

(No Model.)

E. A. WHEELER.  
BOILER FURNACE.

No. 465,304.

Patented Dec. 15, 1891.

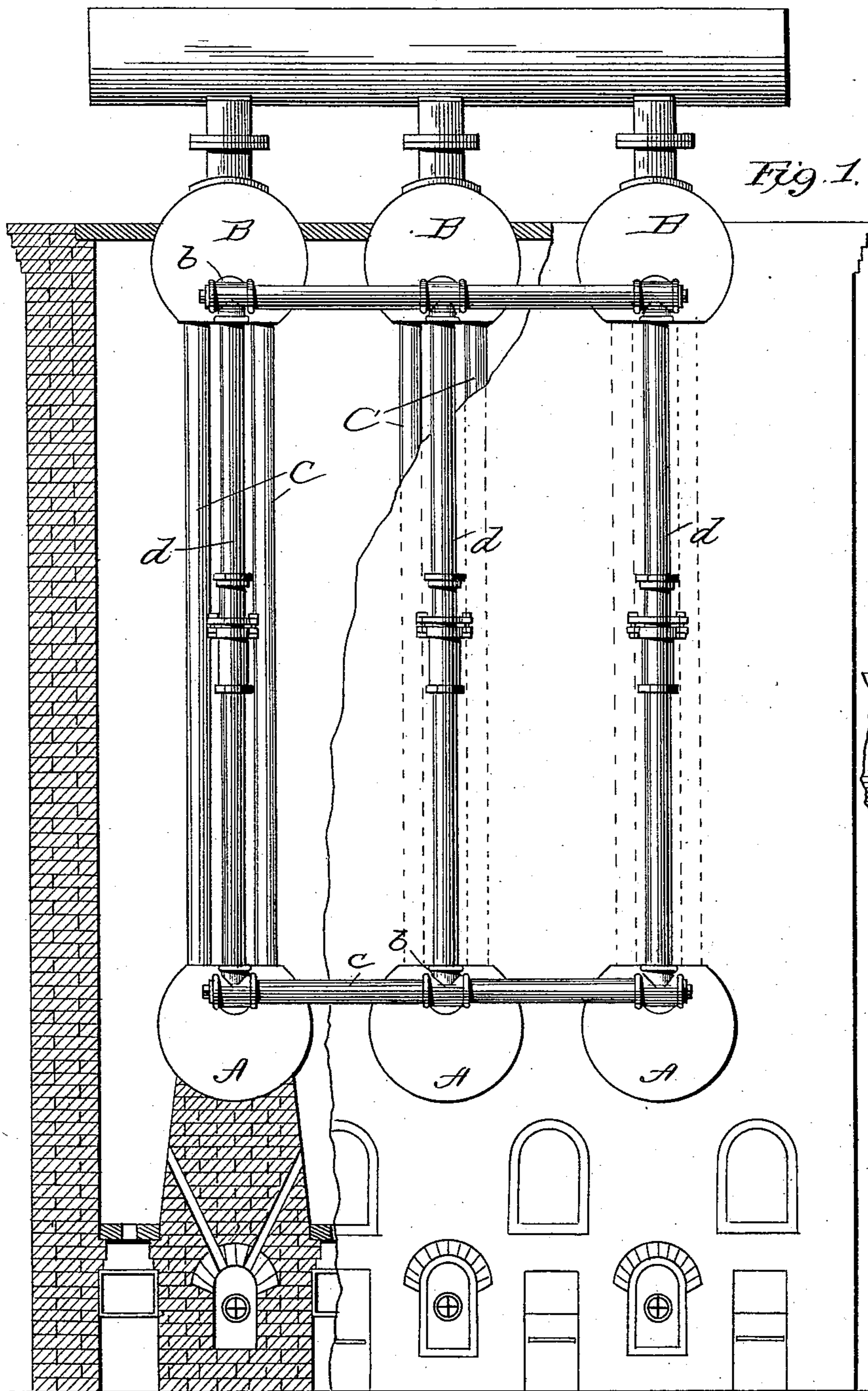


Fig. 1.

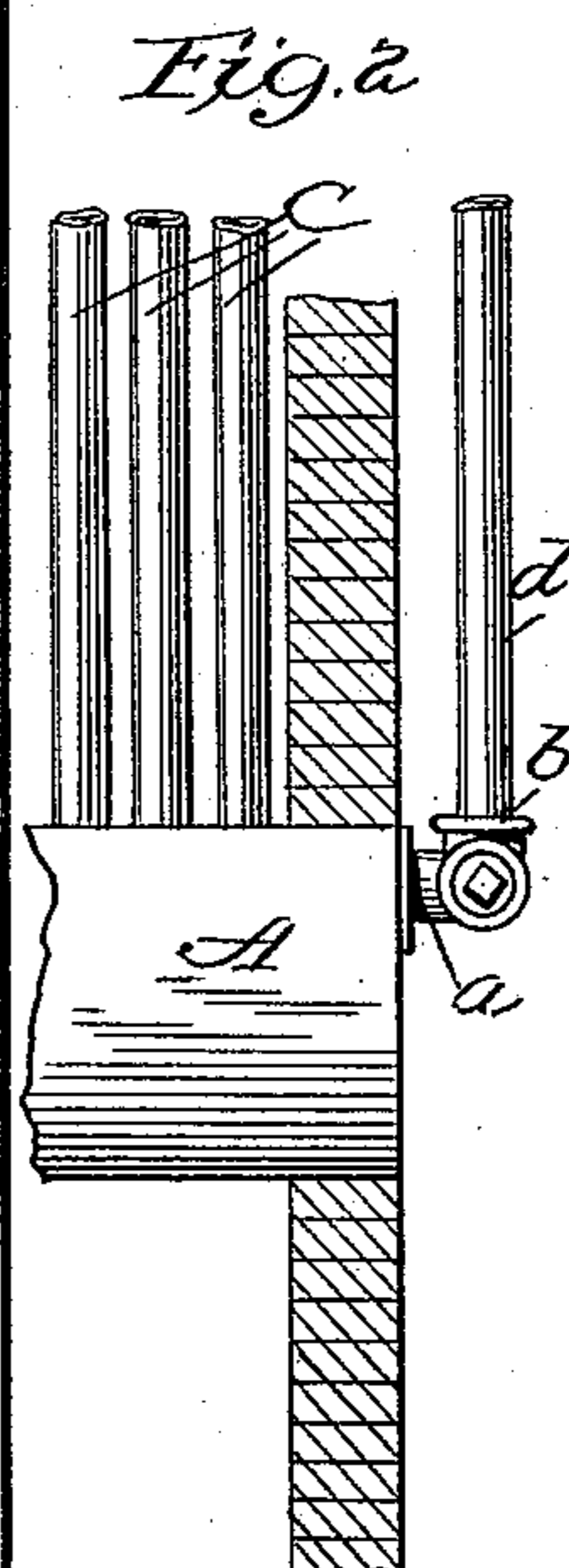


Fig. 2.

Attest  
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# UNITED STATES PATENT OFFICE.

EARL A. WHEELER, OF SHARON, PENNSYLVANIA.

## BOILER-FURNACE.

SPECIFICATION forming part of Letters Patent No. 465,304, dated December 15, 1891.

Application filed July 21, 1891. Serial No. 400,226. (No model.)

*To all whom it may concern:*

Be it known that I, EARL A. WHEELER, a citizen of the United States of America, residing at Sharon, in the county of Mercer and State of Pennsylvania, have invented certain new and useful Improvements in Boiler-Furnaces, of which the following is a specification.

In an application filed by me on the 7th day of March, 1891, Serial No. 384,008, I have shown a boiler-furnace in which I use a series of upper and lower boilers connected by stacks of vertically-arranged pipes, the whole being inclosed within a heating-space.

I have found in practice that as the steam generated in the lower series of boilers rises through the vertical stacks of pipes to the upper boilers it carries with it a certain quantity of water, and in the continuous use of the furnace the upper set of boilers would be filled with water to an injurious extent; and it is the object of the present invention to dispose of this water as rapidly as it is elevated to the upper rows of boilers and to return it to the boilers of the lower set.

In the accompanying drawings I have shown in Figure 1 an elevation of my furnace with the brick-work removed and my improved attachment in place. Fig. 2 is a detail view.

In the drawings, A indicates the lower series of boilers, and B the upper series, these being connected by stacks of vertical pipes C, the whole being inclosed within suitable walls, which form a heating-chamber, the boiler being heated by fire-places, such as shown in my application aforesaid, or in any suitable manner. I tap each boiler of the lower series near the upper line by a short section of pipe which terminates in a suitable coupling, and the upper series of boilers are tapped in the same way near their lower line by short sections of pipe which are also provided with couplings. These short sections

of pipe are shown at *a* and the couplings at *b*. The lower set of boilers are connected by horizontal pipes, which extend between the horizontal portions of the couplings of the pipe *a*, as shown at *c*, and the boilers of the upper set are connected in like manner. Between the vertical portions of the couplings of the upper and lower set vertical pipes are arranged, as at *d*. The short sections of pipes *a* are long enough to carry the horizontal and vertical pipes supported thereby outside the line of the brick-work or inclosing wall of the furnace, so that these pipes are not subjected to the heat of the furnace, and consequently there will be but little steam within them to in any way retard the flow of water of condensation from the upper boilers to the lower ones. It will be seen that as the water is carried up with the steam it will flow out through the pipes A of the upper set of boilers and down the vertical pipes to the lower set of boilers through the pipes *a* of this set, and thus a constant circulation will be kept up, and the boilers of the upper set will be kept free from the accumulations of water.

I claim as my invention—

In combination with a series of lower boilers, a series of upper boilers, interposed pipes between the upper and lower boilers of each set, an inclosing wall, and a series of pipes outside the line of the wall between the upper and lower boilers, couplings connecting the outer pipes with the upper boilers near their lower line and the lower boilers near the upper line, said pipes connecting with each other at top and bottom, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

EARL A. WHEELER.

Witnesses:

A. W. WILLIAMS,  
JOHN C. ROSLEY.