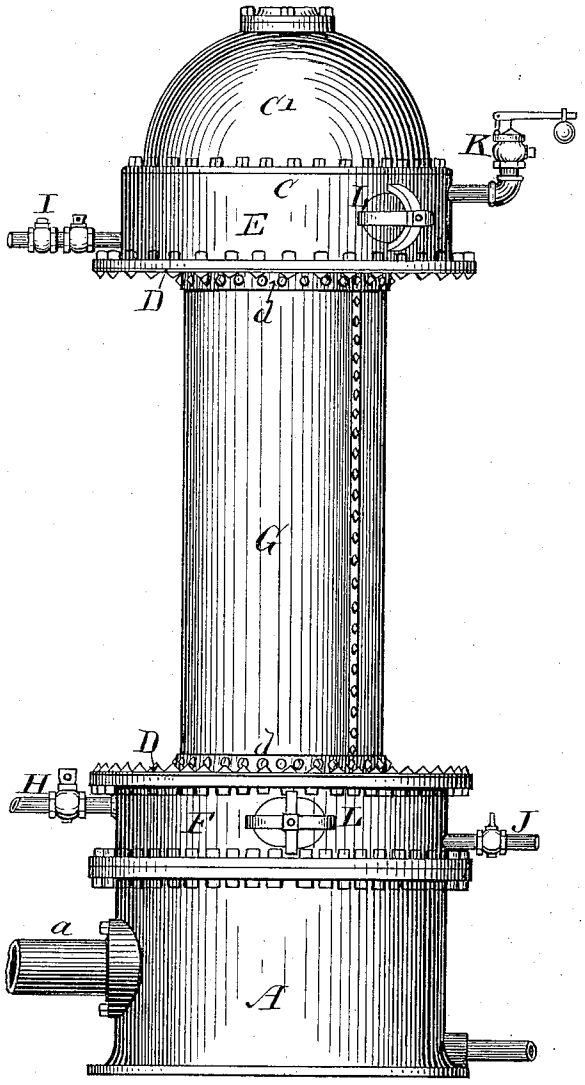


Fig 1.

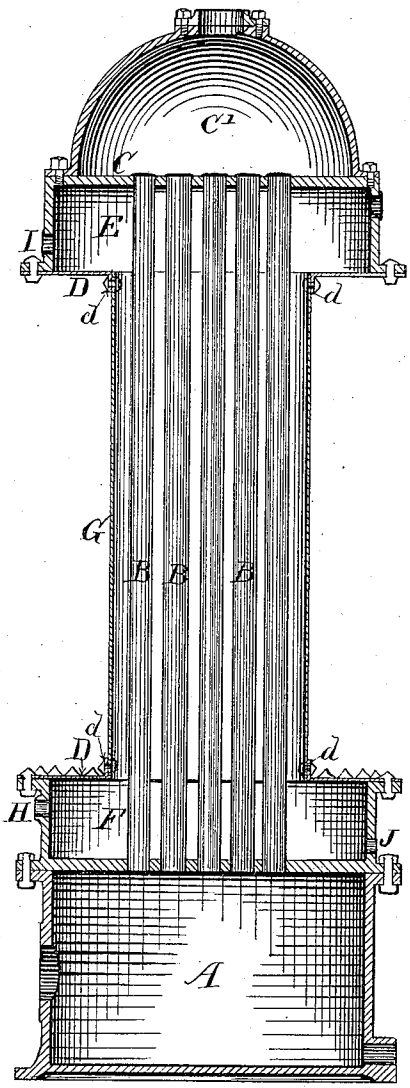


Fig 2.

Witness,

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James W. Pearce,

per Geo. W. Tibbits Atty.

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UNITED STATES PATENT OFFICE.

JAMES W. PEARCE, OF CLEVELAND, OHIO.

FEED-WATER HEATER.

SPECIFICATION forming part of Letters Patent No. 323,957, dated August 11, 1885.

Application filed February 9, 1885. (No Model.)

To all whom it may concern:

Be it known that I, JAMES W. PEARCE, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Boiler Feed-Water Heaters, of which the following is a specification.

This invention relates to feed-water heaters for steam-boilers, and has for its object to provide for the expansion and contraction of the metal by constructing the end plates of the outer casing of thin boiler-iron, and so arranged, in combination with the flues and the heads of the cylinder to which said flues are attached, that said end plates will spring, and thus yield to the lengthening or shortening of the flues.

The special advantage of this construction is that as the flues, being inclosed within the cylinder, and being made of copper, are subjected to a much higher degree of temperature than the outer casing, which is exposed to the outer atmosphere, said flues are therefore liable to expand or stretch to a much greater length than the outer casing, thus subjecting said casing to great strain, with a tendency to breaking joints or fracturing the metal. This danger and the liability thereto are entirely overcome by my invention, and the device is made perfectly safe, as will be seen by the subjoined description.

Referring to the accompanying drawings, Figure 1 is a side elevation, and Fig. 2 is a vertical section, of my improved feed-water heater.

A is a base upon which the heater stands, and comprises the exhaust-steam-receiving chamber, being connected by pipe *a* to the exhaust of a steam-engine. To the top plate of said chamber are attached vertical flues B, whose upper ends are secured to and support a plate, C, surmounted by a dome, C′, having an outlet at the top. The top plate of the aforesaid chamber A and the plate C are each provided with deep flanges or rims E F, to which are secured ring-plates D D, having annular flanges *d d*.

G is a cylinder of smaller diameter than the rims E F, and is secured to said flanges *d d*, forming the aforesaid outer casing and surrounding the flues. The chamber A, the plates C, the rims E F, and the dome C′ are of cast-iron, while the ring-plates D and casing or cylinder G are of boiler-iron.

H is the inlet for the cold water, and I is the outlet for the hot water and the connection with the boiler. J is an outlet for the discharge of the sediment. K is a safety-valve, and L L are hand-holes. The space in the cylinder G surrounding the flues is the space for heating the feed-water in its passage through the heater.

From the foregoing it will be seen that as the flues become heated and expansion or lengthening takes place, the ring-plates D D, being of boiler-iron, will spring to yield to the strain, and will thus readily adapt themselves to the stretching of the said flues.

Having described my invention, I claim—

In a boiler-feed heater, the combination, with the chamber A, flues B B, and chambers E F, and dome C′, of the ring-plates D D and reduced cylinder G, whereby the expansion or stretching of the flues operates upon the said ring-plates, substantially as and for the purpose specified.

JAMES W. PEARCE.

Witnesses:
E. W. LAIRD,
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