R. Boehm.

Smelting Furnace.

No. 90,228. Patented May 18, 1869.

Witnesses.
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RUDOLPH BOEHM, OF CHICAGO, ILLINOIS.

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IMPROVED SMELTING-FURNACE.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, RUDOLPH BOEHM, of Chicago, in the county of Cook, and State of Illinois, have invented a useful Improvement in the Construction of "Smelting-Furnaces;" and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, and letters marked thereon, making a part of this description, in which—

Figure 1 is a longitudinal sectional elevation of my improved furnace.

Figure 2, a horizontal section of the same, taken on line *x x*, fig. 1.

Figure 3, a transverse section, taken on the line *z z*, fig. 4.

Figure 4, a longitudinal elevation.

The present invention relates to an improvement in the construction of that class of furnaces which is designed more especially for melting the precious metals, and thereby separating them from pulverized quartz, silica, &c.; and

Its nature consists in the peculiar form of the arch, smelting-pan, and their arrangement relative to the other parts, as hereinafter fully described.

A represents a casement, which is either made of brick, or other suitable material, firmly clamped together by means of bands of iron, P P, &c.

In one end of the casement is arranged a fire-box, S, which has the ordinary grates J, figs. 1 and 2, for a bottom, placed in such position as to allow ashes to be removed by means of an opening, K, and a blast-pipe, I, to be placed below it.

The casement A, surrounding the fire-box, is protected from the intense heat that it would otherwise be subjected to, by concrete, as shown at B B S', made of any well-known substance used for a like purpose.

A smelting-pan, consisting of a metal outside, L, and a concrete lining, E, is fitted closely into the case A, and its upper edge is so covered with concrete, which overlaps the inner wall B of the fire-box, as to fit closely against an arched cap, C.

This cap has a peculiar form, as shown in the drawings, being concave at the under side, and convex at the top, the concave part terminating in a flue, W, at one end, for the escape of smoke, as shown at figs. 1 and 3.

The object of making the cap in this form is to provide a large heating-chamber in the region of the pan E L, and at the same time bring the heat down as closely as possible to the pan before it escapes.

It will be seen from this description that the smelting is done by means of bringing the heat directly over the top of the ore, instead of bringing it underneath the smelting-receptacle, as is generally done.

By means of this construction and arrangement, an operator is enabled to draw off the metal from the pan, through a hole, F, made for this purpose, an open space, G, being left in the casement A, for the convenience of placing a mould or kettle under the hole F, to receive the molten metal as it flows out.

For large furnaces, the cap C will necessarily have to be made of fire-brick, well cemented together, and so laid as to have the joints tight, one end of the arch resting on the lining of the fire-chamber, and the sides on shoulders at the sides of the pan, and projecting on to its edges N, as shown at figs. 1 and 3.

When, however, the furnace is small, the cap C can be cast from fire-brick clay, properly burned, and then placed in position, similar to the one shown.

In either event, a hole, D, should be made through the top, to supply the pan with ore, or crushed rock, as the case may be, and one or more openings, H, on each side, for the convenience of working off charges.

The operation is quite simple, requiring only that the ore be put into the pan, by means of the hole D, and then subjected to such heat from the fire-box S as is necessary to melt the metal therein, taking the precaution to close the holes H D, during the heating-process, with clay, or other material used for a like purpose.

The blast through the pipe I is produced in the usual manner.

When the cap is in one piece, it can be readily removed, for cleaning the pan, repairing, &c.

Having thus fully described my invention,

What I claim, and desire to secure by Letters Patent of the United States, is—

The peculiar construction of the cap C, when operated in combination with the casement A, fire-box S, pan E L, as described.

RUDOLPH BOEHM.

Witnesses:

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