O. LUMAGHI.

Zinc Smelting-Furnace.

No. 196,369. Patented Oct. 23, 1877.

Fig: 1.

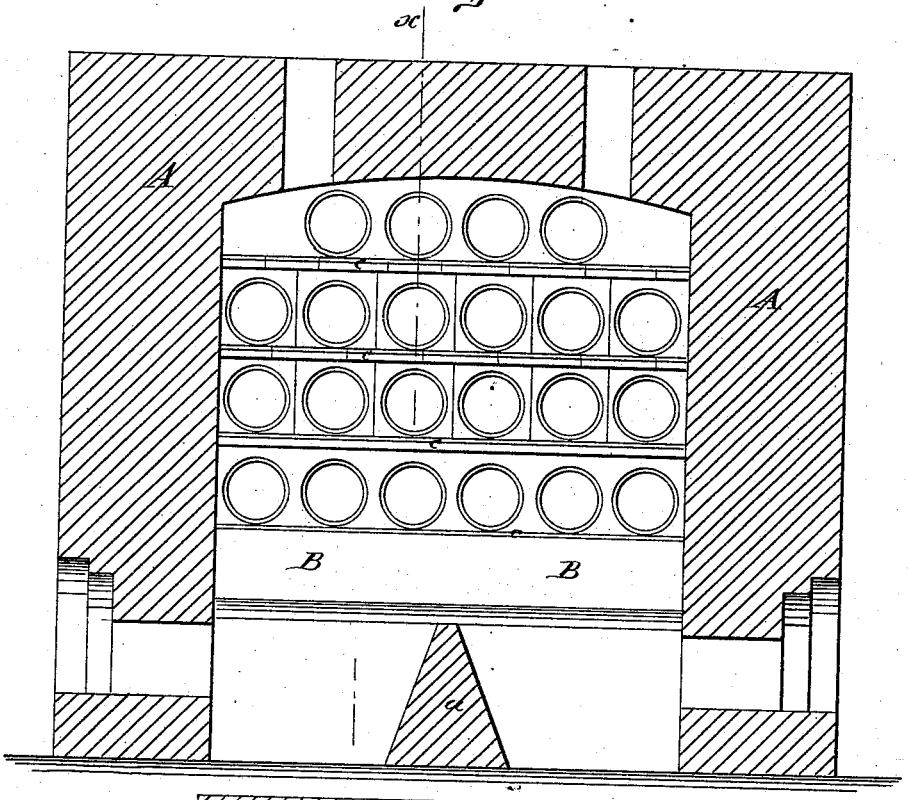
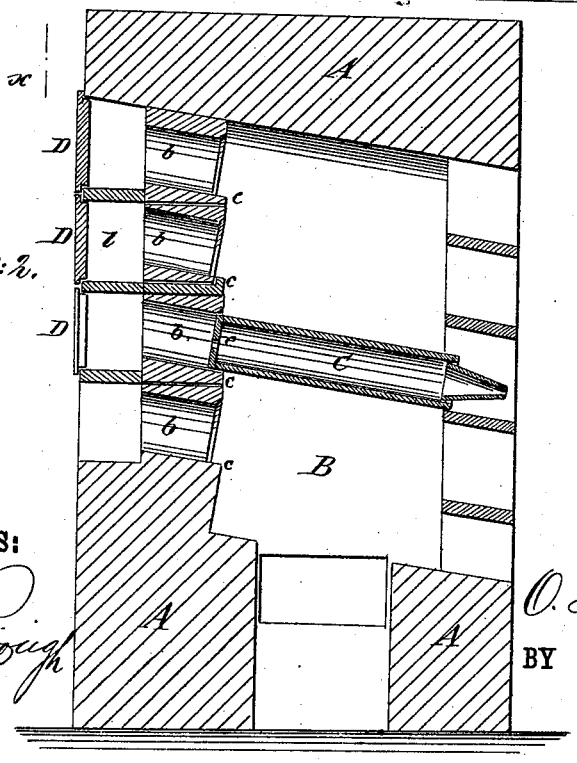


Fig: 2.



WITNESSES:

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BY

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UNITED STATES PATENT OFFICE.

OCTAVIUS LUMAGHI, OF COLLINSVILLE, ILLINOIS.

IMPROVEMENT IN ZINC-SMELTING FURNACES.

Specification forming part of Letters Patent No. **196,369,** dated October 23, 1877; application filed June 11, 1877.

To all whom it may concern:

Be it known that I, OCTAVIUS LUMAGHI, of Collinsville, county of Madison, and State of Illinois, have invented a new and Improved Zinc-Smelting Furnace, of which the following is a specification:

This invention has relation to furnaces which are designed for smelting the ores of zinc; and the nature of my invention consists in constructing the back wall of the furnace with holes through it, which are provided with removable plates, in combination with retorts which have perforations through their butt-ends, for allowing a circulation of air in them when desired, as will be understood from the following description.

My object is to obtain more satisfactory and economical results in the smelting of the ore by obtaining all that can be got in the ordinary way in the shape of spelter, and then to obtain all the zinc which remains in the retorts in the form of oxide.

In the annexed drawings, Figure 1 is a vertical section taken longitudinally through a zinc-smelting furnace. Fig. 2 is a vertical transverse section through the furnace.

Similar letters of reference indicate corresponding parts.

The letter A designates the wall of a furnace, which is made of masonry in the usual manner. B B designate the combustion-chambers or furnaces on opposite sides of a ridge, *a*. The products of combustion are carried off through flues leading out of the arch of the furnace, in the usual well-known manner. The front wall of the furnace is constructed with suitable openings for the introduction and removal of the retorts, and with supports for the front ends of the retorts, strengthened by metal bars. The back wall of the furnace has openings *b* through it, adapted to freely receive the butt-ends of the retorts, which openings flare inward to facilitate the introduction of the retorts, and along each row of openings or cells *b* is a horizontal supporting-shelf, *c*. The outer ends of the openings *b* are provided with caps D for closing them, which caps are removable. This perforated back wall is composed, principally, of blocks of refractory clay held in place by metal bars. C C designate the retorts, which are made of refractory clay, and are of cylindrical or other suitable form, with perforations *e* through their butt-ends.

The retorts in the furnace are supported in inclined planes, as in all furnaces constructed on the Belgian plan.

The object of the perforation *e* in each retort and through the back wall of the furnace is to obtain a draft of air through the retort when wanted. Previous to charging the retorts the perforations *e* are luted closely, and the process of reducing the ore is carried on in the ordinary manner until the free metal is removed; then, by opening the retorts and the wall of the furnace, drafts of air will circulate through them and carry off the remaining zinc in the form of an oxide. This will be collected in suitable receptacles behind the furnace until the contents of all the retorts are completely exhausted.

By this process I save the amount of metal that cannot be drawn as spelter, which is oftentimes considerable.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

The combination, with a furnace having holes covered by removable plates in the back wall, of the retorts having their butt-ends perforated, as and for the purpose specified.

OCTAVIUS LUMAGHI.

Witnesses:
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