

A. NIMMO.

HOT-WATER BOILER.

No. 176,441.

Patented April 25, 1876.

Fig:1.

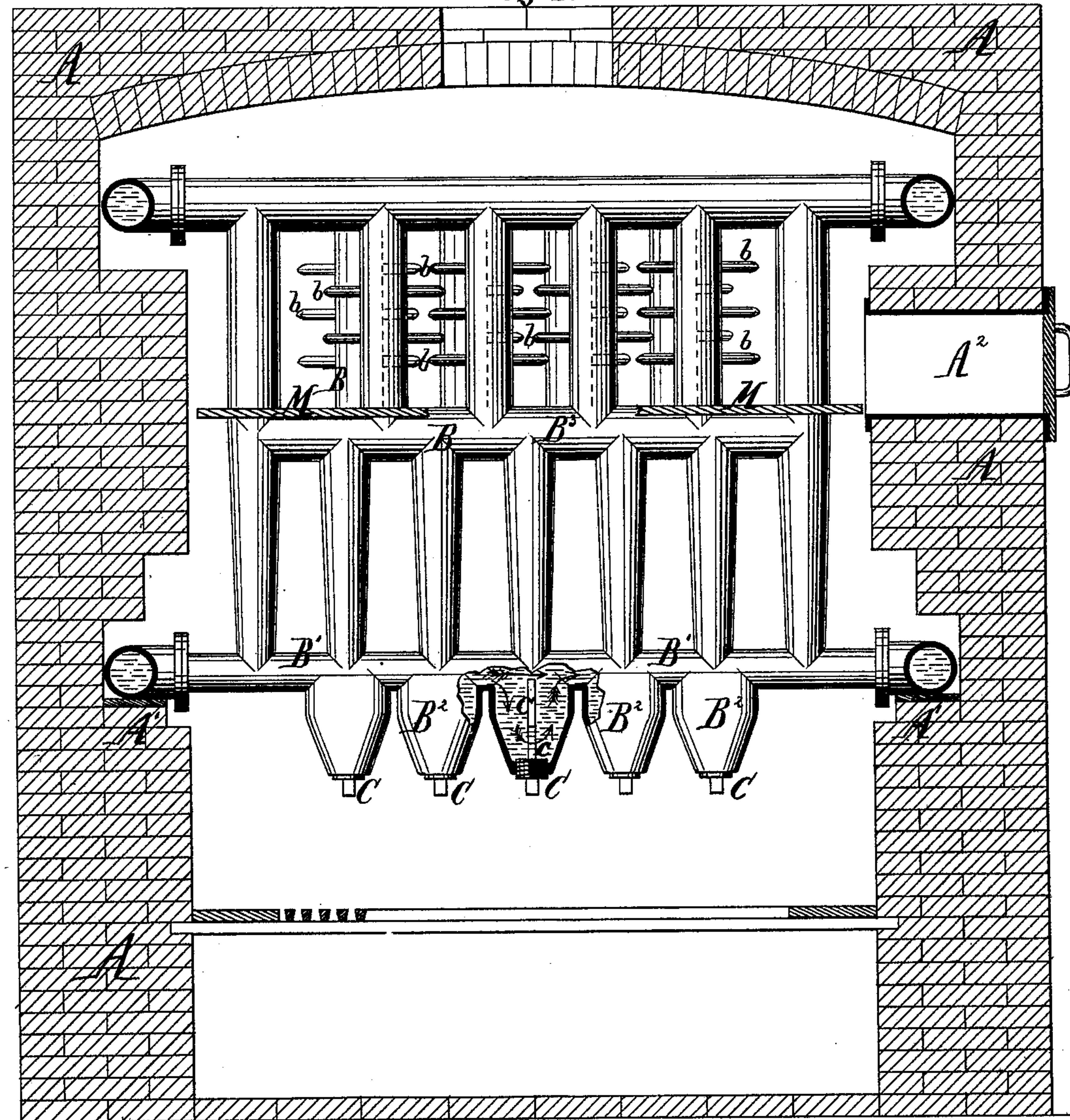


Fig:2.



Fig:3.



Witnesses:

Henry Gentner
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by his attorney
Thomas D. Stetson.

UNITED STATES PATENT OFFICE.

ALEXANDER NIMMO, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN HOT-WATER BOILERS.

Specification forming part of Letters Patent No. **176,441**, dated April 25, 1876; application filed March 20, 1876.

To all whom it may concern:

Be it known that I, ALEXANDER NIMMO, of Brooklyn, Kings county, in the State of New York, have invented certain new and useful Improvements in Hot-Water Boilers, of which the following is a specification:

My improved boiler is of that class in which the parts containing the water are presented to the heat of the fire, and to the heat derived from the hot products of combustion in vessels of small diameter extended in a manner analogous to tubes. I form the parts, by preference, of cast-iron, with screw-plugs to close the orifices occurring at the junctions of the cores.

My invention is designed for use in heating water for any purpose. Its extended use, however, is for warming conservatories and buildings generally by circulating the hot water from the top of the boiler through a series of pipes, and allowing the heat to escape, and then bringing the partially-cooled water back again into the lower part of the boiler, and causing it to again circulate through the boiler and be heated.

I extend the water-conducting parts downward considerably below the cross chambers or passages through which the water circulates horizontally, thus forming drop-tubes, and fix on the inner ends of the screw-plugs, which close the bottoms, flat shovel-shaped plates, which serve to divide the vertical chamber or drop-tube into two passages, with liberty for the water to circulate across at the bottom. These shovel-shaped plates extend a little into the horizontal passage above, and not only divide the drop-tube, and thus promote an active circulation of water due to the heat, but also promote such a circulation by partially arresting the flow of water in the horizontal passage. In other words, the heat received from the fire on the drop-tubes expands the water, and in many instances commences to generate steam, thereby inducing a tendency for the water to rise, while the shovel-shaped dividing-plate fixed on and forming part of the screw-plug separates the ascending current from the descending current of dense water, which sinks in the other side; also, the tendency of the current which moves through the horizontal connections above, on striking and

being partially arrested by the shovel-shaped plate, is deflected downward into the drop-tube, and thus contributes another element tending to induce active circulation in the latter. I have also provided horizontal plates of iron with facilities for holding and tilting them, as required, to form horizontal partitions for inducing the proper circulation of heat.

The following is a description of what I consider the best means of carrying out the invention.

The accompanying drawings form a part of this specification.

Figure 1 is an elevation, partly in section. Fig. 2 is a vertical section through a small portion at right angles to Fig. 1. Fig. 3 represents one of the screw-plugs and its shovel-shaped extension detached.

Similar letters of reference indicate like parts in all the figures.

A is the brick-work, and A¹ shoulders or offsets which support the boiler. B B are hollow or tubular castings, connected as shown, and adapted to receive constant currents through the lower connections, and to allow the water to flow upward through the vertical central connections, and out and away through the upper cross-connections. The lower horizontal part B¹ of each casting B has downward-projecting extensions B². These extensions are closed with a screw-plug, C, which is provided with a stem, c, reaching up into the extensions and carrying a flat plate, c'. Care must be taken, in closing the extensions, that the screw-plugs be set so that the flat surface c' partially arrests the motion of the water in the horizontal pipes, and separates the space in the extensions into two chambers, connected with each other only at the bottom. M M are plates of cast-iron, recessed at their edges to fit approximately to the sides of upright pipes, and beveled to rest on the horizontal pipes B³, which are extended nearly midway across each of the sections of the boiler, as shown. Doors A² are provided in the brick-work to allow access to these plates, and, by tilting either of them up, the ashes or other material thereon can be easily dumped, and the entire plate can be let down into the furnace, and thence removed away. If the doors A² are of sufficient size, the plate can be drawn

out through the door and a new one introduced when desired.

Spurs *b b* are cast on portions of the pipes, to increase the heat-absorbing surface.

I claim as my improvement in water-boilers—

1. The downward extensions B^2 from the horizontal circulating-pipes B^1 and the plugs C , the dividing-plate *c c'* being cast on and forming part of the latter, all adapted to serve as and for the purposes specified.

2. The movable plates M , pipes B^3 , and openings A^2 , combined and adapted to serve as herein specified.

In testimony whereof I have hereunto set my hand this 18th day of March, 1876, in the presence of two subscribing witnesses.

ALEXR. NIMMO.

Witnesses:

A. HENRY GENTNER,

C. C. STETSON.