

(No Model.)

T. B. MOORE.
FURNACE.

No. 526,657.

Patented Sept. 25, 1894.

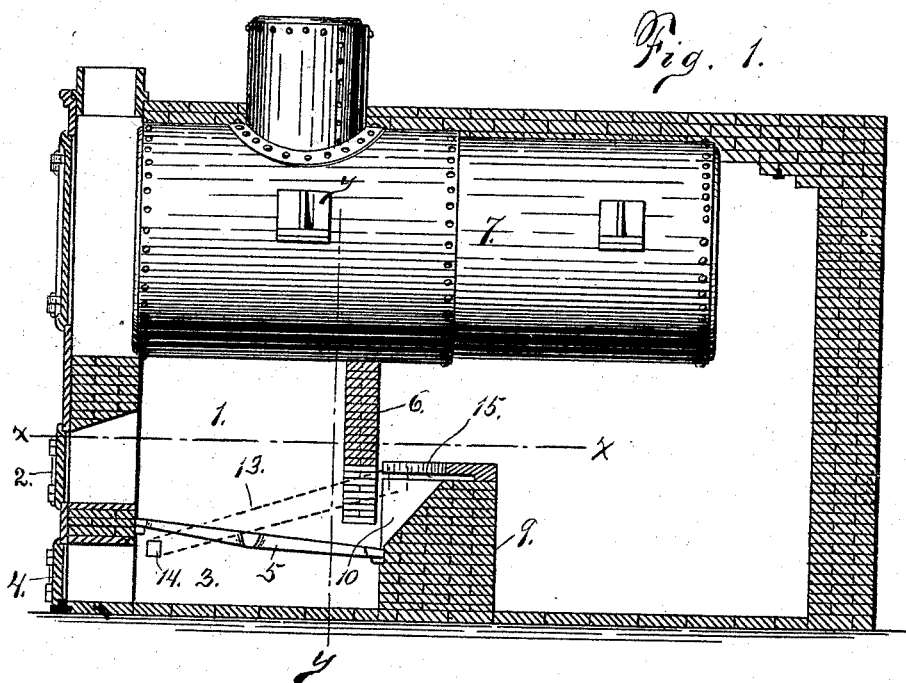
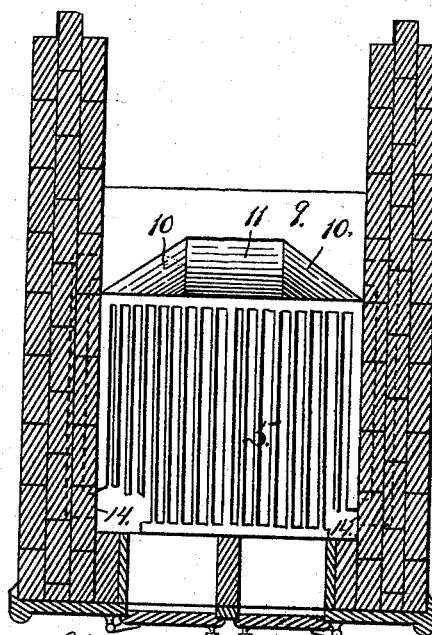
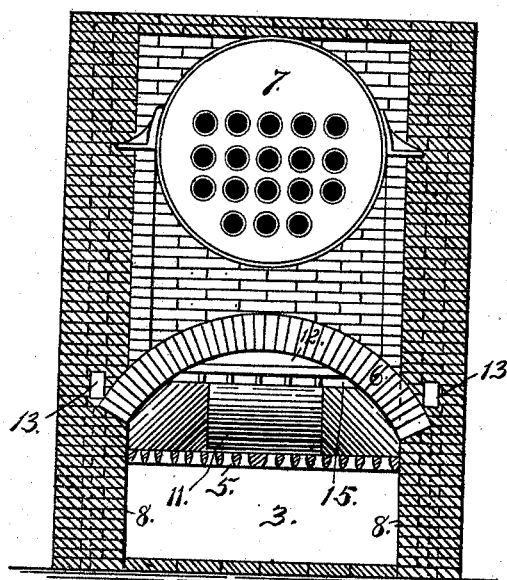
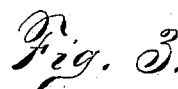


Fig. 2.



Chas. Knechtel Witnesses:
F. P. Norton.

ses: Inventor: Thomas B. Moore.
 By his Attorneys: Miller & Hoddick.

UNITED STATES PATENT OFFICE.

THOMAS B. MOORE, OF ROCHESTER, NEW YORK, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF TWO-THIRDS TO HENRY GALLAGHER AND GEORGE F. GALLAGHER, OF SAME PLACE.

FURNACE.

SPECIFICATION forming part of Letters Patent No. 526,657, dated September 25, 1894.

Application filed February 8, 1893. Serial No. 461,444. (No model.)

To all whom it may concern:

Be it known that I, THOMAS B. MOORE, a citizen 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 I 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.

My invention has for its object the consumption of smoke in furnaces for heating boilers and consists in a certain new and improved location and arrangement of the passages which admit air in a heated state to the combustion chamber in connection with a peculiar formation of bridge-wall by means of which a more perfect consumption of the products of combustion is effected.

I will now minutely describe the manner in which I have carried out my invention and then claim what I believe to be novel.

In the drawings:—Figure 1 is an elevation partly in longitudinal section of my invention. Fig. 2 is a vertical transverse section taken in the line $y-y$ of Fig. 1, and Fig. 3 is a horizontal section taken in the line $x-x$ of Fig. 1.

Referring to the drawings, 1 is the fire-box or combustion chamber with doors 2.

3 is the ash-pit with doors 4, and 5 are the grate-bars.

6 is the arch under the boiler 7 forming the back wall of the combustion chamber 1 and resting upon the abutments 8. 8. The bridge wall 9 is located just in the rear of the arch 6, the back wall of the arch being nearly or quite flush with the front face of the bridge-wall. The front face of the bridge-wall is cut away upon its upper portion above the line where the rear ends of the grate-bars rest in the bridge-wall forming the central rearwardly sloping surface 11 and the two side converging sloping surfaces 10, 10, so as to leave the largest opening directly in rear of the center of the arch 6 and to direct all gases and flames through this opening. This in conjunction with the arch provides a space

or outlet 12 at the rear of the combustion chamber.

13. 13 are passages in the side-walls of the furnace. Their lower ends 14 open into the front of the ash-pit 3. These passages slope upwardly to a point above the abutments 8 of the arch and there communicate on either side with a series of openings 15 around the upper edge of the sloping surfaces 10. 10 and 11, these openings facing the combustion chamber 1.

The object of running the passages up to a point above the abutments of the arch is to avoid any weakening of the abutments which occurs when the passages are run in a horizontal direction under the arch and through the abutments as has been customary in furnaces of the class to which my present invention belongs. The object in having the air passages open into the ash-pit is to enable the fireman to control the draft proper and the air-passages with the ash-pit doors alone, thus dispensing with the outside openings common to furnaces of this class.

In operation when the ash-pit doors are opened, a portion of the air admitted passes up through the grate-bars and fuel in sufficient quantity to cause the proper amount of combustion. The balance of the air passes into the openings 14 in the side-walls of the ash-pit and along the upwardly extending passages 13 where it is heated to a high degree of temperature and is discharged in this highly heated state through the openings 15 in the bridge-wall where it meets the unconsumed products of combustion leaving the fire-box through the passage 12 between the arch and the sloping surfaces of the bridge-wall. An intense heat is produced at this point by the combination of the heated air and the gases carrying the unconsumed particles which serves to practically consume all of these particles at this point. In this manner all the latent heat of the fuel is utilized owing to the perfect combustion produced.

I am aware that passages for the conduction of heated air to the fire-box are old, but to my knowledge none have been used similar to those herein shown, that is, opening into the ash-pit and running to a point above the abutments of the arch either alone or in

connection with the opening formed by the bridge-wall cut away at its top in sloping surfaces, just under and to the rear of the arch. The supply of air to the side passages and for draft purposes regulated simultaneously by the ash pit doors.

I claim—

1. A furnace consisting of an ash pit, a combustion chamber, a grate separating them, an arch over the rear end of the grate, and a bridge wall in rear of the arch rising to a point opposite the highest point of the arch and having at its center a rearwardly sloping surface and each side thereof a rearwardly sloping and centrally inclined sloping surface, the side walls of the furnace having air passages discharging through openings in the upper ends of said sloping surfaces, as and for the purpose set forth.

2. A furnace consisting of an ash pit, a com-

bustion chamber, a grate separating them, an arch over the rear end of the grate, and a bridge wall in rear of the arch rising to a point opposite the highest point of the arch and having at its center a rearwardly sloping surface and each side thereof a rearwardly sloping and centrally inclined sloping surface, the side walls of the furnace having air passages leading from points in the ash pit below the grate and discharging forwardly through openings at the upper ends of said inclined surfaces, as and for the purpose set forth.

In testimony whereof I have hereto set my hand in the presence of two subscribing witnesses.

THOMAS B. MOORE.

Attest:

W. T. MILLER,
O. E. HODDICK.