A. W. FREDRICKSON.

WATER HEATER AND PURIFIER.

APPLICATION FILED OCT. 18, 1907.

929,574. Patented July 27, 1909.

Fig. 1.

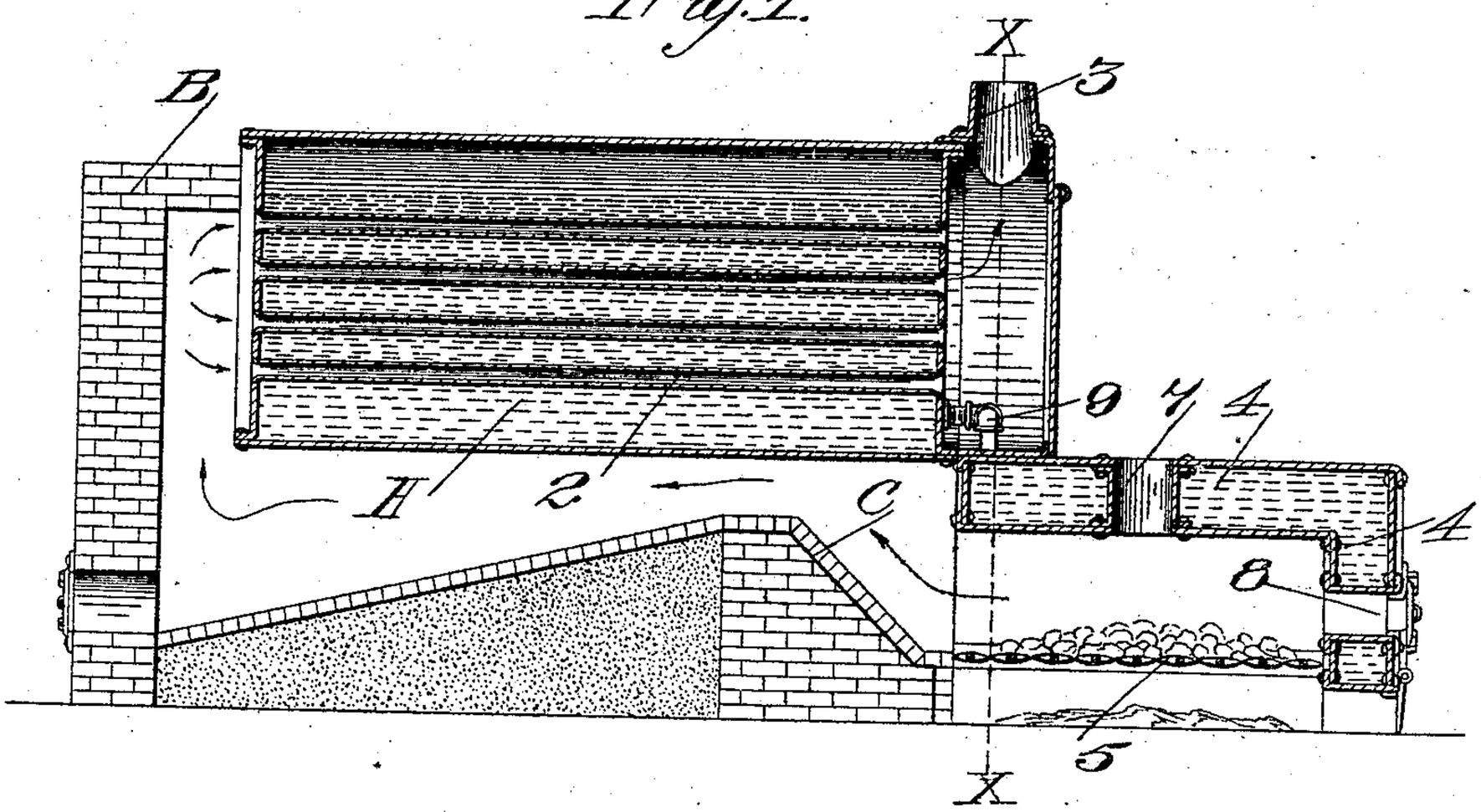


Fig. 2.

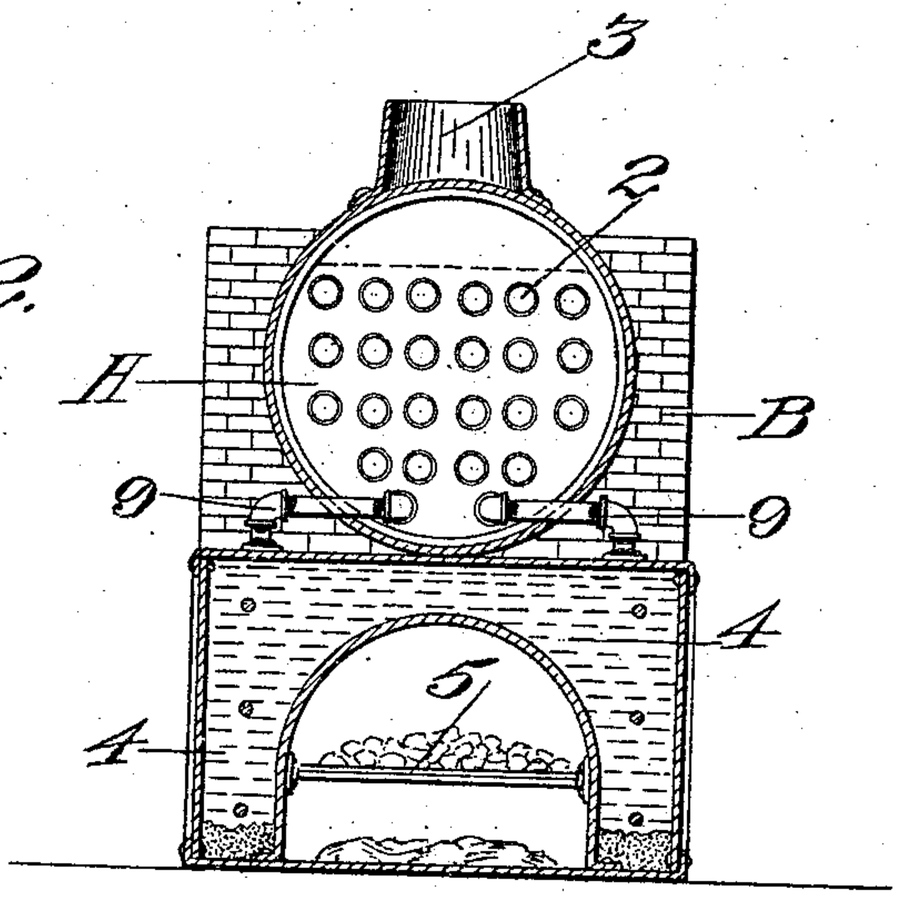
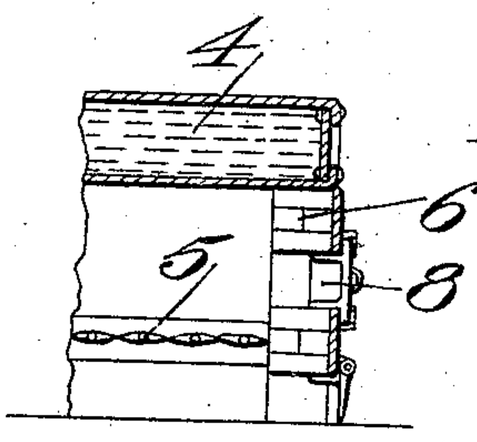


Fig. 3.



Witnesses.
G. Lasberg.
L. S. Rose

Inventor.
Alfred W. Fredrickson.
by Geo. H. Strong, Atty.

UNITED STATES PATENT OFFICE.

ALFRED W. FREDRICKSON, OF HARDY, CALIFORNIA.

WATER HEATER AND PURIFIER.

No. 929,574. Specification of Letters Patent. Patented July 27, 1909.

Application filed October 18, 1907. Serial No. 398,059.

To all whom it may concern:

Be it known that I, ALFRED W. FREDRICKSON, citizen of the United States, residing at Hardy, in the county of Mendocino and State of California, have invented new and useful Improvements in Water Heaters and Purifiers, of which the following is a specification.

My invention relates to a steam boiler water heating and purifying attachment.

It consists in the combination of parts and in details of construction, which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a sectional side elevation through a boiler showing my attachment. Fig. 2 is a cross section on line X—X of Fig. 1. Fig. 3 shows my attachment fitted with a brick front.

It is the object of my invention to provide an attachment for steam boilers and the furnaces thereof, whereby the water may be heated and sediment contained therein deposited before the water is delivered into the boiler proper, and in so combining the two that a steady and continuous supply of hot water is delivered to the boiler.

Referring to the accompanying drawings, Fig. 1 is a sectional elevation of a boiler showing my attachment.

A represents a multi-tubular boiler which may be set in masonry B, in the usual or any suitable manner. C is a bridge wall located beneath the front end of the boiler, so that heat and products of combustion passing over this bridge wall will pass beneath the boiler to the rear, thence returning through the tubes 2 to the front, will pass into the up-take and smoke-stack, as at 3.

My device consists of a double steel shell having an intervening space at the top and sides, as shown at 4. 5 is a grate located in the interior, and interior to these double walls. The front may be made of masonry, as shown at 6, or it may be a continuation of the water space 4. Fuel may be introduced upon the grate either through an opening 7 at the top, or through an ordinary door 8 at the front. The grate is located a sufficient distance above the bottom of the double walls, and water is introduced into this space by a feed pump or other suitable mechanism.

The water introduced in the bottom and below the grate will at first be cool. As it rises, and is subjected to the heat of the inner walls of the structure, the temperature rises, and the well known result of the increased temperature will be to separate any sediment or deleterious matter from the water, which will be deposited at the bottom below the grate, where, not being subjected to agitation, it will collect, and may be drawn from time to time by blow-off passages. The water rising through the walls and passing over the top of the chamber surrounding the fire-box, will be gradually heated to a temperature substantially equal to that in the boiler.

9 are pipes or passages leading from the upper rear end of this heating structure, and opening into the lower part of the boiler, so that all the water delivered thereto will be substantially purified, and heated to such a temperature that the ebullition will be continued within the boiler in the usual manner; and if the temperature of the heater is sufficient to form steam, any steam thus formed will also pass through the pipes 9, rising into the upper steam chamber of the boiler, in conjunction with the steam produced within the boiler itself. The apparatus thus constructed is, as shown, substantially separate from the boiler, with the exception of the tubes 9 and the passage from the grate 5 over the bridge wall C and thence beneath and through the boiler, as previously described. By this means I economize all the heat produced from the fuel, purify the water, separating sediment from it, gradually raising its temperature to a boiling point, in which condition it enters the boiler and furnishes a continuous supply of pure water thereto.

Having thus described my invention, what I claim and desire to secure by Letters Patent is—

1. The combination with a steam boiler and a furnace chamber and grate extending in front of the boiler shell, of a double walled water chamber surrounding the furnace and adapted to receive the feed water, said surrounding space extending below the grate bars and fuel space, and constituting an impurity settling space below the level and action of the fire, and pipes connecting the top of the furnace inclosing water space, with the lower part of the main boiler.

2. The combination with a return tubular

boiler and a furnace chamber and grate extending in front of the boiler shell, of a feed water heater and purifier, said device consisting of a double walled hollow shell inclosing the furnace chamber to form a water heater, and having extensions below the level of the grate and the heating effects of the fuel thereon, and constituting impurity-receiving and settling chambers, and passages connecting the top of the heating chamber with the lower front portion of the boiler.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ALFRED W. FREDRICKSON.

Witnesses:
S. W. HART,
GEORGE RUST.