

(No Model.)

2 Sheets—Sheet 1.

G. F. GALLAGHER & T. B. MOORE.
FURNACE.

No. 526,776.

Patented Oct. 2, 1894.

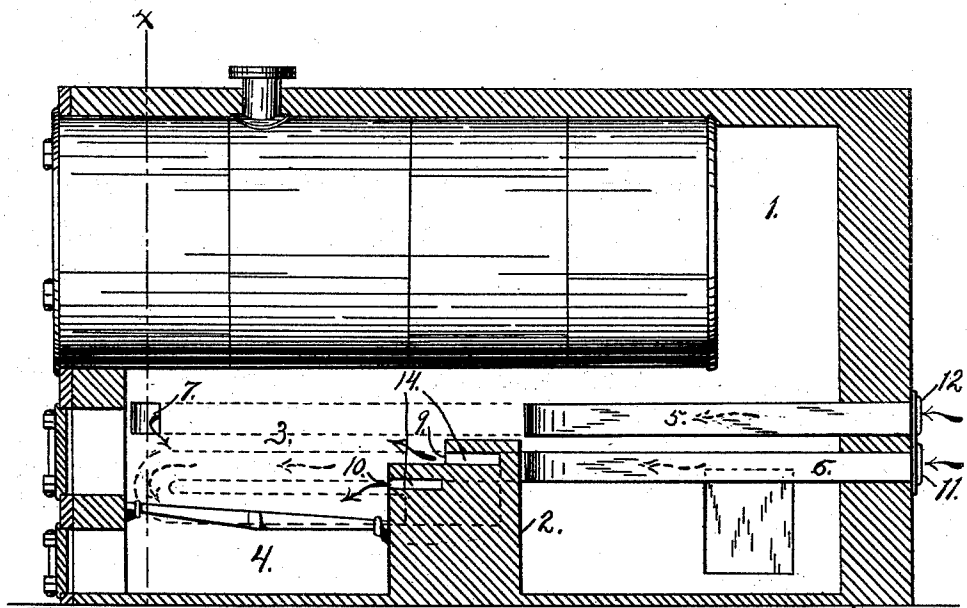


Fig. 1.

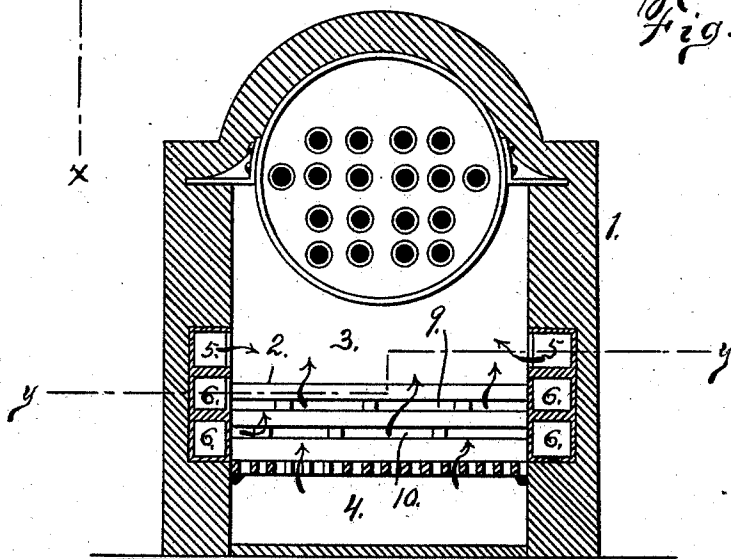


Fig. 2.

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John H. Hall

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Thomas B. Moore

BY

W. F. Miller.

ATTORNEY

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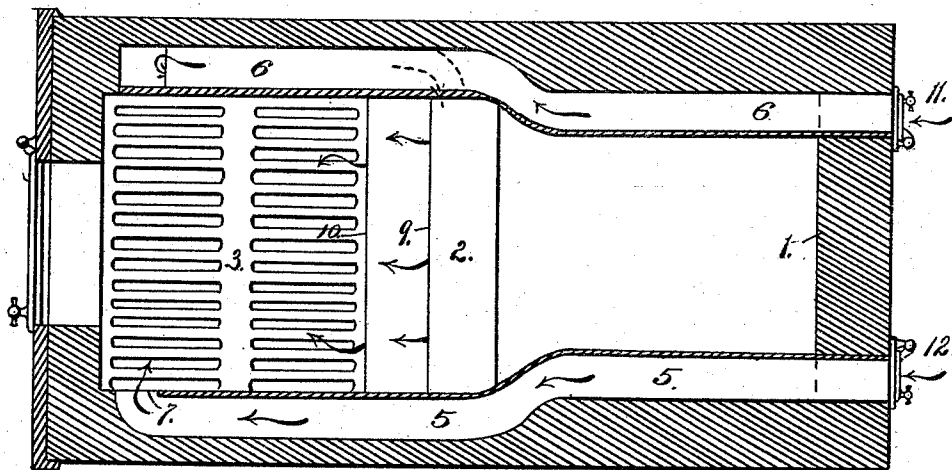


Fig. 3.

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UNITED STATES PATENT OFFICE.

GEORGE F. GALLAGHER AND THOMAS B. MOORE, OF ROCHESTER, NEW YORK, ASSIGNORS OF ONE-THIRD TO HENRY GALLAGHER, OF SAME PLACE.

FURNACE.

SPECIFICATION forming part of Letters Patent No. 526,776, dated October 2, 1894.

Application filed April 11, 1891. Serial No. 388,464. (No model.)

To all whom it may concern:

Be it known that we, GEORGE F. GALLAGHER and THOMAS B. MOORE, citizens of the United States, residing at Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Furnaces; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to figures of reference marked thereon, which form a part of this specification

Our invention relates to improvements in furnaces, and more particularly to that class of furnaces which have for their object the entire consumption of all the products of combustion and it consists in certain novel features of construction all of which we will now proceed to definitely describe and claim.

In the drawings Figure 1 is a vertical longitudinal section of a furnace equipped with our improvement. Fig. 2 is a vertical cross section taken through the line $x-x$ of Fig. 1. Fig. 3 is a plan view taken through the line $y-y$ of Fig. 2.

Long experiment in this line has taught us that it is advisable that the air-inlet passages for supplying superheated air to the fire shall draw their air from the rear end of the furnace so as not to interfere with the draft through the doors below the grate, that such passages shall have no angles or sharp turns more than are absolutely necessary, that they shall not cause the inflowing air to rise and fall (which angles or rise and fall would retard the flow), and that means be provided whereby the current's supply to the front and rear ends of the fire box can be controlled independently so that the superheated air can at times be admitted to the front or rear only, to both, or neither as desired. In our several patents heretofore granted to one or both of us we have covered constructions differing considerably from this in principle, but the chief object of the present invention is to carry out the ideas just set forth.

Referring to the drawings, 1, is the body of the furnace into which the boiler is set.

2, is the bridge-wall; 3, the fire-box, and 4, the ash-pit.

5, and 6, are super-heating air passages or channels located in the side wall of the furnace, the passages 5 leading from the back or rear end of the furnace to the forward end of the fire-box, and the passages 6, leading from the rear end of the furnace to the forward end of the fire box returning along the side walls of the fire-box and opening into narrow passages 14, extending across the bridge-wall 2. These passages 14, open into the rear-end of the fire-box through narrow openings 9, and 10, above the grate-bars.

The air passing into the passages 5 through the doors 12 passes along the side walls in the combustion chamber and through the side wall of the fire-box thus becoming superheated, and is discharged through the openings 7, at the forward end of the fire-box. The air passing through the doors 11, takes a similar course returning as it reaches the forward end of the furnace and again passing through the side wall of the fire-box where it passes into the passages 14, (in the bridge-wall) and into the rear-end of the fire-box through the openings 9, and 10.

The doors 11 and 12, are arranged with dampers for regulating the supply of air passing through them.

It will be seen that an old furnace of most any construction could easily and cheaply be equipped with our improvement.

The passages or channels 5, and 6, shown in Fig. 3 might be arranged within the side walls of the furnace their entire length in place of passing through the combustion chamber as shown without departing from the spirit of our invention.

We claim—

A steam boiler furnace having its bridge wall provided in its front side with transverse openings, and its side walls provided with horizontal passages leading from the rear end of the furnace, and independent from each other throughout their entire lengths the upper passages leading straight to the front end of the fire box and opening

thereinto, and the lower passages leading
straight from said rear end, then making a
reverse turn, then leading straight rearward,
and then communicating with the openings
5 in the bridge wall, and dampers at the rear
ends of said passages for controlling them
independently, all as and for the purpose set
forth.

In testimony whereof we have signed our
names to this specification in the presence of
two subscribing witnesses.

GEORGE F. GALLAGHER.
THOMAS B. MOORE.

Witnesses:

OTTO HODDICK,
W. T. MILLER.