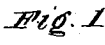


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Inventor

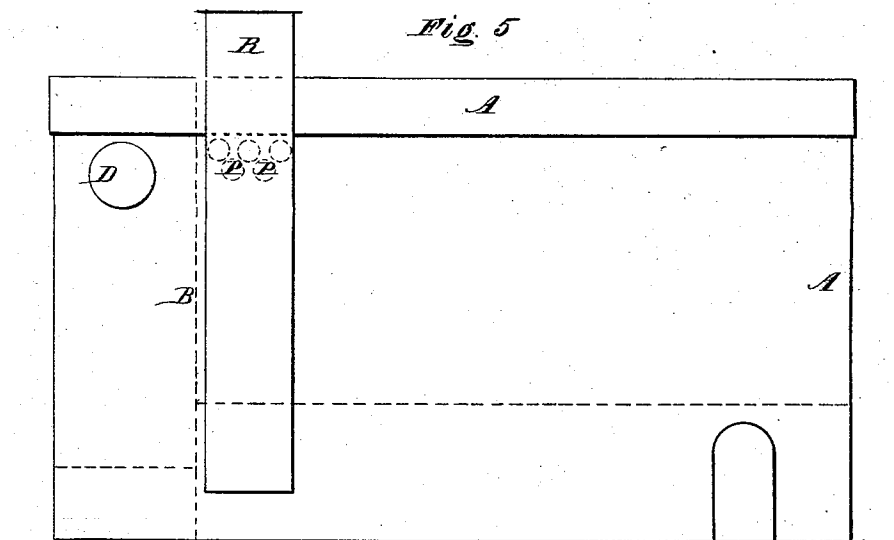
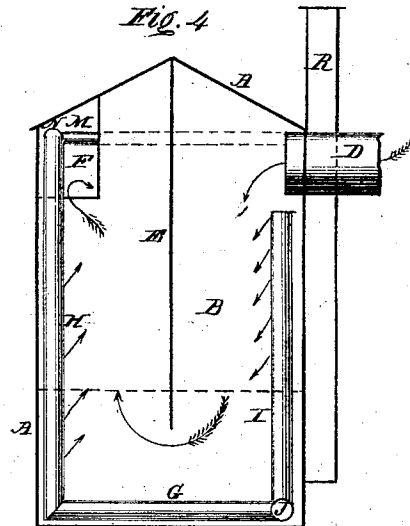
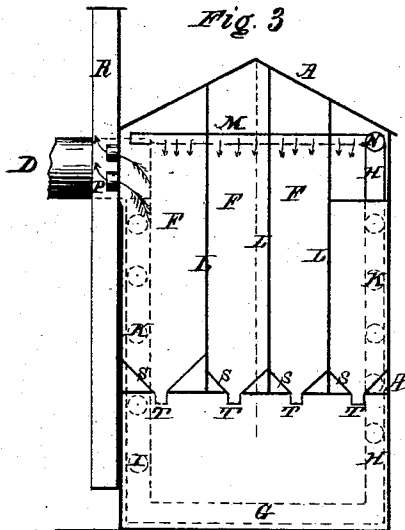
Jonathan G. Trotter
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Apparatus for Condensing and Collecting White Zinc.

No. 145,976.

Patented Dec. 30, 1873.



Witnesses

Charles L. Barritt
 Pietro. W. Finch

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UNITED STATES PATENT OFFICE.

CHARLES W. TROTTER, OF BROOKLYN, NEW YORK, ADMINISTRATOR OF
JONATHAN G. TROTTER, DECEASED.

IMPROVEMENT IN APPARATUS FOR CONDENSING AND COLLECTING WHITE ZINC.

Specification forming part of Letters Patent No. **145,976**, dated December 30, 1873; application filed December 5, 1873.

To all whom it may concern:

Be it known that JONATHAN GEORGE TROTTER, late of the city, county, and State of New York, deceased, did in his lifetime invent certain new and useful Improvements in Apparatus for Condensing and Collecting the Vapors of Zinc, or what is commonly called the white oxide of zinc, of which the following is declared to be a full description.

The nature of the said invention consists, first, in the construction of the collecting-house, having a series of chambers, or flues, or passage-ways therein, whereby the vapors of the zinc will be thoroughly cooled and condensed before escaping therefrom; second, in combining with the said chambers, flues, or passage-ways, a series of air-pipes, whereby currents of atmospheric air can be commingled with the zinc vapor, to oxidize it, and thus cause it to deposit in the chambers or flues of the apparatus; and third, in combining with the said flues a trough-shaped floor, with outlets therefrom, whereby the oxide of zinc may be collected and withdrawn from the flues automatically.

But to describe the said invention more particularly, reference will be made to the accompanying drawings forming a part of this specification, the same letters of reference wherever they occur referring to like parts.

Figure 1, Sheet 1, is a plan view of the apparatus on a line with $x x$, Fig. 2, Sheet 1. Fig. 2, Sheet 1, is a vertical cut section of the same through the line $x^2 x^2$, Fig. 1, Sheet 1. Fig. 3, Sheet 2, is a vertical cut section of the apparatus through the line $x^3 x^3$, Fig. 1, when looking toward the front end of the apparatus. Fig. 4, Sheet 2, is a vertical end view of the apparatus, having the front wall removed. Fig. 5, Sheet 2, is a side view of the building or apparatus.

Letter A represents the external walls and roof of the building. The walls are intended to be made of brick, and roofed with iron plates. Of course wood or other material suitable for such purposes may be used, and therefore the invention is not confined to the use of brick and iron in the construction of the building; nor is the invention limited to the pre-

cise proportions or dimensions of the building and parts thereof, as shown in the drawings, as size and proportions will be governed entirely by the number of furnaces operated with in vaporizing the zinc. In the front end of the building is formed a subdivision by the partition B, called the receiving-chamber C, into which, at or near the eaves of the roof, the vapors of zinc are discharged through the pipe D. For the purpose of separating any foreign matters carried over with the vapors of zinc from the furnace, a deflector, E, is suspended from the peak of the chamber, entirely across the chamber, and to within a few feet of the chamber floor. The object of this is to cause the vapors of zinc to follow the course indicated by the arrows in Fig. 4, Sheet 2, and thus cause the foreign matters to separate therefrom before escaping from the upper corner of the partition B into the condensing and collecting chambers or flues F. For the purpose of facilitating the separation of the foreign matter from the vapor of zinc, a series of atmospheric air-pipes, G, H, and I, are arranged across the front of the chamber and its ends, and is supplied with a blast of air through the induction-port J. On entering the induction-port it passes into the transverse horizontal pipe G, and thence up the end pipes H and I into the branch pipes K, from which it escapes through vents, as shown by the arrows, to commingle with the gas to cool it. Thus, in the first compartment of the reception-chamber, the branch pipes discharge the currents of air downward, as indicated by the arrows, while in second compartment thereof the branch pipes discharge the currents of air upward, as indicated by the arrows.

The object of thus supplying the jets of air in the direction of the flow of the zinc vapors is, first, to cool it so as to cause the deposit of any heavy foreign matter mechanically carried along with the current of zinc vapor; and second, to assist in oxidizing the vapor, and thereby convert it into a perfect oxide of zinc, and at the same time, by the direction of the jets of air, help to strengthen the pressure of the current of zinc vapors that it may be carried throughout the length of the

condensing and collecting chambers, flues, or passage-ways F, as indicated by the course of the arrows shown in Fig. 1, Sheet 1. While the zinc vapor is passing through these flues or passage-ways, formed by partition-walls L connecting with the ceiling or roof of the building and extending throughout its length, jets of atmospheric air are projected down upon it from vents in a series of pipes, M, extending across the upper part of the condensing-chamber, as shown by arrows in Fig. 3, just escaping from the pipes M. These pipes are connected with a supply-pipe, N, attached at one end to the upper end of the pipe H in the receiving-chamber.

For the purpose of making a continuous flue or passage-way throughout the length of the building, and obtaining a great amount of cooling and condensing space, the partitions L are alternately connected with the front and rear walls of the condensing and collecting chamber, thus leaving a passage-way around the end of each alternate partition, as shown by the arrows in Fig. 1, for the escape of the air, after depositing the oxide of zinc, by the exhaust-ports P in the chimney R at the side of the building.

In making the condensing and collecting chambers, it is proposed to make the partitions of sheet metal, galvanized, and by any suitable means strengthened and secured to the roof or ceiling and floor and ends of the chambers, to make them perfect flues or passage-ways, that the current of atmospheric air will, by suitable pressure, traverse their entire lengths with sufficient velocity to sustain the draft of the furnaces in reducing the ores to vapor, and, at the same time, thoroughly oxidize and cool them, that all the oxide will be precipitated before the escape of the air from the outlet-ports P.

To facilitate the collecting of the oxide from the condensing flues or chambers, they are made trough-shaped lengthwise of the building, as shown in Fig. 3, Sheet 2, letters S, with outlets, T, therefrom at convenient distances apart, somewhat on the principle of the ordinary hopper, so that, by suitable scrapers or endless belts running along the troughs, the

oxide may be discharged into bags, boxes, or other suitable receptacles placed in the packing-room underneath the condensing and collecting chambers.

The furnaces are intended to be arranged at right angles to the front end of the condensing and collecting building, so that each of them may be discharged into the pipe D, as a main conduit, for delivering the vapors of zinc to the condensing and collecting chambers by means of a blast of atmospheric air forced or drawn in through the conduit-pipe D and over the ends of the pipes connecting with the furnaces.

It will be obvious that the exhaustion of the atmospheric air from the flues at the outlet-ports P would produce the same effect in drawing in a current of atmospheric air through the conduit-pipe D as if forced therein by a blowing apparatus; and it may be found to be necessary, where a large building is used, to use an exhausting apparatus in connection with a blowing apparatus to produce the necessary velocity of the current of air through the flues of the condensing and collecting chambers.

I therefore desire it to be understood that, as the object is to produce a thorough oxidizing of the vapors of zinc by the circulation of the atmospheric air throughout the length of the condensing and collecting flues, I do not limit the invention to the use of either method of producing such a result.

Having now described the said invention, I will proceed to set forth what is claimed and desired to be secured by Letters Patent of the United States—

1. In combination with the chamber C, the atmospheric air-pipes G H I and branch pipes K, substantially as set forth.

2. In combination with the flues or passage-ways F and walls L, the series of transverse air-discharging pipe M and supply-pipe N, arranged and operating substantially as described.

CHARLES W. TROTTER,
Administrator of Estate of Jona. George Trotter.
Witnesses:

R. ROWLEY,
CHARLES L. BARRITT.