

UNITED STATES PATENT OFFICE.

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ORE-ROASTER.

SPECIFICATION forming part of Letters Patent No. 365,393, dated June 28, 1887.

Application filed January 19, 1886. Serial No. 189,039. (No model.)

To all whom it may concern:

Be it known that I, VICTOR LORD, a citizen of the United States, residing at Odessa, in the county of New Castle, State of Delaware, have
5 invented a new and useful Improvement in Ore-Roasters, which improvement is fully set forth in the following specification and accompanying drawings, in which—

10 Figure 1 represents a partial end elevation and partial transverse section of an ore-roaster embodying my invention. Fig. 2 represents a longitudinal vertical section thereof.

Similar letters of reference indicate corresponding parts in the two figures.

15 My invention consists of an apparatus for roasting ores, the same being effective in operation and of comparatively inexpensive construction, as will be hereinafter fully set forth.

Referring to the drawings, A represents a
20 furnace having a series of pans, B, which are arranged side by side and one above the other, said pans communicating with each other alternately at opposite ends and containing spiral conveyers C, which are rotated in any suitable
25 manner.

D represents elevators, which, by means of chutes E, are in communication with the lowest series of pans B, and have their upper ends so disposed that they discharge their loads into
30 the top series of pans.

At one end of the furnace A is an elevator, F, for supplying the pans with ore, and at the top of the furnace are spiral conveyers, G H, below which is a hopper, J, having branches K,
35 which discharge into the lowest series of pans.

The conveyers C are each formed of a spiral tube, C', which is connected with a central shaft, C'', by means of tubular branches, C'', said shaft being tubular, whereby water may
40 be admitted into the shaft, and as the spiral tube C' and the branches C'' are in communication with each other and with the shaft the water flows into said spiral tube and branches, thus serving to cool the conveyor.

45 When the ore is raised by the elevator F, it is supplied to the conveyor G and the conveyor H, and distributed by the latter to the hopper J, and so fed to the lowest series of pans, where the ore is "fired" by means of coal, wood, or
50 other fuel placed on the pans B, and by means of the spiral conveyor in said pans carried to the chute E, whereby it is taken up by the ele-

vator D and deposited in the top series of pans. The ore is carried to the pans and is discharged from the pans just above the lowest tier or series thereof, a spout, L, being provided for
55 such purpose.

The furnace has a chimney, M, so that a proper draft is maintained, and as the ore is in a state of ignition as it passes through the
60 several pans and is stirred by the conveyers, it is evident that the roasting is effectively accomplished. This action is increased by the location of the terminal series of pans above the bottom series, whereby said discharge series
65 are heated by the intense heat of the bottom series, the heat of the pans being generally communicated to each other.

It will be seen that the apparatus is comparatively inexpensive, and may be easily op-
70 erated and will be found admirably adapted for burning or roasting the various ores of silver, copper, zinc, &c., so as to remove the sulphur therefrom. The ore is directed by the
75 spout L to a spiral conveyor, L', by which it is deposited in a tank or other receptacle, as at N.

I do not limit myself to the arrangement of the pans side by side, nor to the number of series, as the same may be varied as desired.

The shelves or pans are preferably formed
80 of tile; but any suitable material may be employed for the same.

I am aware that it is not new to construct an ore-roaster having a series of pans placed one above another or alongside of each other,
85 and having mechanism whereby the ore may be carried along the pans and from one to another thereof, and finally discharged from the lowest one of the series, the interior of the roaster being heated by means of a furnace
90 located either beneath or at the side of, but outside of, said pans. Such constructions are old; but in the mechanism described herein, and shown in the accompanying drawings, the furnace or fire-pot as a separate construction
95 is not employed, the pans being heated by fuel introduced into the lower pan of each series by means of openings P in the front walls of the apparatus, the said fuel mixing with the
100 ore; or the fuel may be introduced with the ore and ignited by means of material inserted at the said openings P. To prevent the too rapid wear and destruction of the conveyers by the same becoming overheated, new means

are used, as described, whereby the conveyers are cooled and thereby preserved. Neither am I aware that ore-roasters have been constructed in which the ore is first emptied into the lowest one of a series of pans and therein heated before it is conveyed to the top one of the series by the elevators, it finally being discharged from the next to the lowest of the series. By this arrangement the ore, by being first heated before passing into the elevator, is in condition to permit the escape of the sulphur therefrom while being agitated in the elevator. This construction also permits economy of space and simplicity of parts, as can readily be seen.

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

1. A roasting-furnace having a series of hearths located one above the other, alternately communicating at opposite ends, the lowest hearth having a chute leading there-

from, and elevator and chutes leading from said lowest hearth to the top one thereof, and a spout leading from the hearth adjacent to the lowest one of the series, all substantially as 25 and for the purpose set forth.

2. A roasting-furnace having the conveyers G H and hopper J below the said conveyers, a series of hearths alternately communicating at opposite ends, the said hopper J leading to the lowest one thereof, conveyers C in said hearth, and means to operate the same, substantially as described, the elevator D, and chutes E, communicating between the lowest and top hearths, and spout I, leading from 35 next to lowest hearth to the outside of the furnace, all substantially as described.

VICTOR LORD.

Witnesses:

JOHN A. WIEDERSHEIM,
A. P. GRANT.