

No. 612,350.

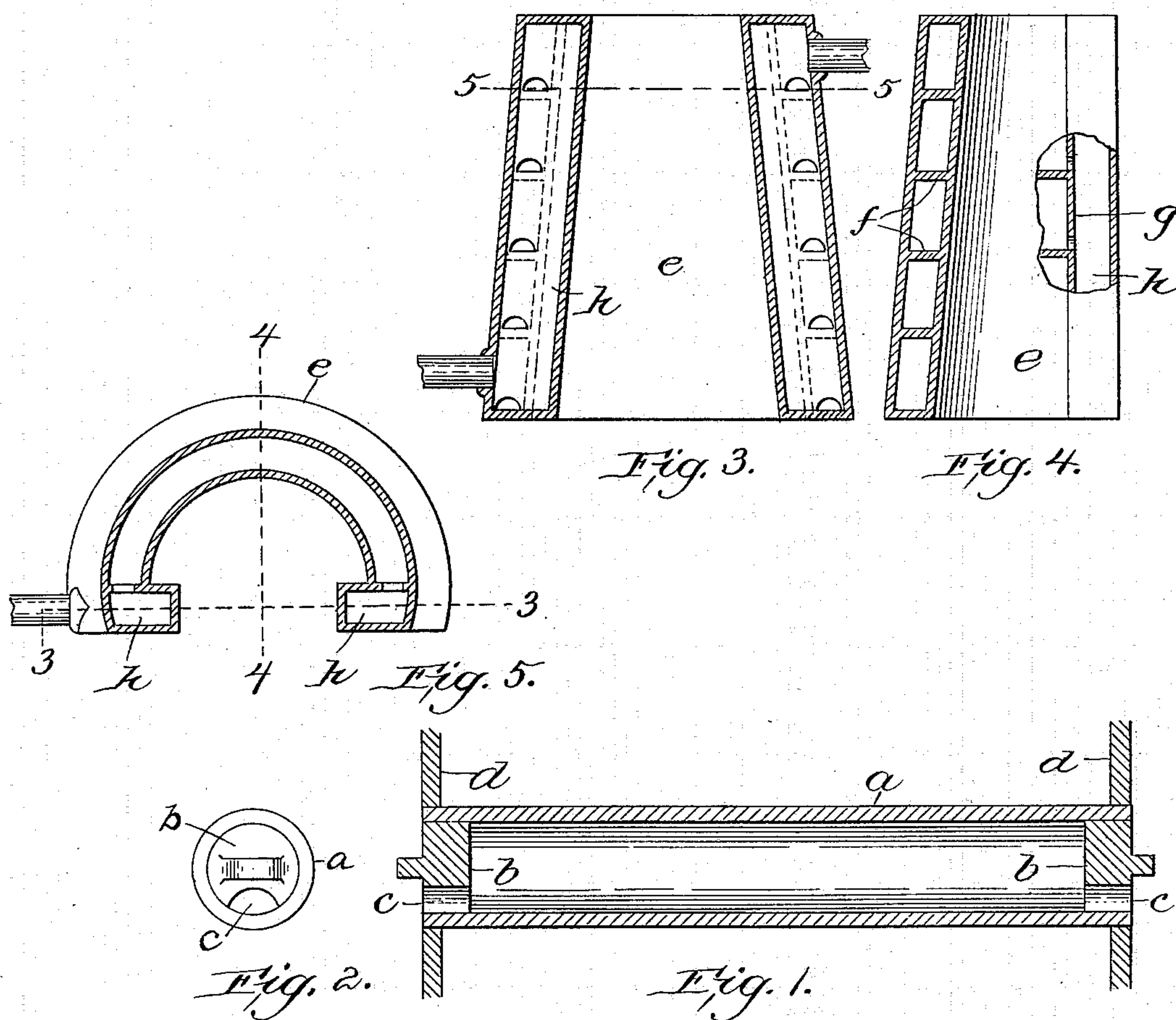
Patented Oct. 11, 1898.

J. C. LAFRENIÈRE.

WATER HEATER.

(Application filed Mar. 30, 1898.)

(No Model.)



Witnesses:

Arthur G. Randall.

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UNITED STATES PATENT OFFICE.

JOSEPH C. LAFRENIÈRE, OF BOSTON, MASSACHUSETTS.

WATER-HEATER.

SPECIFICATION forming part of Letters Patent No. 612,350, dated October 11, 1898.

Application filed March 30, 1898. Serial No. 675,730. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH C. LAFRENIÈRE, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Water-Heaters, of which the following is a description sufficiently full, clear, and exact to enable those skilled in the art to which it appertains or with which it is most nearly connected to make and use the same.

My invention relates to boilers and heaters, and has for its object to provide means which shall so regulate and control the amount of water passing into and through tubes in which it is heated that the greatest possible amount of heat may be absorbed or taken up by the water in its passage.

To this end my invention consists in partially closing or obstructing the ends of the tubes, so that the flow of water thereinto is materially lessened.

In the drawings I have illustrated two of the many forms in which my invention may be embodied.

Figure 1 is a longitudinal vertical sectional view showing one mode of applying my invention to a straight water-tube. Fig. 2 is an end view of the same. Fig. 3 shows a circular water-jacket to which my invention is applied. Fig. 4 is a vertical sectional view of the same. Fig. 5 is a horizontal sectional view of the same.

Referring now to the form shown in Fig. 1, *a* indicates a water-tube which may be of any common or known construction, and *b* designates plugs fitted into the ends thereof in any suitable way. The plug *b*, as shown, is provided with an aperture *c*, which may be of any suitable size or shape. Reference-letter *d* designates the head in which the tube is secured, as will be understood.

In Figs. 3, 4, and 5 I have shown another form of heater comprising a circular jacket *e*, provided with horizontal partitions or division-plates *f*, by means of which the space between the outer and inner walls of the jacket are divided into semicircular conduits or passages, as shown in Figs. 4 and 5. The ends of these passages are partially closed,

as shown at *g*, a sufficient orifice being left to permit the desired quantity of water to flow into and through the various conduits or tubes from the vertical head *h*.

As shown in the drawings, the orifice or aperture in each end wall of the tube is formed a sufficient distance below the top or upper side of the tube or conduit to form a pocket, whereby the water passing into the tube is prevented from completely filling the same, since the air or steam pocketed above the level of these apertures excludes the water from the upper part of the tube, as will be readily understood.

It will therefore be understood that my principle is capable of application in various ways to different forms of tubes.

The advantage and utility of my invention resides in the fact that I am able to present a small volume of water to a large radiating-surface in a manner that causes the water to very quickly absorb the large quantity of heat radiated through the tube or conduit, and that it is adapted for use either in hot-water heaters or steam-generators. It is cheap to construct, can be readily applied to existing heaters, and I have found by actual tests that it is very efficient.

In embodying the invention in a straight water-tube, as shown in Fig. 1, I may employ another tube or solid body in the center thereof, so that heat may or may not be conveyed through the central tube. This construction will expose more of the same quantity of water used to the direct action of the heat and so absorb the furnace heat the more quickly and completely.

Without attempting to set forth all the forms of my invention or the manifold ways in which it may be applied, what I claim is—

1. In a heater a water-tube provided with a plug or end wall at each end, said plugs or end walls being apertured a sufficient distance below the upper side of the tube to form a pocket along the top of said tube, whereby the water passing through is prevented from filling the tube, substantially as described.

2. In a heater a water-jacket formed by an outer and an inner shell, a series of horizon-

tal partitions dividing the jacket into tubes
or conduits, said conduits being partially
closed at both ends by end walls apertured
near the bottom of the conduit, whereby a
5 pocket is formed along the top of each con-
duit, substantially as described.

In testimony whereof I have signed my

name to this specification, in the presence of
two subscribing witnesses, this 26th day of
March, A. D. 1898.

JOSEPH C. LAFRENIÈRE.

Witnesses:

GEO. N. GODDARD,

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