No. 702,526. Patented June 17, 1902.

A. J. ASH.

SPELTER FURNACE.

(Application filed Feb. 3, 1902.)

(No Model.) 2 Sheets—Sheet 1.

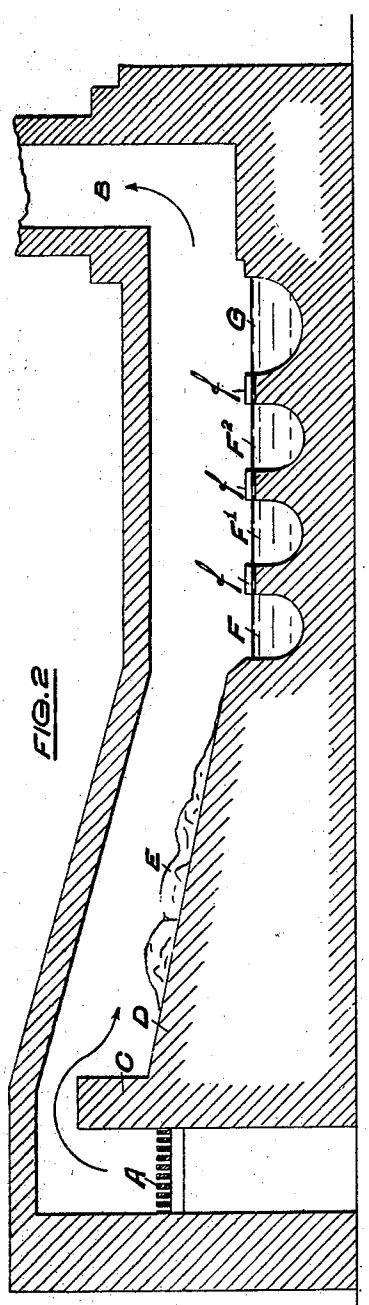

FIG. 2

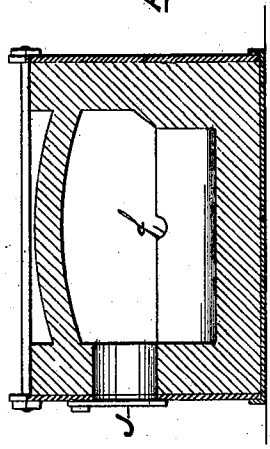

FIG. 3

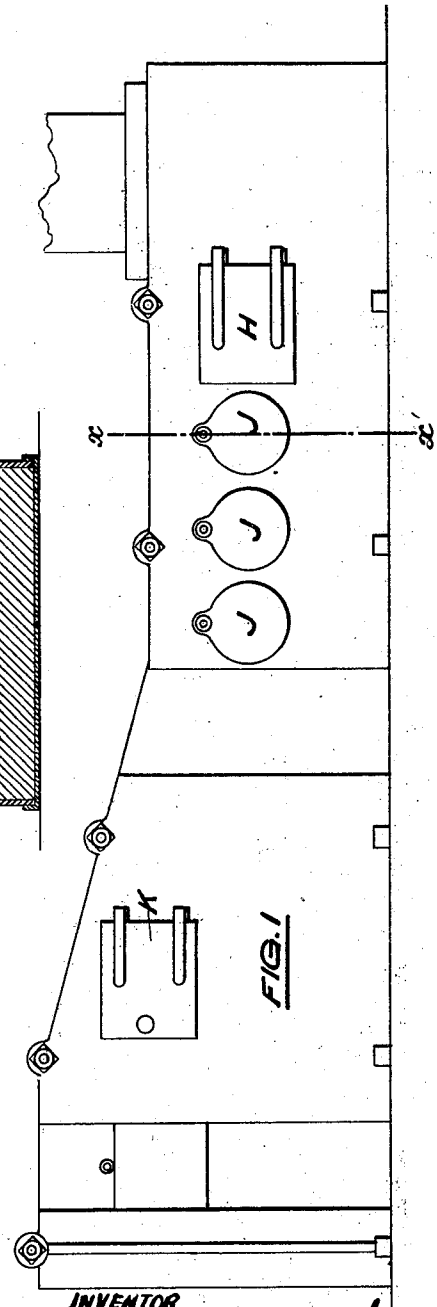

FIG. 1

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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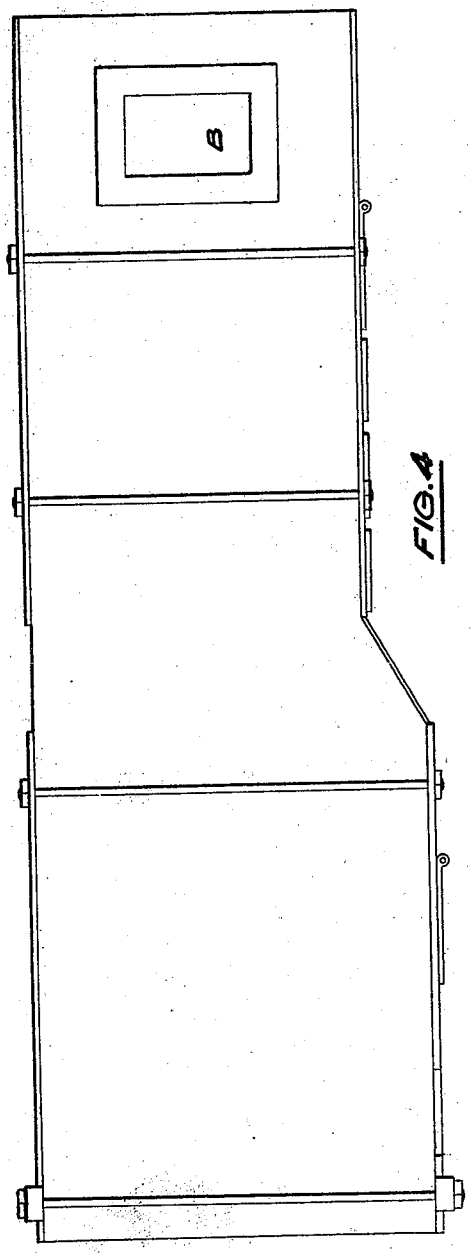

FIG. 4

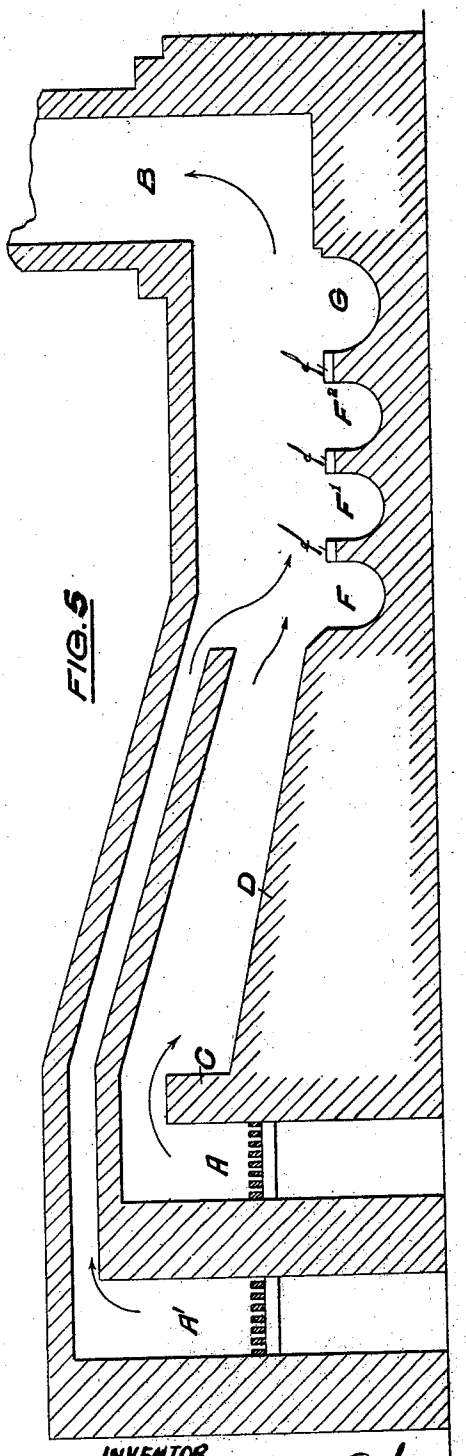

FIG. 5

WITNESSES:
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UNITED STATES PATENT OFFICE.

ALFRED JAMES ASH, OF PETERSWOOD, ENGLAND.

SPELTER-FURNACE.

SPECIFICATION forming part of Letters Patent No. 702,526, dated June 17, 1902.

Application filed February 3, 1902. Serial No. 92,372. (No model.)

To all whom it may concern:

Be it known that I, ALFRED JAMES ASH, a subject of the King of Great Britain and Ireland, and a resident of Barnt Green, Peterswood, in the county of Worcester, England, have invented certain new and useful Improvements Relating to Spelter-Furnaces, of which the following is a specification.

This invention consists of improvements relating to spelter-furnaces whereby I am enabled to readily and economically refine what is known as "hard spelter" or the alloy of zinc and iron obtained as a waste product from the ordinary galvanizing-baths in which iron or steel plates or sheets and other articles are galvanized or coated with zinc.

Referring to the two accompanying sheets of explanatory drawings, Figure 1 is a side elevation, and Fig. 2 a sectional side elevation, of a furnace constructed in accordance with my invention. Fig. 3 is a sectional end elevation on the line X X′, Fig. 1. Fig. 4 is a plan of the furnace. Fig. 5 is a sectional side elevation of a modified form of my furnace.

The same reference-letters in the different views indicate the same parts.

Referring to Figs. 1, 2, 3, and 4, it will be seen that the furnace is of the reverberatory type, having a single fire-grate A at the one end and the chimney B at the opposite end. Adjacent to the fire, but on the chimney side of the bridge C, is the inclined melting or liquation-bed D, on which is placed the hard spelter E. Beyond the said inclined bed D, I arrange the refining pits or chambers, as F F′ F^2, communicating with each other and with the collecting pit or chamber G through the troughs, as *f*, formed through the upper ends of the dividing-walls of the chambers. The flame and hot gases from the fire-grate A pass through the furnace in the direction indicated by the arrows and by the heat therefrom the zinc is melted or liquated from the hard spelter and caused to run down the inclined bed D into the refining-pits. The impurities carried down with the metal accumulate in the respective refining-pits, as F F′ F^2, through which the metal passes as it flows to the collecting pit or chamber G, from whence it is ladled or otherwise removed on the opening of the door H. The slag or impurities accumulating in the respective refining-pits F F′ F^2 can be readily removed on opening the doors or covers, as J. The hard spelter is introduced to the furnace through the aperture covered by the door K and through the same aperture the solid impurities left on the liquation-bed D can be removed.

In the modified form of furnace illustrated at Fig. 5 I employ two fire-grates, as A A′, the additional grate A′ being arranged, as illustrated, for the prevention of oxidation of the metal in the pits.

I do not limit myself to any particular number of refining pits or chambers nor to the shape and arrangement of the same and of the collecting-pit herein described and illustrated.

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

1. A reverberating furnace for refining hard spelter comprising an inclined liquation-bed, a fire-grate discharging hot products of combustion into direct contact with said liquation-bed, said inclined liquation-bed having an unobstructed lower edge and a plurality of refining and collecting pits adjacent to said lower edge, substantially as described.

2. A reverberating furnace comprising a plurality of refining and collecting pits, an inclined liquation-bed sloping downwardly to said pits, a fire-grate adjacent to the elevated end of said liquation-bed and discharging hot products thereon and a second fire-grate separated from said first-named grate and discharging its products directly into proximity to the pits, substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

ALFRED JAMES ASH.

Witnesses:

EDWARD MARKS,

HERBERT BOWKETT.