C. G. BEST.

Roasting Ores.

No. 9,227. Patented Aug. 31, 1852.

Fig. 2.

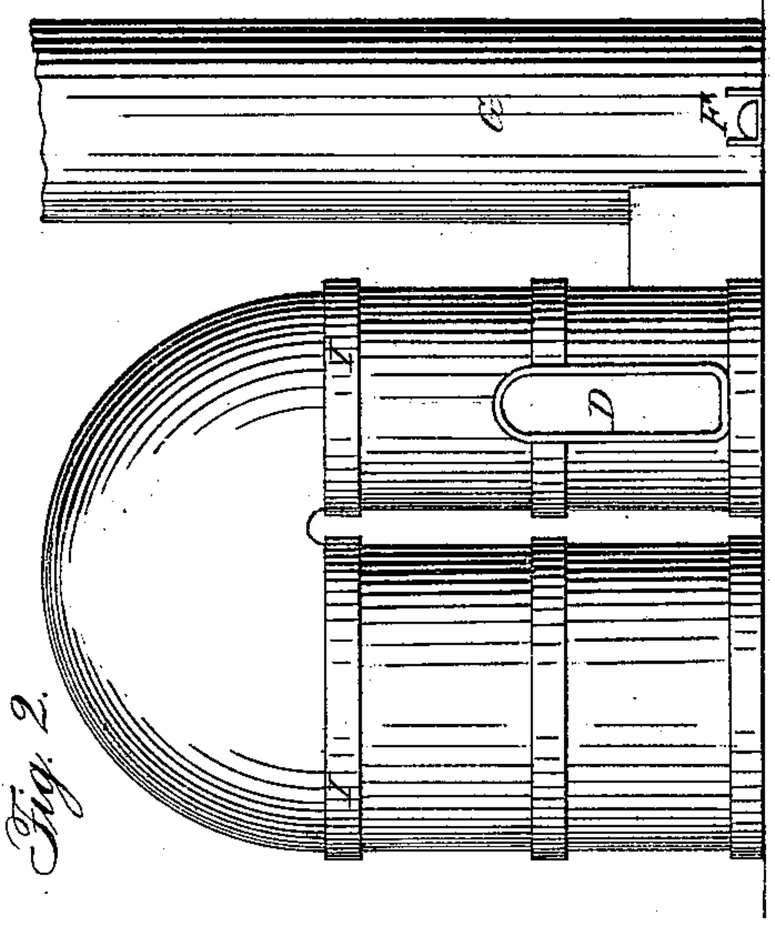


Fig. 1.

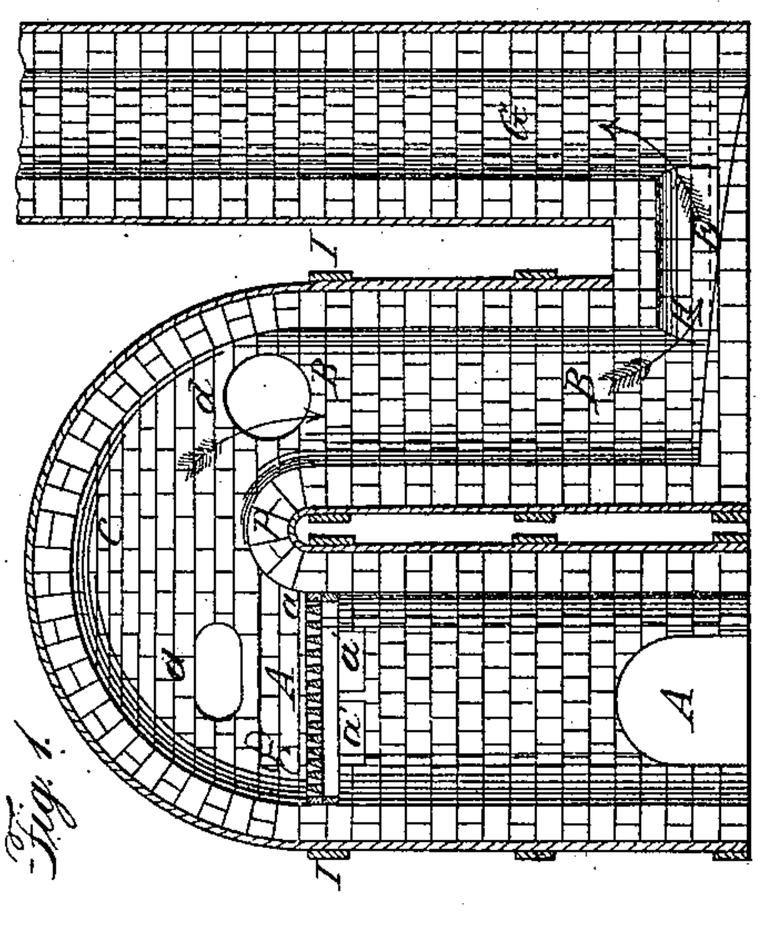
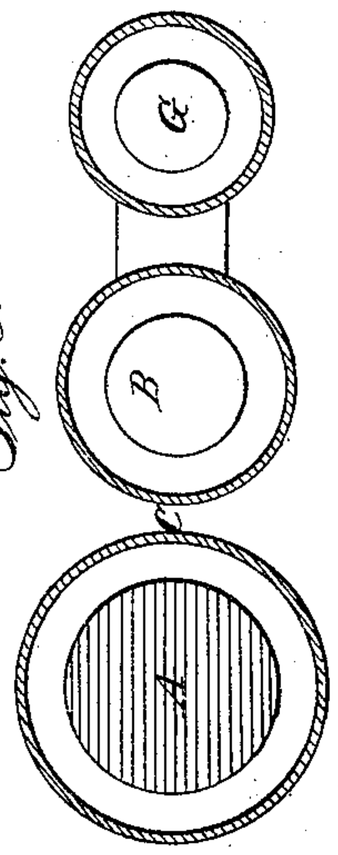


Fig. 3.



UNITED STATES PATENT OFFICE.

CHRISTOPHER G. BEST, OF ALBANY, NEW YORK.

IMPROVED REVERBERATORY FURNACE.

Specification forming part of Letters Patent No. **9,227**, dated August 31, 1852.

To all whom it may concern:

Be it known that I, CHRISTOPHER G. BEST, of the city and county of Albany, and the State of New York, have invented certain new and useful Improvements in Reverberatory Furnaces for Smelting Iron or other Like Metal; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a vertical elevated section. Fig. 2 is a back view of the furnace, and Fig. 3 is a plan view.

The same letters refer to like parts in all the figures.

The nature of my invention consists in constructing a furnace for smelting metal in such a manner that the fire-chamber is separate from that in which the metal is placed, and is placed above but near to the metal, and the flame and heat from the fuel in a state of combustion made to act upon and pass down through the whole of the metal in the furnace, thus enabling the heat to act more evenly and to be more thoroughly diffused throughout the whole stack of metal in the furnace than is done in any of the furnaces in common use.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A is the furnace for the fuel. The coal is placed in the grate *a*, and the small doors *a' a'* below the grate are for the purpose of clearing the ribs of clinkers, &c.

A' is an aperture at the bottom of the furnace-stack, to admit air. The stack of the furnace is circular, and hollow below the ribs *a*. The air, as it passes up through the space below the ribs, absorbs all the heat radiated from the bottom of the grate and enters the furnace in a highly-heated state.

B is the chamber in which the metal to be smelted is placed. It is a circular stack, and is separated from the fuel by the non-conducting partition P. The metal, &c., is piled up in the chamber B B, and brought near to but entirely separated from the fuel in A. The furnace A and the metal-chamber are united together and in open communication above, being covered with the same arch, C. There is a door, *d*, above the grate to feed in the fuel, and a door, *d'*, at the top of the chamber B B to feed in small pieces of iron. In Fig. 2 there is a large door, D, on the back of the furnace, for the workmen to go into the stack and pile up the heavy pieces of metal. The bottom of the metal-chamber is inclined at E, on which incline the molten metal flows down, and can be removed at the outlet-door F. The metal-chamber is connected with the smoke or escape chimney G, and the escaping gases pass through an opening, H, above the incline E, and then pass up the chimney, as indicated by the arrows. The interior of the furnace is all lined with fire-brick, and the outside is covered with iron and well banded by the bands I I I. As the flame acts upon the whole surface of the metal, and as the heat acts upon the whole body of metal equally when passing through it, the whole mass of metal is more equally exposed to the heat; consequently the action of the heat upon the metal is more uniform and perfect than in any furnace now in use. The construction of this furnace also allows of its being charged at intervals like a cupola-furnace. Its form allows its being well bound, thus enabling it to work with the economy as well as the convenience of the cupola-furnace. It can be used either as a draft or a blast furnace. The metal can be smelted with any desirable flux, if necessary, or merely for the purpose of reducing it to a molten state. The heated products of combustion in a state of flame or gas are alone applied to reduce the metal in the chamber B. Therefore the smelter has complete command over his metal, to reduce it as he chooses in the manner which he considers most appropriate.

The advantages of this improvement in furnaces are very great, and will be the means of greatly benefiting those employed in the manipulations of smelting and casting iron.

The above may be built of a square form, if desired; but the circular form is the best.

Having thus described my invention, I claim—

The reverberatory furnace constructed as described, the fuel, with the fire-box A, being above the metals to be melted in the chamber B, and bringing the flame and heated products of combustion vertically down through the metals in the chamber B, in the manner and for the purposes set forth.

CHRISTOPHER GUY BEST.

Witnesses:
S. H. H. PARSONS,
CHARLES FERGUSON.