

B. A. MASON.

Furnaces for Heating Crucibles, Metal, &c.

No. 133,538.

Fig. 1.

Patented Dec. 3, 1872.

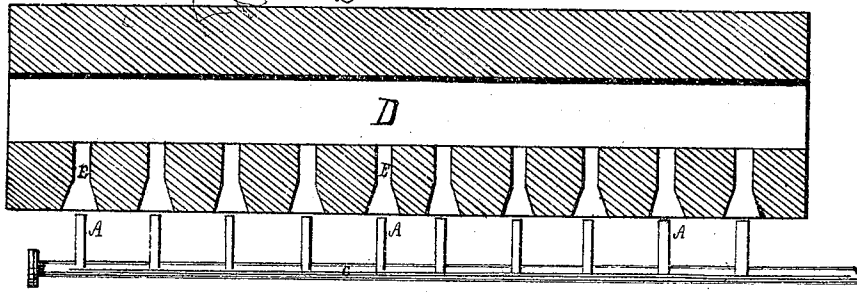


Fig. 2.

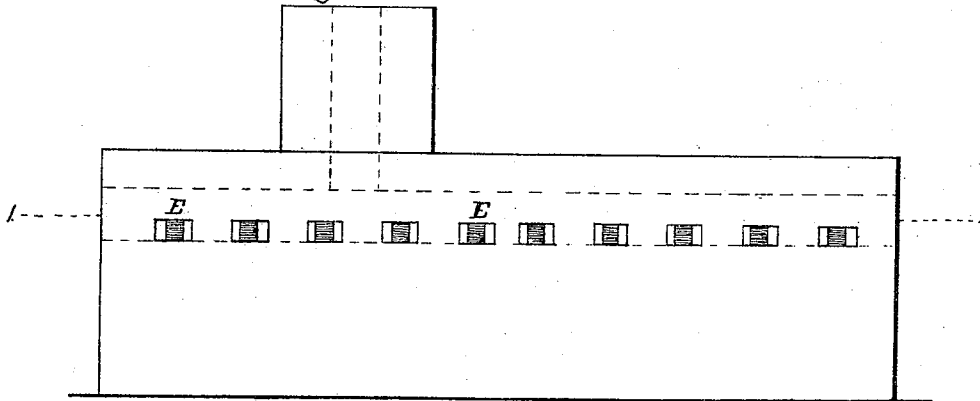
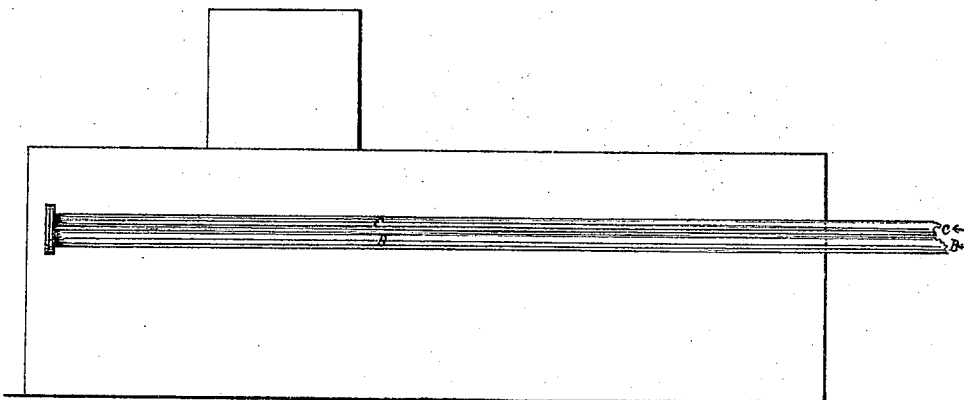


Fig. 3.



Witnesses:
E. M. Gallaher.
R. W. Smith

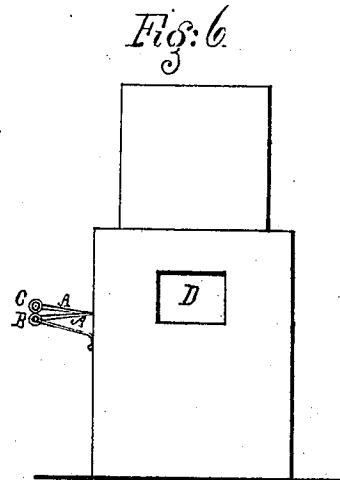
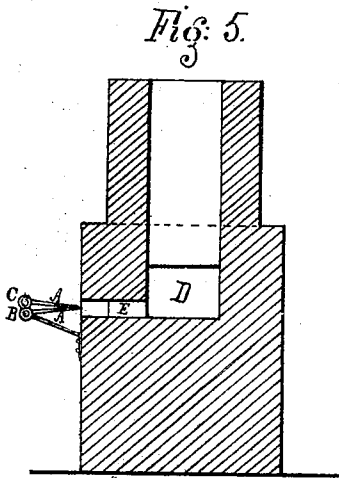
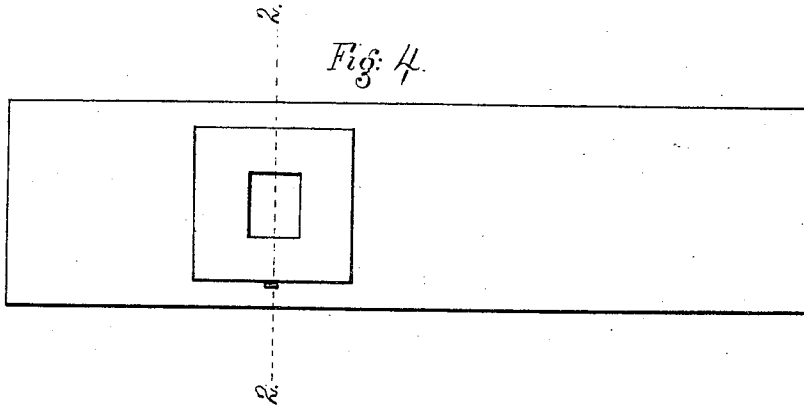
Inventor:
Benjamin A. Mason
By his Att'y,
J. S. Brown.

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P. C. Lyons

Inventor:

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UNITED STATES PATENT OFFICE.

BENJAMIN A. MASON, OF NEW YORK, N. Y.

IMPROVEMENT IN FURNACES FOR HEATING CRUCIBLES, METALS, &c.

Specification forming part of Letters Patent No. 133,538, dated December 3, 1872.

To all whom it may concern:

Be it known that I, BENJAMIN A. MASON, of the city, county, and State of New York, have invented a certain new and useful Improvement in Apparatus for and Method of Heating and Annealing of Metals, for the purpose of reducing and manufacturing the same; and I do hereby declare that the following is a description of the same, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1 is a longitudinal sectional view of a furnace taken through the line 1 1' of Fig. 2. Fig. 2 is a side elevation of a furnace, the blast and gas pipes not being shown in this figure. Fig. 3 is a side elevation of a furnace, showing the longitudinal blast and gas pipes. Fig. 4 is a plan view of the furnace without the pipes. Fig. 5 is a transverse section taken through the line 2 2' of Fig. 4, showing the pipes in position; and Fig. 6 is an end elevation of the furnace.

The same letters indicate like parts in the drawing.

I do not wish to be understood as limiting myself to the use of a furnace of the form shown in the drawing or hereinafter described, as my invention is applicable to all known forms of furnaces used in the heating of metals.

I use gas, carburated or otherwise, to heat the furnace, which I burn in the following manner: I make use of a series of pipes, A, Fig. 1, projecting laterally from two or more pipes placed longitudinally with the furnace. The longitudinal pipes B, Fig. 3, and C, Fig. 3, are placed one above or by the side of the other, generally about six inches from the exterior walls of the furnace. From the pipes B and C a series of short lateral pipes, A, Fig. 1, project inward toward the chamber of the furnace D, Fig. 1, through the spaces or openings E, Fig. 2, the pipes, however, not entering the angular or flaring space at the entrance of the openings, but reaching to within a short distance of the same. The pipes B and A carry the volume of gas, while a blast of air passes through the pipes C and A and mingling with the ignited gas at the mouth of the pipes B and A, drives the burning gas through the openings E into the chamber of the furnace, where it is consumed, maintaining an intense heat, free from sulphur and other deleterious matter so often found to injure metals when present, as in ordinary fuel under combustion.

I am aware that gas has been and is now used for heating of metals, but not in the manner used by me, wherein I ignite the gas at a point near the exterior of the furnace, outside thereof, and apply the blast at the same point, forcing the ignited gas through the ordinary atmosphere into the interior of the furnace, the angular spaces through which the ignited volume passes being of such a form as to induce an additional current of oxygen-supplying air into the furnace where it is consumed, thereby creating an intense heat with less consumption of fuel than can be otherwise obtained.

Since the various burning jets of gas from the main pipe B are readily controlled and adjusted, and the force of the air-blasts from the pipe C is with equal facility regulated, the heat can be applied with any desired power in any or all parts of the furnace, and be varied at pleasure, to suit the various circumstances of each case or occasion. Hence I produce not only intense heat, but such as can be controlled in degree to any extent. The outside open jets of the burner-tubes A A, in addition to their forcing outside air into the furnace to assist the combustion, also enable the force of the flames to be seen at all times from the outside, so as to regulate them the more easily and precisely.

By my invention all description of rods and bars can be reheated for further reduction, while metals treated in crucibles will be much more rapidly smelted by my method than by the manner of heating heretofore used for such purposes.

What I claim, and desire to secure by Letters Patent, is—

1. A series of lateral burner and blast pipes or tubes, A A, projecting from gas and air blast feeding-pipes B C, in combination with a furnace or furnaces, D, provided with openings E E to receive the respective jets of gas and air, substantially as and for the purpose specified.

2. The arrangement of the lateral burner and blast pipes A A outside of and disconnected from the furnace D and opposite to the openings E E thereof, substantially as and for the purpose herein specified.

3. The openings E E having the angular or flaring form, as described, and for the purpose specified.

Witnesses: BENJ. A. MASON.

WILLIAM A. HARDING, Jr.,

J. S. BROWN.