(No Model.)

J. ROBERTS.

FURNACE.

No. 490,774. Patented Jan. 31, 1893.

Fig. 1.

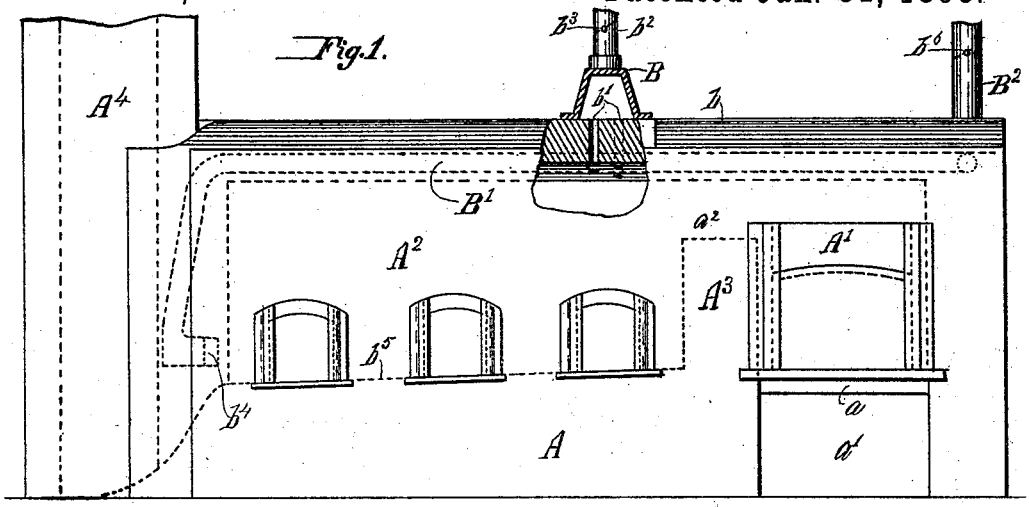


Fig 3

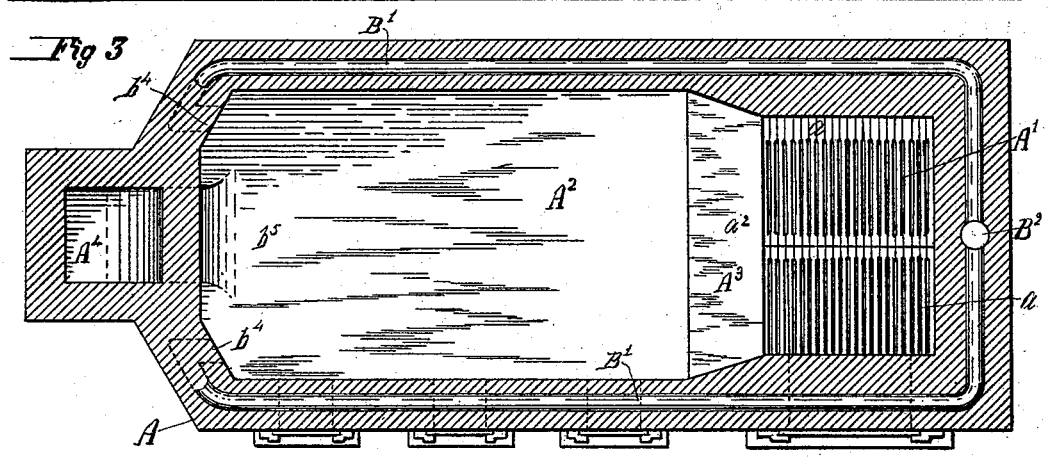
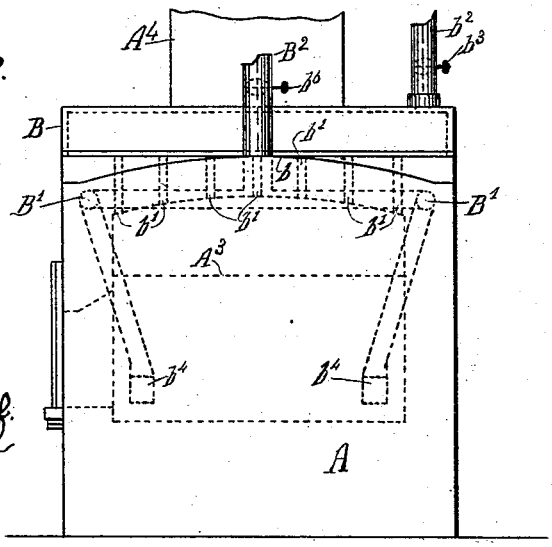


Fig. 2.



WITNESSES:

William Mo. Oliff.

C. R. Ferguson

INVENTOR

Jacob Roberts

BY Edwin H. Brown

HIS ATTORNEY

UNITED STATES PATENT OFFICE.

JACOB ROBERTS, OF CATASAUQUA, PENNSYLVANIA.

FURNACE.

SPECIFICATION forming part of Letters Patent No. 490,774, dated January 31, 1893.

Application filed July 30, 1892. Serial No. 441,695. (No model.)

To all whom it may concern:

Be it known that I, JACOB ROBERTS, of Catasauqua, county of Lehigh, and State of Pennsylvania, have invented a certain new and useful Improvement in Furnaces, of which the following is a specification.

This invention relates to puddling furnaces and it consists essentially of the combination with the furnace of ports or ducts for admitting air or oxygen in the top or roof of the puddling or heating chamber and ports or ducts for admitting air or oxygen to the rear and near the bottom of the puddling or heating chamber.

I have found it an important feature to introduce the air or oxygen at the bottom as well as at the top of the puddling or heating chamber, as it obviates what is generally termed a cutting flame, which is liable to injure the iron or other metal in the furnace.

In the accompanying drawings, Figure 1 is a side elevation of a furnace embodying my improvement. Fig. 2 is an end view. Fig. 3 is a transverse longitudinal section.

Referring by letter to the drawings, A designates the wall or casing of the furnace having the fire chamber A′ in its front end, and the puddling or heating chamber A^2 rearward of the fire chamber. The fire chamber is provided with the usual grate *a* and ash pit *a′*, and a passage for the products of combustion is established between the fire chamber and puddling or heating chamber through the opening a^2 over the bridge wall A^3. The puddling or heating chamber A^2 communicates with an uptake or flue A^4.

Having described the general construction of a furnace, I will now describe my invention as connected therewith.

B designates an air or oxygen box, here shown as extending across the roof *b* of the furnace. Ports *b′* extend through the roof *b* and provide a passage for air or oxygen to the chamber A^2. The ports *b′*, it will be observed, enter the puddling or heating chamber some distance rearward of the bridge wall A^3 and direct the air or oxygen directly downward into the puddling or heating chamber. Air or oxygen may be introduced under suitable pressure through a pipe b^2 entering the box B and provided with a suitable valve b^3. Other streams of air or oxygen are forced under suitable pressure, into the puddling or heating chamber A^2 through ports or ducts b^4. These ports or ducts b^4 enter the chamber A^2 through its rear wall and near its bottom b^5, adjacent to the uptake. The ports or ducts b^4, as shown herein, may communicate with pipes or flues B′ extending along the upper part of the furnace and down the rear portion, in which event the air or oxygen will be heated before it is admitted to the chamber A^2. The pipes or flues B′ will communicate with a suitable supply apparatus through the pipe B^2 provided with a cut off valve b^6.

Having described my invention, what I claim, is:

1. A furnace having a fire chamber and puddling or heating chamber partially separated by a bridge wall, ports or passages for air or oxygen communicating with the puddling or heating chamber at its top and rearward of the bridge wall, and arranged to direct the air or oxygen directly downward into the puddling or heating chamber, and ports or passages for air or oxygen communicating with the rear portion of said puddling or heating chamber near its bottom, substantially as specified.

2. A furnace having a fire chamber and puddling or heating chamber, partially separated by a bridge wall, ports or passages for air or oxygen communicating with the puddling or heating chamber at its top and rearward of the bridge wall, and arranged to direct the air or oxygen directly downward into the puddling or heating chamber, ports or passages communicating with the rear portion of said puddling or heating chamber near its bottom and pipes or flues extending along the walls of the furnace and communicating with said last named ports or passages, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JACOB ROBERTS.

Witnesses:

T. F. FREDERICK,

C. O. FULLER.