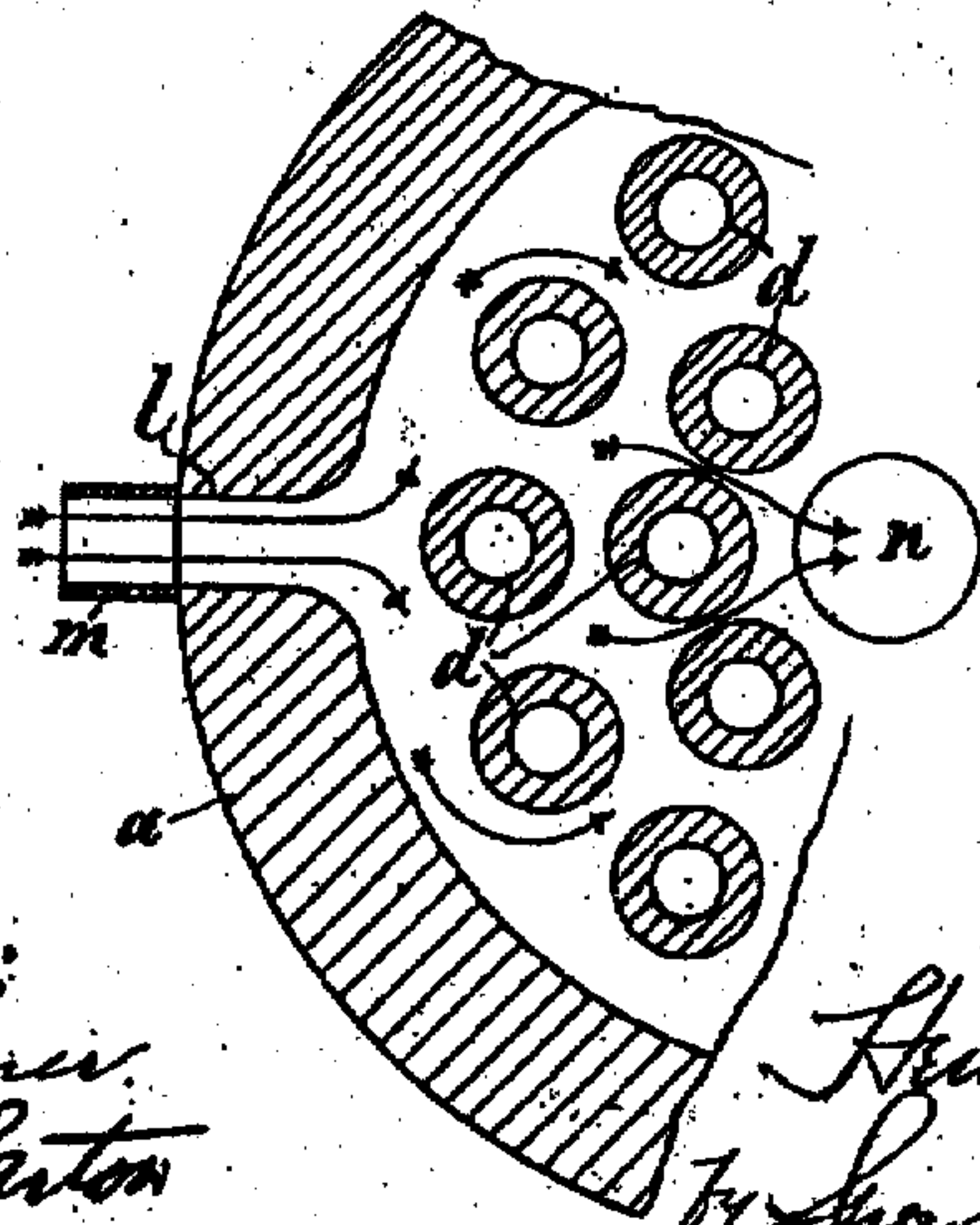
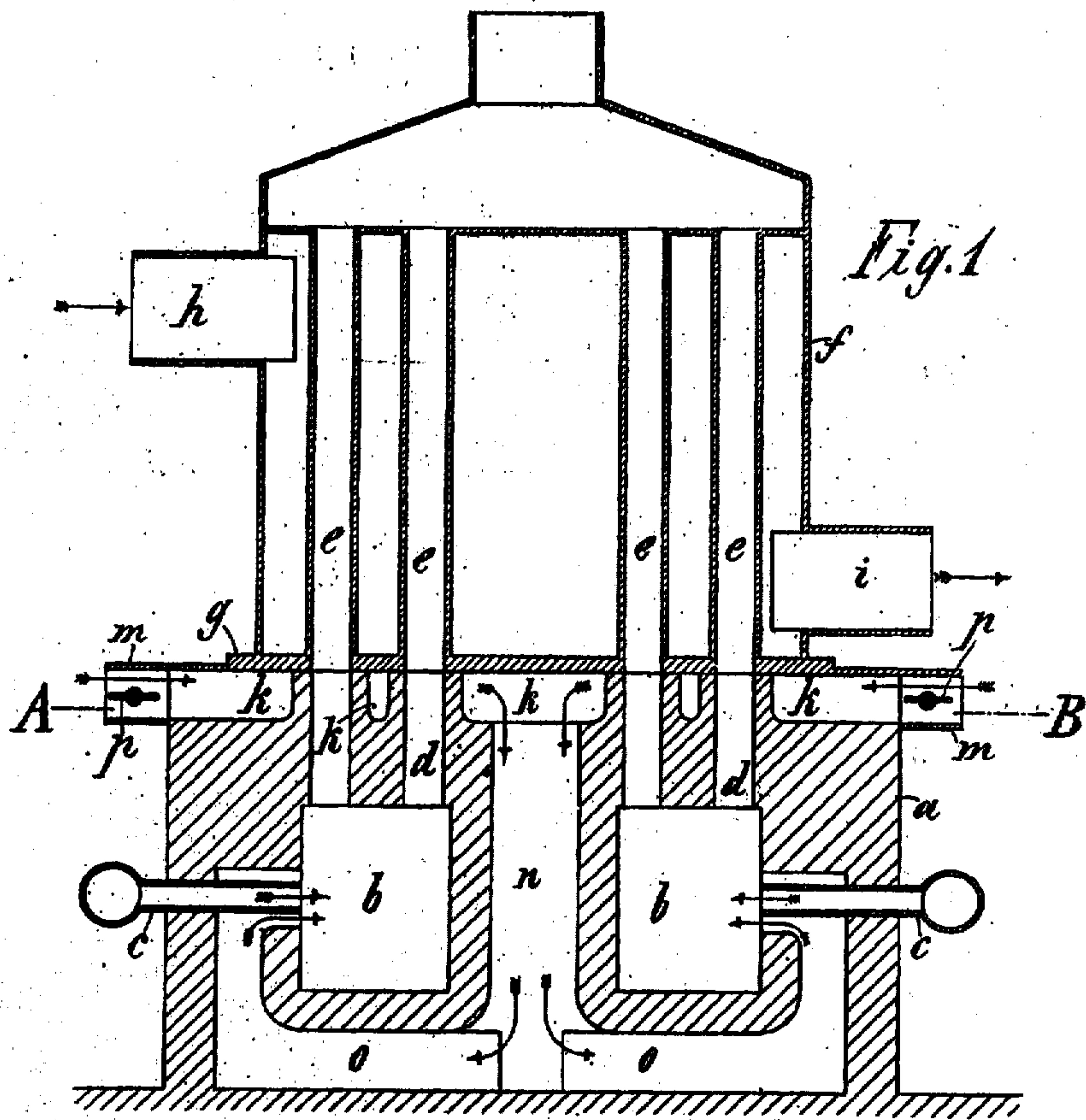


H. GERDES.
STOVE, FURNACE, AND THE LIKE.
APPLICATION FILED FEB. 26, 1909.

924,548.

Patented June 8, 1909.



Witnesses:
A. M. Tanner
Edward H. Sarton

Inventor:
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by *[Signature]* Attorney

UNITED STATES PATENT OFFICE.

HEINRICH GERDES, OF BERLIN, GERMANY.

STOVE, FURNACE, AND THE LIKE.

No. 924,548.

Specification of Letters Patent.

Patented June 8, 1909.

Application filed February 26, 1909. Serial No. 480,201.

To all whom it may concern:

Be it known that I, HEINRICH GERDES, a citizen of the German Empire, and residing at Berlin, German Empire, have invented certain new and useful Improvements in Stoves, Furnaces, and the Like, of which the following is a clear and exact specification.

The present invention relates to stoves or furnaces, and more particularly to that class of furnace generally employed for heating buildings and rooms, and which is constructed somewhat on the system of the tube boilers. In connection with this class of furnace there is a tendency on the part of the lower tube plate, which is usually mounted on the fire-brickwork lower part of the furnace, to contract and warp owing to uneven heating of the same. The object of the present invention is to obviate this disadvantage by providing an air chamber below the said tube plate, through which the air passes and keeps the plate comparatively cool. The air thereby becomes heated and in order to prevent the loss of the heat thus obtained the air is led from the said chamber to the combustion chamber.

In order to render the present specification easily intelligible reference is had to the accompanying drawing in which similar letters of reference denote similar parts throughout the several views:

Figure 1 is a central vertical section through a stove or furnace constructed according to the present invention and Fig. 2 is a part sectional plan on the line A—B of Fig. 1.

The lower part of the furnace *a* is provided with a combustion chamber *b* in the usual manner into which the gas is conducted through the burner tubes *c*. This combustion chamber is in connection with the heating tubes *e* by means of the flues *d*. The air to be heated passes to the upper chamber *f* of the furnace through the inlet pipe *h*, passes through between the heating tubes *e* and out of the furnace at *i*. Below the tube plate *g* and between it and the combustion chamber an air chamber *k* is provided. The flues *d* lead through this chamber and the air from the outside passes through the passages *l* or pipes *m* into the said chamber *k*, down through the central flue *n*, the flues *o* to the

combustion chamber *b*. Thus the air will cool the lower tube plate *g* and will simultaneously be pre-heated for later combustion. The pipes *m* are provided with dampers *p* to regulate the amount of air admitted.

The chamber *k* separates the lower tube plate from the upper hot surface of the flues and thus the former will not be distorted by abnormal heat while at the same time no heat is practically lost.

I claim as my invention:—

1. A furnace comprising an upper and a lower part, a lower tube plate separating said parts, a series of tubes in the upper part carried by said tube plate, said lower part having a combustion chamber therein, and flues connecting said combustion chamber with the series of tubes and said lower part also having an air chamber at its upper part located immediately under the lower tube plate and surrounding the flues.

2. A furnace comprising an upper and a lower part, a lower tube plate separating said parts, a series of tubes in the upper part carried by said tube plate, said lower part having a combustion chamber therein, and flues connecting said chamber with the series of tubes, and said lower part also having an air chamber at its upper part located immediately under the tube plate and surrounding the flues, and means for conducting the air from said air chamber to the combustion chamber.

3. A furnace comprising an upper and a lower part, a lower tube plate separating said parts, a series of tubes in the upper part carried by said tube plate, said lower part having a combustion chamber therein and flues connecting said combustion chamber with the tubes in the upper part, said lower part having an air chamber in its upper part located immediately under the lower tube plate and a central flue connecting said air chamber with the combustion chamber, and controllable means for feeding air to said air chamber.

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

HEINRICH GERDES.

Witnesses:

HENRY HASPER,
WOLDEMAR HAUPT.