

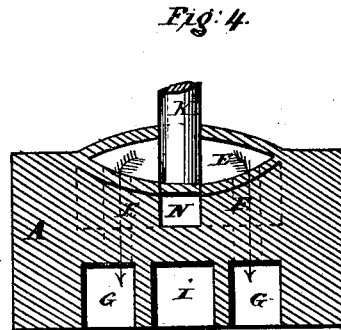
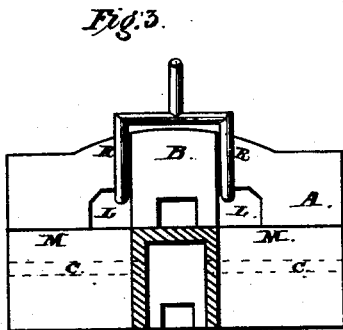
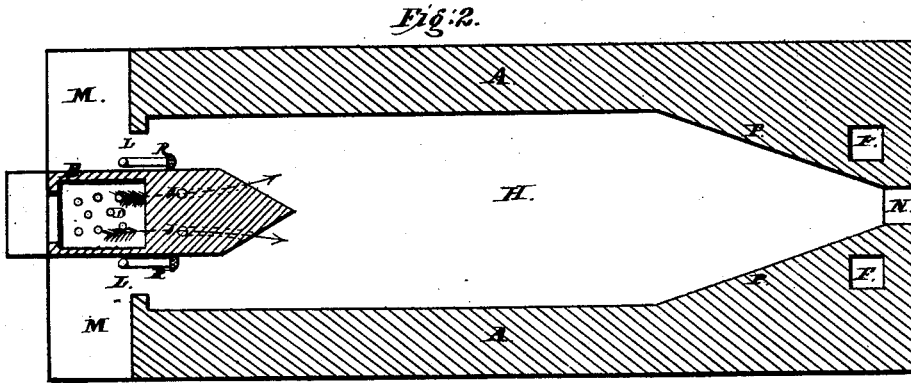
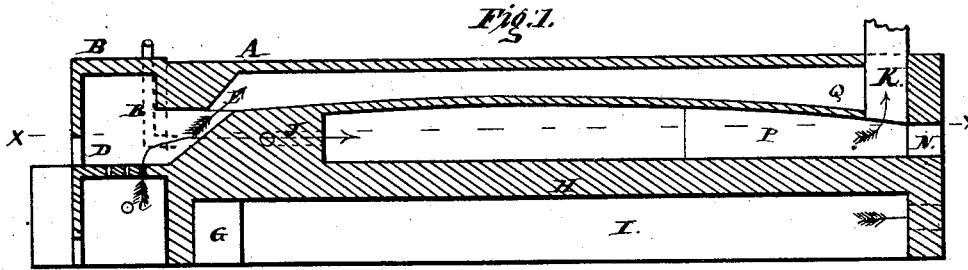
J. G. TROTTER, dec'd.

C. W. TROTTER, Adm'r.

Process of Making White Oxide of Zinc.

No. 163,704.

Patented May 25, 1875.



Witnesses:

R. Bowley

Charles L. Barick

Inventor:

Charles W. Trotter

*Administrator Estate of
Jonathan W. Trotter deceased*

UNITED STATES PATENT OFFICE.

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

IMPROVEMENT IN PROCESSES OF MAKING WHITE OXIDE OF ZINC.

Specification forming part of Letters Patent No. **163,704**, dated May 25, 1875; application filed
November 29, 1873.

To all whom it may concern:

Be it known that JONATHAN GEORGE TROTTER, deceased, late of the city, county, and State of New York, did invent an Improved Process for Making White Oxide of Zinc, of which the following is a specification:

This invention consists in the improved process, as hereinafter pointed out in the claim.

Figure 1 is a longitudinal sectional elevation of the furnace. Fig. 2 is a plan view of the same through the line *x x*, Fig. 1. Fig. 3 is a front end elevation of the furnace. Fig. 4 is a rear end view, showing the flues under the bed of the furnace.

The same letters of reference wherever they occur refer to like parts.

Letters A are the walls of the furnace, made of any suitable material for such purposes. B is the fire-place, arranged in the front of the oven or oxidizing-chamber, having a perforated fire-bed, or may be made with closely-arranged parallel grate-bars. Underneath the fire-place is a closed ash-pit, into which, through the pipes C, is forced, or drawn in by suitable blowing or exhausting apparatus, atmospheric air, to support the combustion of coal in the fire-place, and in oxidizing the vapors of zinc as set free from the ores or metals or galvanizer's dross, operated upon on the bed of the oven or oxidizing-chamber. The fire is built upon the perforated grate D, and delivers the lighter vapors or gases into the flue E, made between the upper and lower shell of the arch of the oven, and thence passes down through the flues F into the flues G under the bed of the oven or oxidizing-chamber H, and then returns through the middle flue I to the back or rear end of the furnace, and out by the chimney. At the same time the heavier vapors or gases pass through the holes or flues J J in the bridge-wall or back of the fire-place into the oven or oxidizing-chamber H, on the floor of which the charge of coal and ore, or coal and metal or dross, is placed, and by its action thereon supports the combustion of the coal mixed therewith to vaporize the zinc, and at the same time oxidizes and carries it off by the funnel K at the rear end of the oven or oxidizing-chamber to any suitable collecting-chamber or collecting-bags, as

may be used. Letters L L are two charging-ports formed in the front end of the furnace at each side of the fire-place, on a level with the bed of the oven, and having a platform or table, M, projecting outward from their mouths to about the depth of the fire-place. The object of these charging-ports is to admit of feeding the charges of coal and ore into the oven or oxidizing-chamber, and to push back the successive charges from time to time upon the bed thereof, and the tables or platforms are for the purpose of holding the charges of coal and ore preparatory to its being pushed into the body of the oven or oxidizing-chamber; also for the purpose of warming or heating the coal and ore before it is charged into the oven or oxidizing-chamber, that it may be more rapidly ignited; also for the purpose of closing the charging-ports by banking the coal and ore in front of them, to shut off the free admission of cold currents of air into the oxidizing-chamber, to lessen the temperature thereof. As the successive charges of coal and ore or coal and metal or galvanizing dross become exhausted on the bed of the oven, the slag and cinder are from time to time drawn back a limited space, to make room for the introduction of the new charges through the ports L. These successive charges are intended to cover about one quarter of the surface of the bed of the oven to about the depth of five inches. Thus, as each charge is withdrawn by the opening N at the rear of the furnace, the preceding charges are pushed back, and a new charge introduced by the ports L, to keep up the continuous operations of the furnace in making the oxide of zinc.

For facilitating the drawing off of the successive charges and slag and cinder the side walls of the oven or oxidizing-chamber are made to converge, and terminate at the sides of the opening N, as shown at P P, Fig. 2. To meet the converging point of the side of the arch the roof, as shown at Q, Fig. 1, is also converged. By these means not only the bed of the furnace can be rapidly and easily freed from all cinder, ashes, and residuum, and thus make a cleaner oxide, but, it is believed, will also improve the draft of the furnace.

To promote the combustion of the coal and

ore, and at the same time more thoroughly oxidize the vapors of zinc eliminated from the ore or metal or galvanizer's dross mixed with the coal, currents of steam are discharged in a fine spray into the body of the oven or oxidizing-chamber by means of the pipes R, arranged at the front end of the furnace, and entering it through the charging-ports L, or other suitable openings. The outlets or ends of these steam-pipes are made with diffusing or spraying nozzles thereon, so that the steam will escape therefrom in a perfect vapor to spread rapidly, and thus be decomposed into its elementary parts, as oxygen and hydrogen, to support the combustion of the carbon and carbonaceous gases in the oven, and, at the same, contribute oxygen for the more thorough oxidizing of the vapors of zinc.

In the invention of the 13th of January, 1855, on which this invention is an improvement, a chamber or air-pipe is arranged in the bridge-wall of the fire-place to be supplied with air, which is discharged through branch-pipes or openings through the bridge-wall to support the combustion of the fuel mixed with the ore on the bed of the oven, and, at the same time, supply oxygen to the vapors of zinc to oxidize it. This improvement thereon is to accomplish not only the supply of an excess of oxygen to

oxidize the vapors of zinc by the oxygen set free by the decomposition of the steam, but also to add to the fuel a new element, in the form of free hydrogen gas, to combine with the carbureted gases in the oven to intensify the heat therein, and thus economize coal, and, at the same time, cause a more thorough sublimation of the vapors of zinc.

Having now described the said improvements in furnaces for making oxide of zinc, I will set forth what is claimed as new, and for which Letters Patent of the United States are solicited, to wit:

The method or process of working the ores of zinc or galvanizer's dross when mixed with coal by the auxiliaries of free hydrogen and oxygen gases, generated in the reducing-chamber or oxidizing-chamber, by the decomposition of diffused currents of steam projected into and upon the ignited charges of ore and coal on the bed of the oven, substantially as and for the purposes set forth.

CHARLES W. TROTTER,
Administrator of Jonathan George Trotter,
deceased.

Witnesses:

R. ROWLEY,
CHARLES L. BARRETT.