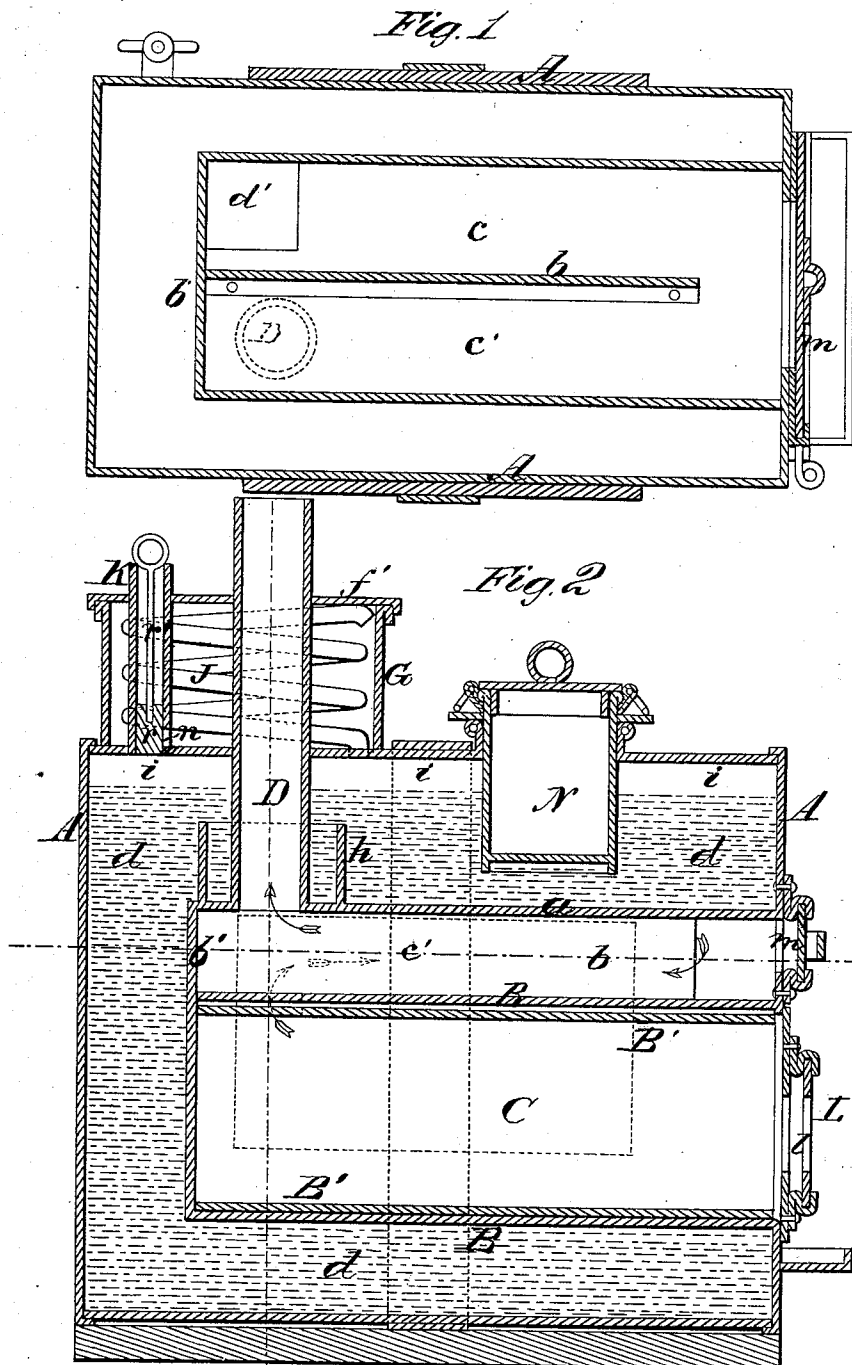


S. L. LATTA.
Water-Heater.

No. 159,103.

Patented Jan. 26, 1875.



WITNESSES

Villette Anderson.
Robert Everett

INVENTOR

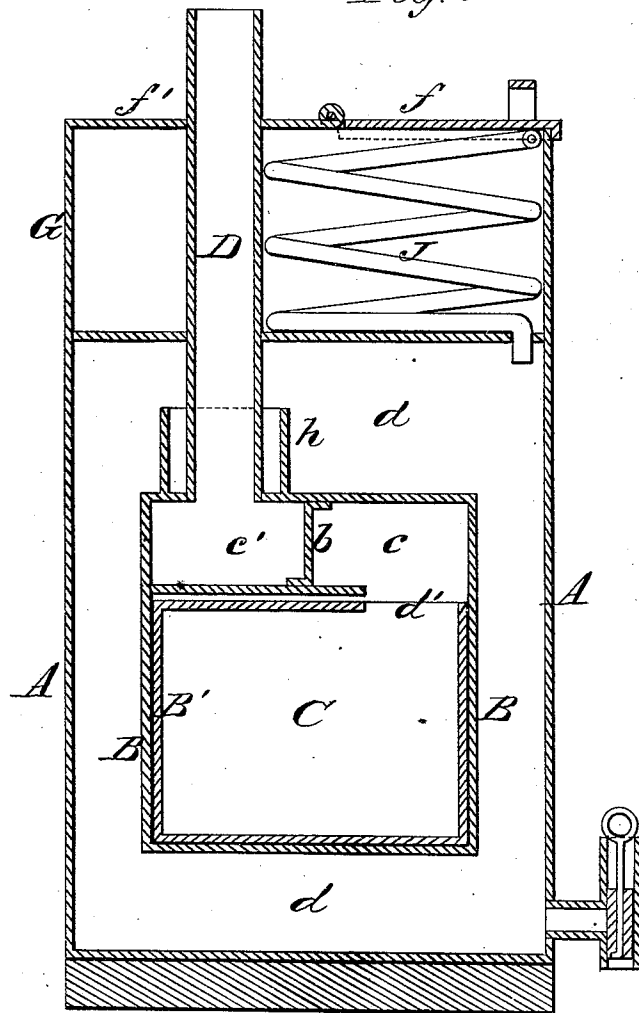
Samuel L. Latta,
Chipman & Osburn & Co.,
ATTORNEYS

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Fig. 3



WITNESSES

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UNITED STATES PATENT OFFICE.

SAMUEL L. LATTA, OF LIGONIER, INDIANA.

IMPROVEMENT IN WATER-HEATERS.

Specification forming part of Letters Patent No. **159,103**, dated January 26, 1875; application filed November 7, 1874.

To all whom it may concern:

Be it known that I, SAMUEL L. LATTA, of Ligonier, in the county of Noble and State of Indiana, have invented a new and valuable Improvement in Water-Heaters; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawing is a representation of a horizontal section of my water-heater. Fig. 2 is a longitudinal vertical sectional view of the same, and Fig. 3 is a transverse vertical sectional view.

This invention has relation to means for heating water for butter-shippers, for hotels, laundries, and other places where a large amount of hot water is required.

The nature of my invention consists in a fire-chamber and smoke-flues, which are surrounded by water, the smoke-flues being arranged above the fire-chamber, and so formed as to cause the products of combustion to pass forward and then backward before escaping through the exit-flue. It also consists in combining a supplementary water-heater with the main heater, for the purpose of keeping on hand a reserve of warmed water to supply the place of that which is drawn out of the main heater, as will be hereinafter explained.

In the annexed drawings, A designates the rectangular shell of the heater, and B the walls, which surround the fire-chamber C. Between the upper wall of the fire-chamber C and a wall, *a*, is a horizontal flue-space, which is divided by a partition, *b*, extending from the back wall, *b'*, nearly to the front wall of the heater, thus forming two flues, *c c'*, into the first of which the products of combustion enter through an aperture, *d'*, thence pass forward to the front of the heater, thence pass into flue *c'*, and finally escape through a vertical pipe, D. The lower end of the pipe D is secured permanently to the top wall of the flue *c'* at its rear end, and should the water in a space, *d*, descend too low there would be a liability of the joint between the pipe and said top wall leaking. To prevent this a cup,

h, surrounds the lower end of pipe D, which will always contain water, and keep the parts comparatively cool. The side, bottom, and back walls of the fire-chamber, and the side, back, and top walls of the flue-space, are surrounded by water, which is contained in the space *d*, between said walls and the side, top, back, and bottom walls A of the heater. On top of the heater, and located at its rear end, is a reservoir, G, of rectangular form, and provided with a hinged cover, *f*, and a stationary or fixed cover, *f'*, as shown in Fig. 3. The plate which forms the bottom of this tank is the top plate of the heater, and through this plate and the top plate or cover, *f'*, the pipe D passes, and gives off its heat to the water contained in said tank. J is a coil of pipe, which is arranged in the tank or reservoir G, and which communicates with the steam-space *i* inside of the walls A, and also with the upper portion of the reservoir G. This pipe, except its upper end, is submerged in the water contained in the reservoir G, and the steam which passes through it imparts heat to the water in the reservoir. K designates a feed-pipe, which passes through the top and bottom of the reservoir G, and in which (the feed-pipe) a valve, *r*, is applied, having a stem, *r'*, attached to it, which valve is designed for closing opening *n*, leading from the feed-pipe K into the space *d*, and also into the reservoir G, as shown in Fig. 2. The front door, L, of the fire-chamber C is provided with a register, *l*, and the front end of the flue-space above this chamber is provided with a slide, *m*, which allows access to the flues *c c'*, for cleaning them out and for other purposes.

For the purpose of preventing the fire-chamber walls B from burning out, I employ a removable rectangular shell, B', which forms a lining for said chamber and protects its walls.

In front of the reservoir G a hole is made through the top plate of the heater, for the purpose of receiving a pot, N, in which to keep coloring matter melted and ready for use in coloring butter.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the smoke-pipe D, fire-chamber C, and smoke-flues *c c'*, nearly surrounded by water, the latter being arranged

as described, so as to cause the products of combustion to pass forward and then backward before escaping through the pipe D, as and for the purpose set forth.

2. The cup *h*, surrounding the base of the smoke-pipe D, arranged in water-space *d*, and combined with the flues *c c'* and fire-chamber C, substantially as described.

3. The reservoir G, coil-pipe J, and smoke-pipe D, in combination with the feed-pipe K,

perforated at *n*, and the valve *r*, substantially as described.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

SAMUEL L. LATTA.

Witnesses:

D. W. GREEN,
H. JEANNERET.