

R. L. Walker.

Steam-Boiler Furnace.

N^o 75817

Patented Mar. 24, 1868

Fig. 1.

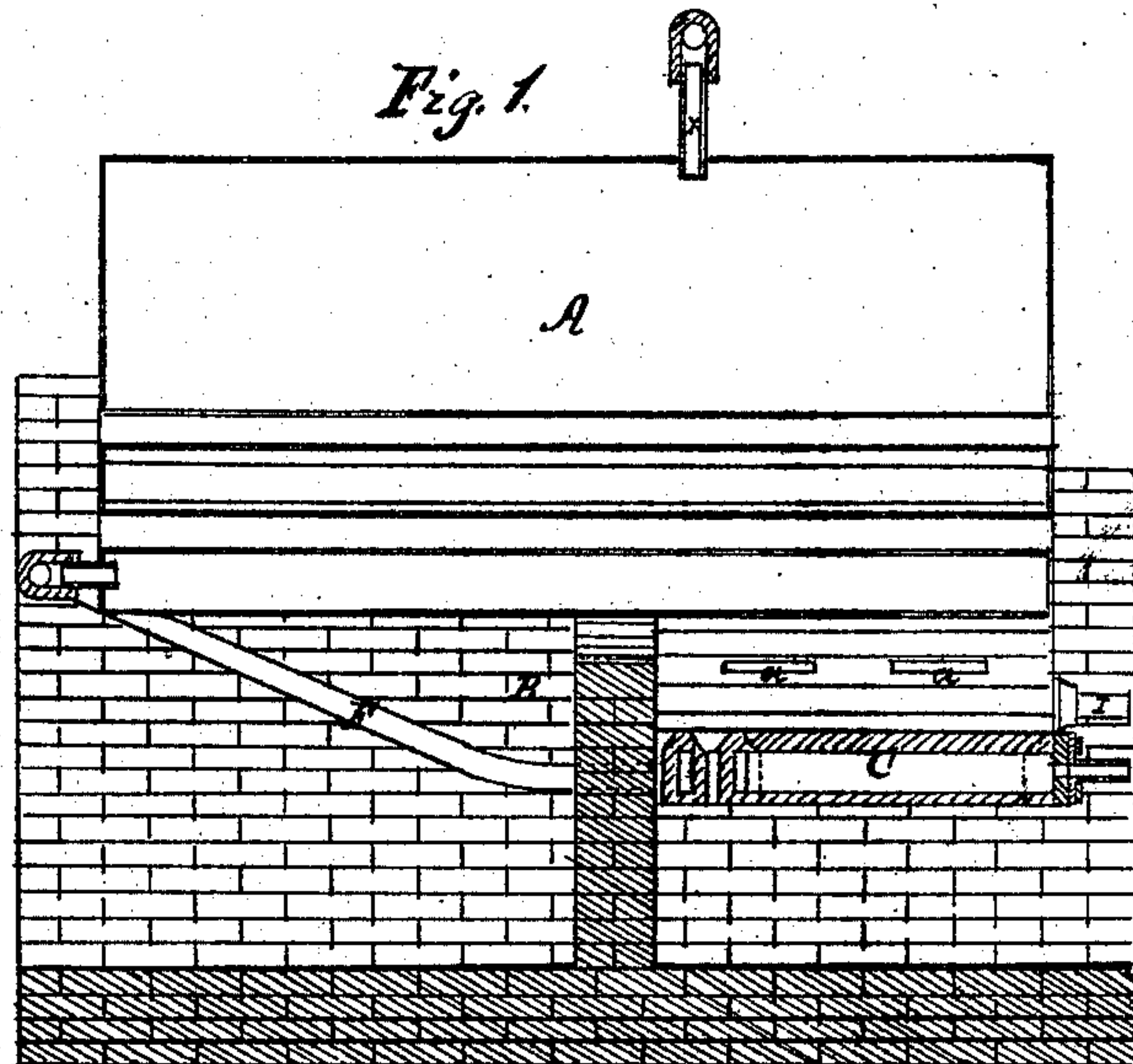


Fig. 2.

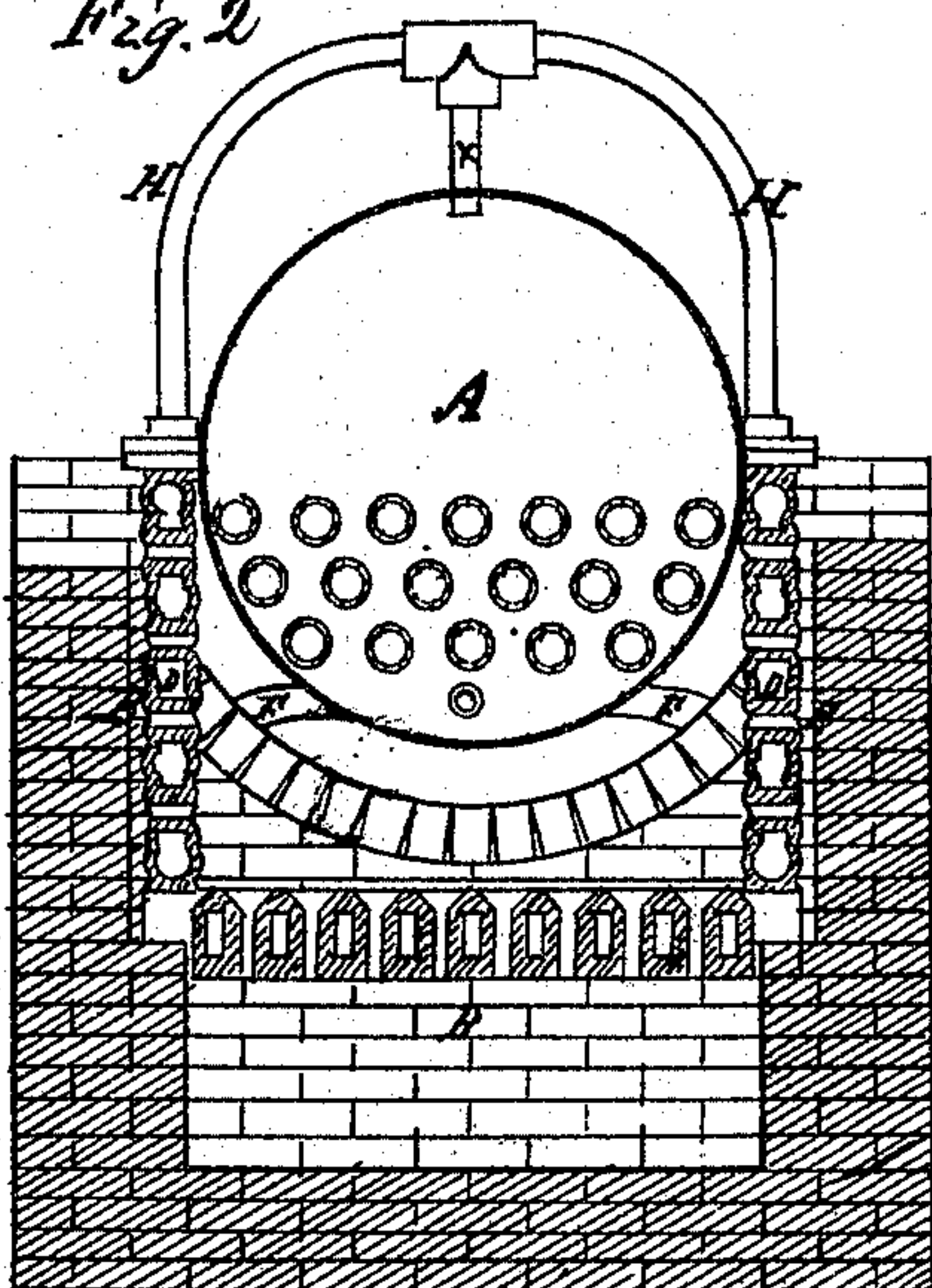


Fig. 3.

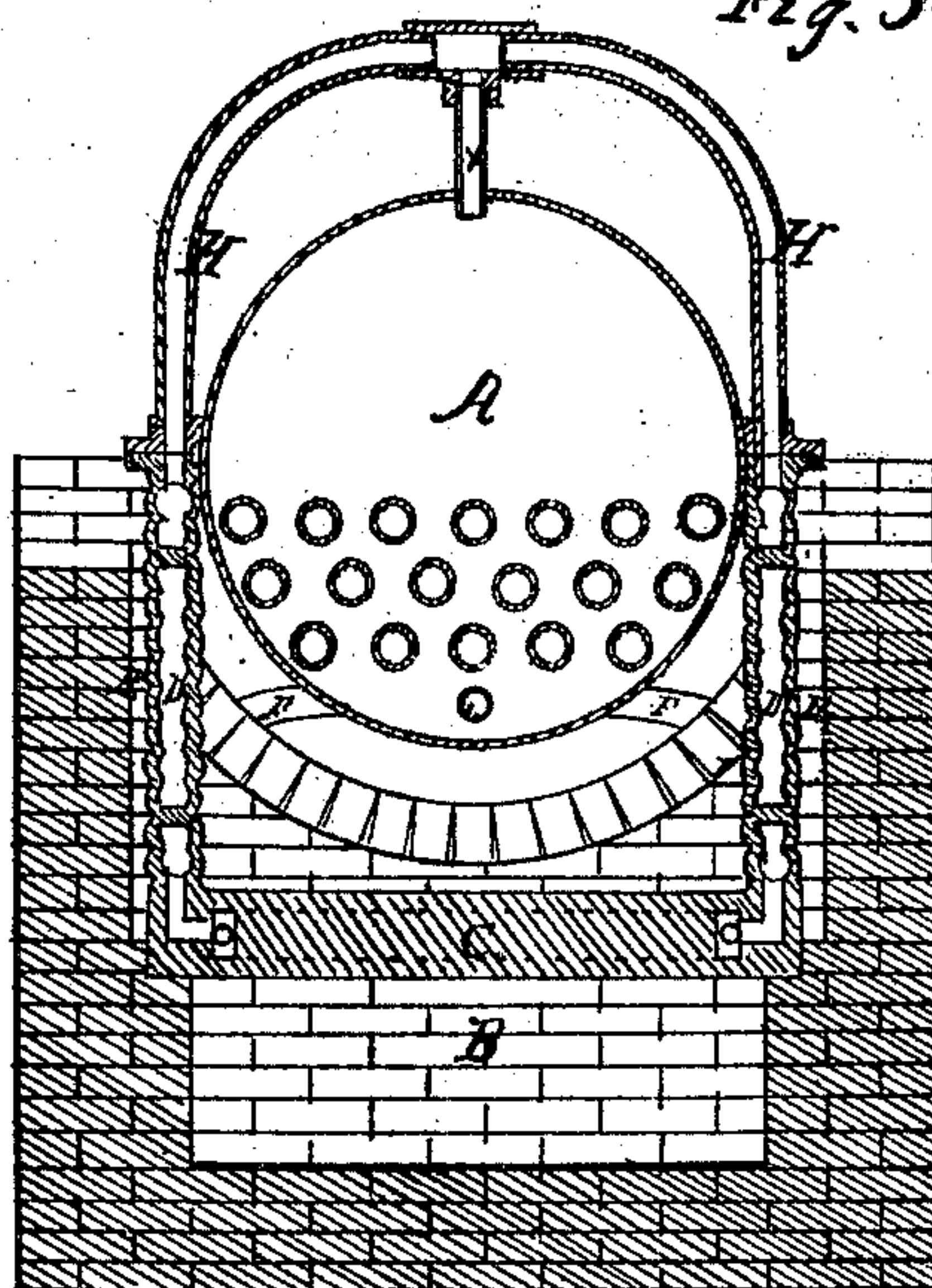


Fig. 5.



Fig. 4.

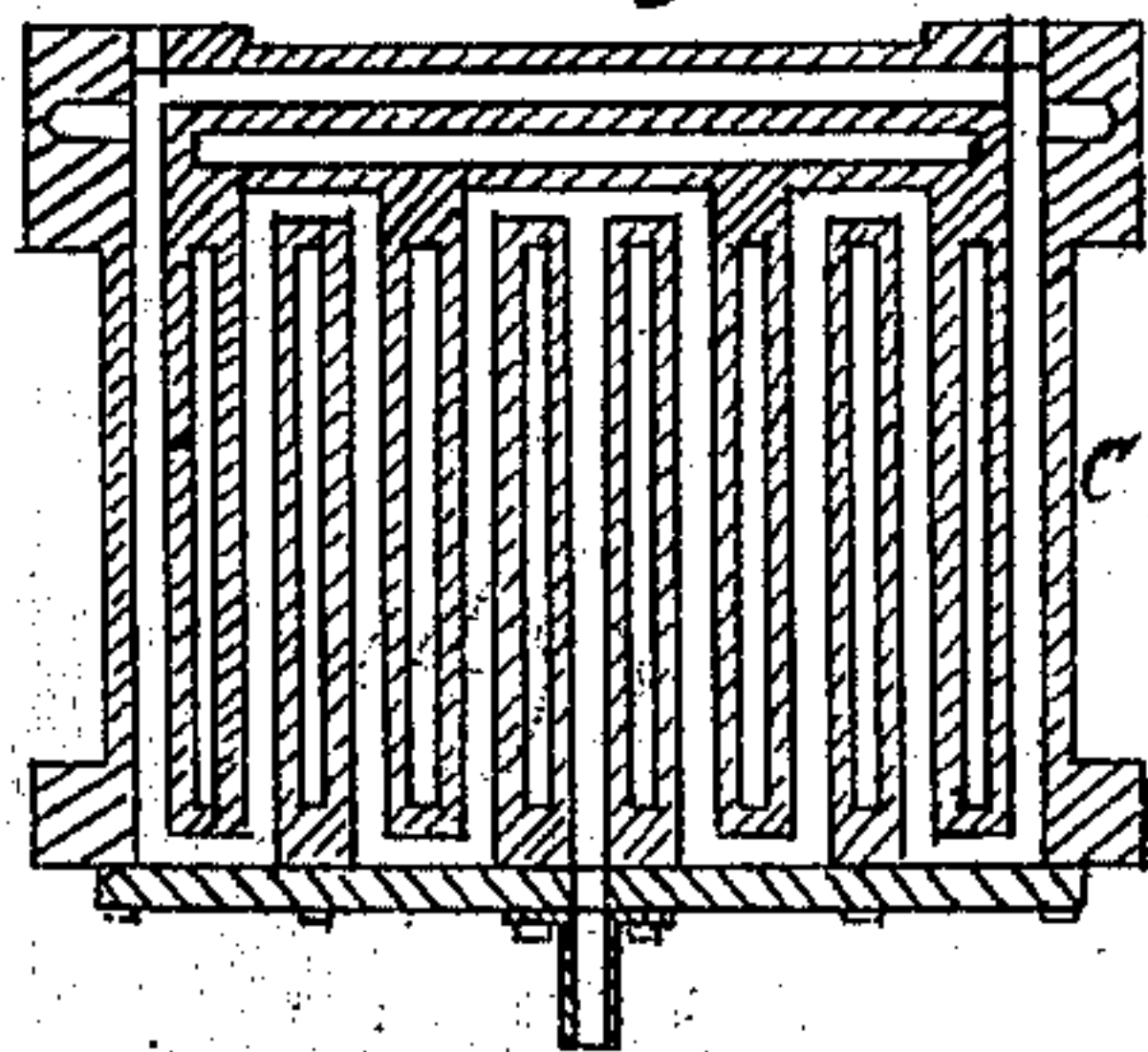


Fig. 6.

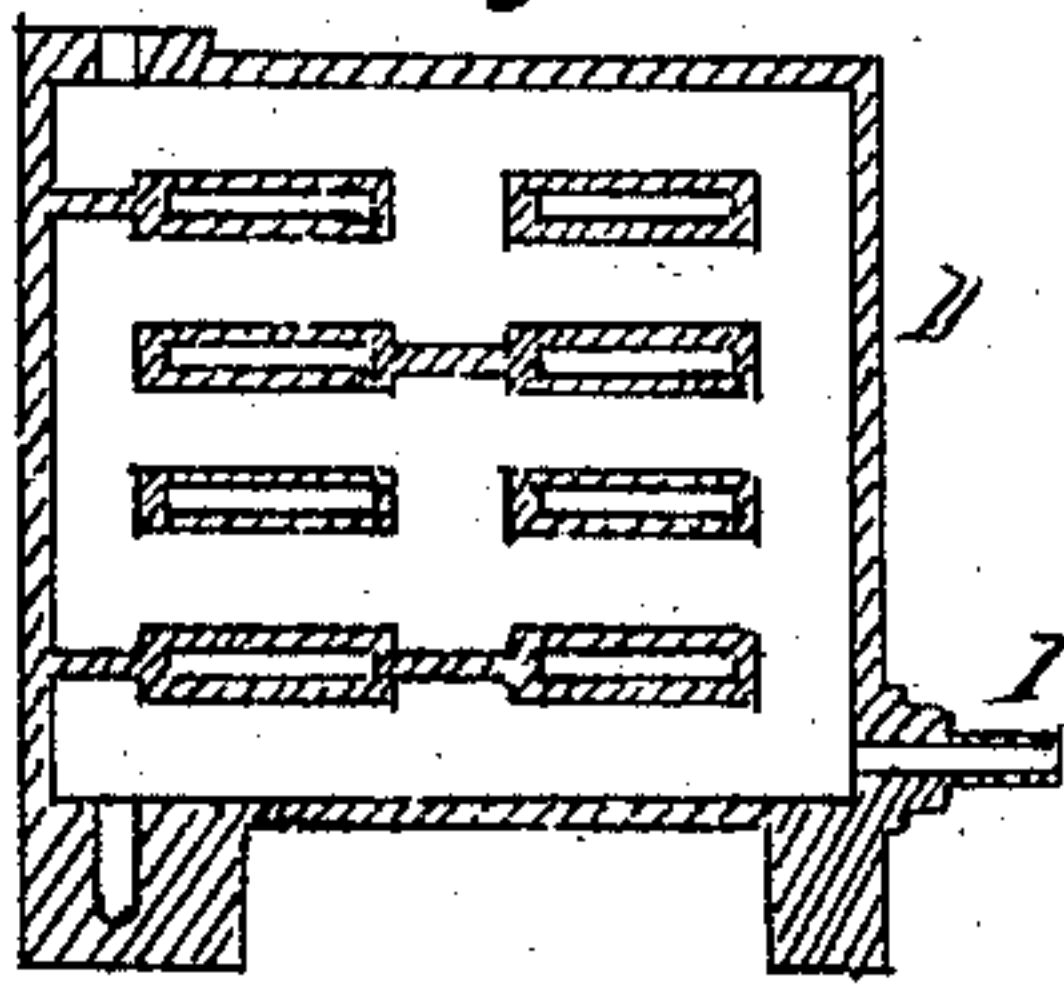


Fig. 7.



Witnesses.

S. N. Piper.

J. B. Swan.

Inventor.
R. L. Walker.

by his attorney
R. H. Cady

United States Patent Office.

ROBERT L. WALKER, OF GLOBE VILLAGE, MASSACHUSETTS.

Letters Patent No. 75,817, dated March 24, 1868.

IMPROVEMENT IN STEAM-BOILER FURNACES.

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

TO ALL PERSONS TO WHOM THESE PRESENTS MAY COME:

Be it known that I, ROBERT L. WALKER, of Globe Village, in the county of Worcester, and State of Massachusetts, have made a new and useful invention having reference to Steam-Boilers and their Furnaces; and I do hereby declare the same to be fully described in the following specification, and represented in the accompanying drawings, of which—

Figure 1 is a vertical and longitudinal section, and

Figures 2 and 3 are transverse sections of a boiler and furnace provided with my invention.

Figure 4 is a horizontal section of the water-grate of the furnace.

Figure 5 is a transverse and vertical section of one of the auxiliary generators, to be hereinafter described.

Figure 6 is a vertical and longitudinal section of such generator.

Figure 7 is a horizontal section of it.

In such drawings, A denotes a steam-boiler set in a furnace, B, whose grate is represented at C. The grate may be of the ordinary kind, that is, without having its bars tubular to receive water, or it may be what is termed a "water-grate," as it is exhibited in the drawings, in which case it is shown as made like that described in the United States Patent, No. 71,251, recently granted to me. At one or each side of the grate, I raise a narrow auxiliary steam-generator, D, so that its inner side may constitute a support for the fuel while on the grate, there being against the opposite side of the said generator a narrow chamber or space, E. The generator is to be constructed with one or more passages, *a*, leading through it, so as to allow the heat and smoke from the fuel, while in combustion, to pass from the fireplace through such passage or passages into the chamber E and against the outer side of the generator; or, instead of making the generator with such passage or passages, there may be about either or both ends of it, or either or both edges of it, a communication by which the heat and smoke of the fuel of the fireplace may pass into the chamber E. This generator may be formed of two corrugated or grooved plates fastened together, or it may be otherwise suitably made. When a water-grate is used, it should connect directly with the generator, so as to enable the water, after being circulated through the grate, to pass directly into and flow up through the generator, the grate or the generator having a pipe leading from it to and so as to open into the water-space of the boiler. In the drawings this conduit is exhibited at F. There should also be another conduit leading from the upper part of the generator to or so as to open into the steam-space of the boiler. This conduit is exhibited at H in the drawings. It is a curved pipe extending from both of the auxiliary generators, and over the boiler, and having a branch-pipe, *x*, at its middle to open connection with it and the upper part of the boiler. A pipe, I, either for supplying the auxiliary generator with water, or for discharging from it the liquid contents, or any deposits, may open into the front end and lower part of the auxiliary generator.

By means of the auxiliary generator or generators arranged on the furnace, or with respect to and combined with it and the boiler, as described, the heat which would otherwise be absorbed by the side-wall or walls of the furnace can be utilized in effecting the heating of water and the formation of steam in the said auxiliary generator or generators, such steam, after being formed, being caused to pass into the steam-space of the boiler.

I am aware that a furnace has been arranged within a boiler, so that the sides of the furnace, when heated, would heat the water in the boiler; therefore I make no claim to such an arrangement.

What I claim as my invention is as follows:

I claim the combination and arrangement of one or both the auxiliary steam-generators with a furnace and boiler, substantially in manner and so as to operate therewith as described.

I also claim the combination and arrangement of the heating-chamber E with each of the auxiliary generators, and the furnace or furnace and boiler, arranged and combined substantially as described.

I also claim the combination of the water-grate with the auxiliary generator or generators, the furnace and boiler, arranged and combined substantially as described.

R. L. WALKER.

Witnesses:

R. H. EDDY,

SAMUEL N. PIPER.