2 Sheets—Sheet 1.

J. A. MAYNARD.

Steam Heater.

No. 112,824. Patented Mar. 21, 1871.

Fig. 1.

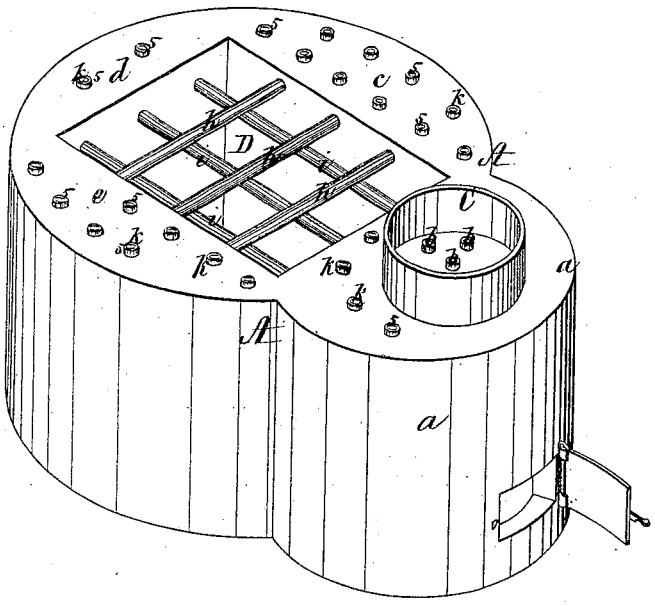
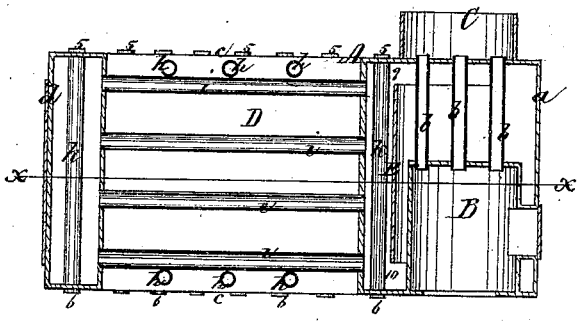


Fig. 2.



Witnesses;
N. W. Stearns
W. J. Cambridge

Jas A. Maynard Inventor.

J. A. MAYNARD.

2 Sheets—Sheet 2.

Steam Heater.

No. 112,824.

Patented Mar. 21, 1871.

Fig. 3.

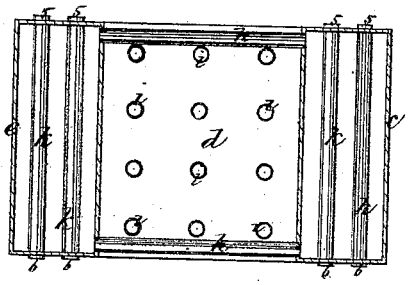
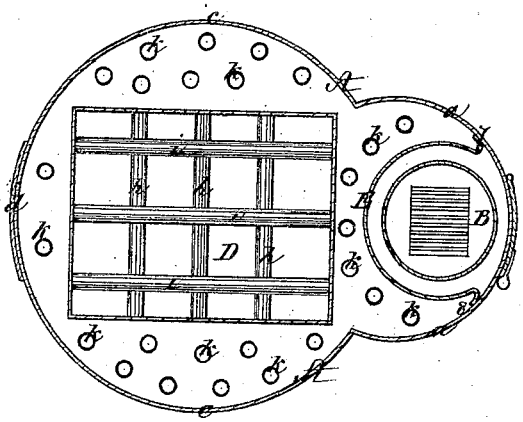


Fig. 4.



Witnesses:
N. W. Stearns
W. J. Cambridge

Jos. A. Maynard Inventor;

United States Patent Office.

JAMES A. MAYNARD, OF NEWTONVILLE, MASSACHUSETTS.

Letters Patent No. 112,824, dated March 21, 1871.

IMPROVEMENT IN BOILERS FOR HEATING PURPOSES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, JAMES A. MAYNARD, of Newtonville, in the county of Middlesex and State of Massachusetts, have invented certain Improvements in Boilers for Heating Buildings and for other purposes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1 is a perspective view of my improved boiler.

Figure 2 is a longitudinal vertical section through the center of the same.

Figure 3 is a transverse section through the center of the same.

Figure 4 is a horizontal section on the line *x x* of fig. 2.

My invention consists in connecting two portions of a boiler by means of a series of tubes, through which circulates hot water or steam, these tubes serving as radiators for heating the air which passes in contact with their external surfaces; and my invention also consists in the combination with the above of a "circulator" or division-plate, which is placed partially around the furnace within the boiler and extends to within a short distance of its top and bottom, whereby the water is caused to circulate continuously through the boiler and tubes in order that it may become rapidly heated.

To enable others skilled in the art to understand and use my invention, I will proceed to describe the manner in which I have carried it out.

In the said drawing—

A is the boiler, within the portion *a* of which is placed the furnace B, the flues *b* of which communicate with the smoke-pipe C.

The portions *c d e* of the boiler are connected together and to the portion *a* so as to form a rectangular opening, D, which is crossed by two series of tubes *h i*, the extremities of those *h* opening into the portions *c e*, while the extremities of those *i* open into the portions *a d* of the boiler.

These tubes are heated by the hot water and steam which circulate through them, and serve as radiators to heat the air which passes up through the rectangular opening D into contact with their exterior surfaces.

The interior of each portion *a c d e* of the boiler is provided with vertical tubes *k*, open at each end 5 6. These tubes are heated by the hot water and steam within the boiler, and serve as radiators for heating the air which passes up through them in contact with their inner surfaces.

The air, after being heated by passing up through the rectangular opening D and tubes *k*, enters a chamber, not shown, surrounding the boiler, from which it is conveyed by suitable pipes to any part of the building to be heated.

In order to facilitate and insure the desired circulation of the water within and through the boiler and tubes *h i*, a plate or "circulator," E, is made to extend partially around the furnace B from 7 to 8, see fig. 4, and to within a short distance of the top and bottom of the boiler, leaving passages 9 and 10, by which construction the cold water at the bottom of the portion *a* of the boiler, as it is heated, passes up and around the circulator or plate E, and the water is thus kept in constant motion and made to circulate freely as desired.

Instead of a boiler composed of four portions, *a c d e*, one consisting of but two portions, *a d*, connected by their tubes *i*, may be employed without departing from the spirit of my invention.

The above-described boiler is compact and efficient, and particularly designed for heating buildings, but it may be used to generate steam for various purposes.

Claims.

I claim—

1. A boiler composed of two or more portions, connected by the tubes *h* or *i*, which serve as radiators for heating the air passing in contact with their external surfaces, as and for the purpose described.

2. The circulator E, in combination with the furnace B and a boiler provided with radiating-tubes *h* or *i*, operating substantially as set forth.

3. The combination of the portions *a c d e* with their radiating-tubes *k*, the radiating-tubes *h i*, furnace B, and circulator E, operating substantially in the manner and for the purpose described.

Witness my hand this 20th day of December, A. D. 1870.

JAS. A. MAYNARD.

Witnesses:

N. W. STEARNS,

W. J. CAMBRIDGE.