

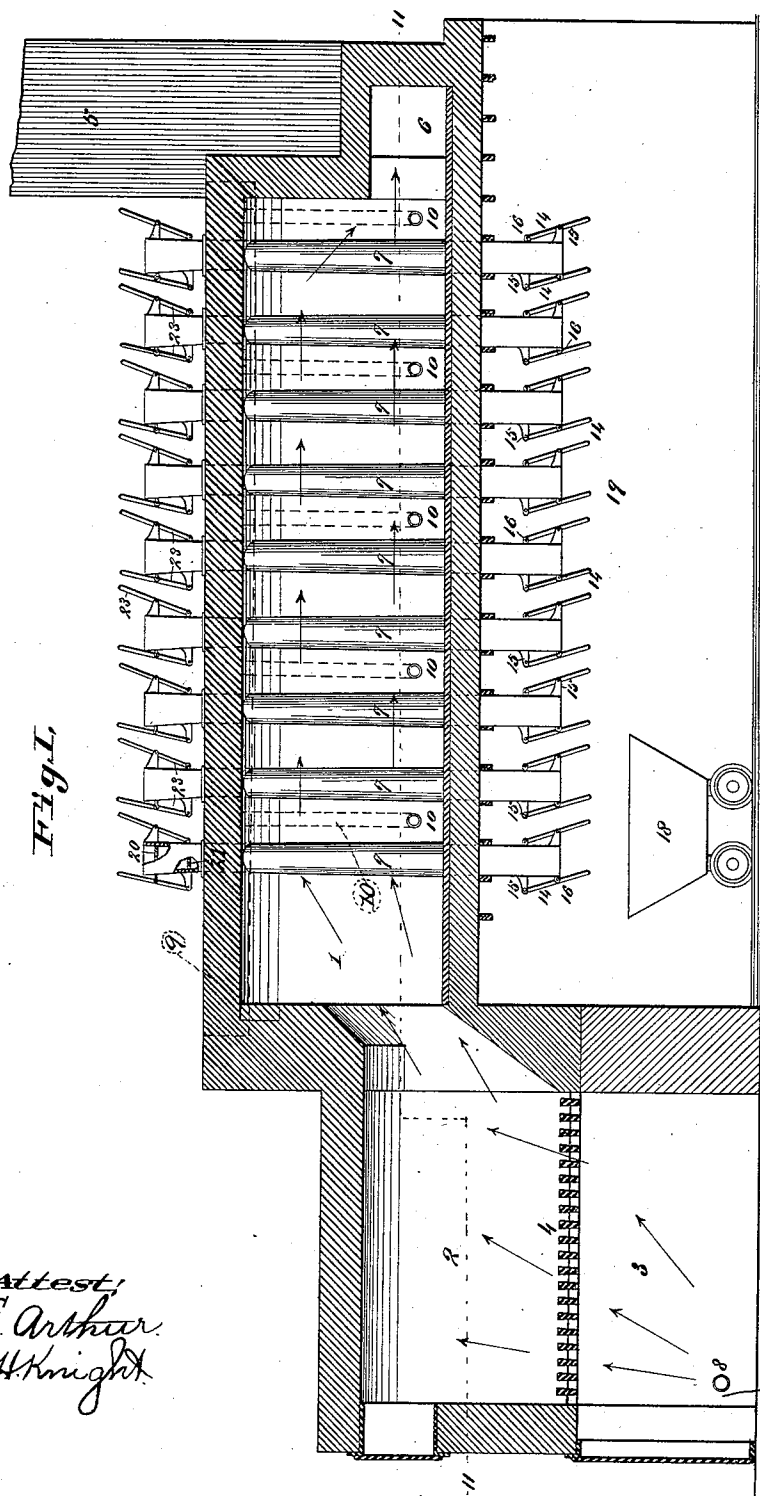
(No Model.)

2 Sheets—Sheet 1.

H. G. TESSMER.
ZINC FURNACE.

No. 469,104.

Patented Feb. 16, 1892.



Attest:
E. Arthur.
J. H. Knight.

Inventor:
Hermann G. Tessmer.
By
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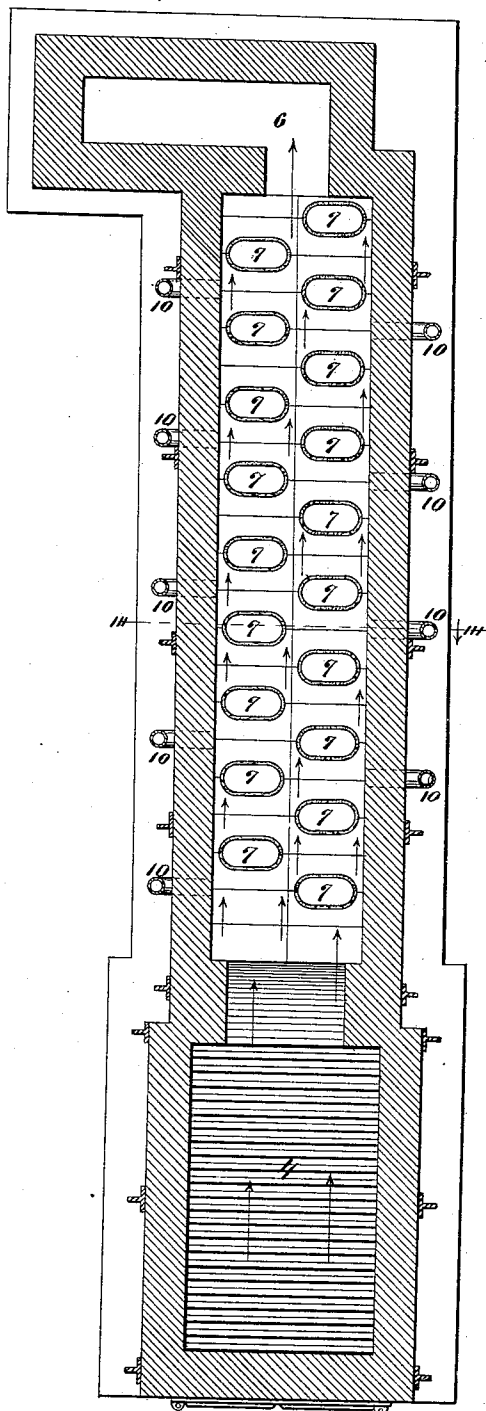
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Fig. II.

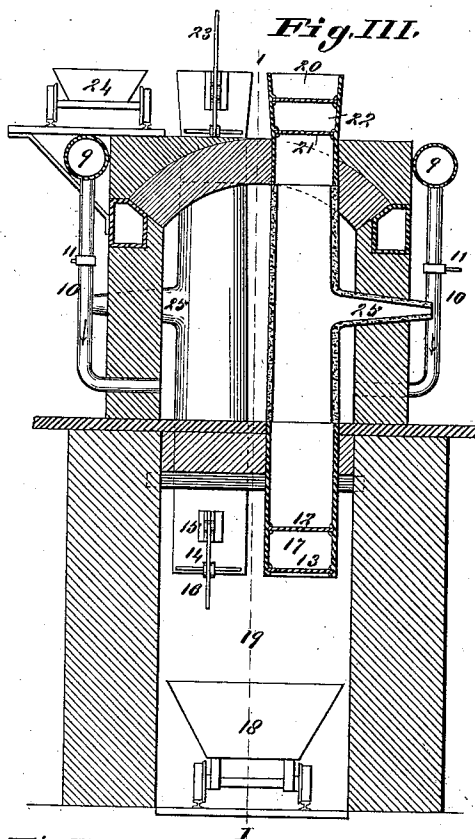
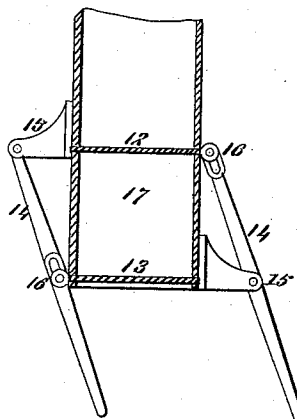


Fig. IV.



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UNITED STATES PATENT OFFICE.

HERMANN G. TESSMER, OF PITTSBURG, KANSAS.

ZINC-FURNACE.

SPECIFICATION forming part of Letters Patent No. 469,104, dated February 16, 1892.

Application filed August 19, 1890. Serial No. 362,420. (No model.)

To all whom it may concern:

Be it known that I, HERMANN G. TESSMER, of Pittsburg, in the county of Crawford and State of Kansas, have invented a certain new and useful Improvement in Zinc-Furnaces, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to an improved zinc-furnace, the object being to construct a furnace which can be easily handled or manipulated and which will be much more rapid in its work than the furnaces now in use.

My invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Figure I is a vertical longitudinal section of my furnace, taken on line I I, Fig. III. Fig. II is a horizontal longitudinal section taken on line II II, Fig. I. Fig. III is a vertical transverse section taken on line III III, Fig. II. Fig. IV is an enlarged vertical section of the foot or lower end of one of the retorts, showing both of the valves closed.

Referring to the drawings, 1 represents a furnace having a fire-box 2, an ash-pit 3, a grate 4, and a chimney or uptake 5, communicating with the furnace through a flue or passage 6.

7 represents the retorts, in which the zinc is vaporized and which pass through the furnace, so that the heat and products of combustion passing from the fire-box to the chimney or uptake will come in contact therewith to heat and vaporize the zinc in the retorts.

I prefer to use a force-draft to the furnace, which may be done by injecting steam or air into the ash-pit beneath the grate through means of a pipe 8.

It is very desirable that the heat of the furnace be under control, so that the temperature within the furnace can be regulated at will. I accomplish this by means of air-pipes 9, which I prefer to locate along the side of the furnace, as shown in Fig. III, and which would be open at their ends to admit air.

10 represents a number of smaller pipes forming a communication between the pipes 9 and the furnace, the lower ends of the pipes 10 being bent and passed through the wall of

the furnace, as shown clearly in Fig. III. The pipes 10 are provided with valves 11, which may be opened and closed at will to regulate the passage of the air from the pipes 9 into the furnace.

It will be understood that the forced draft of the furnace will cause an inflow of air through the pipes 9 and 10 when the valves 11 are open, and thus the temperature of the furnace is fully under control.

I prefer, for convenience, to arrange the retorts in two series, as shown in Fig. II, those of one series being placed opposite the spaces of those of the other series, affording a free circulation of the heat and products of combustion from the furnace and also affording room and opportunity to get at each retort.

It has heretofore been customary in zinc-furnaces to arrange the retorts in a position slightly inclined from the horizontal, which makes it very inconvenient both to feed the retorts and to extract or remove the refuse matter. To overcome these difficulties, I arrange my retorts vertically or in an upright position, so that they can be easily fed or charged and will be self-delivering. To control the delivery and prevent air entering the retorts while discharging, I arrange in the bottom of each retort two valves 12 and 13, which are preferably made in the form of sliding plates, operated by levers 14, pivoted to the retorts at 15 and connected to the valves at 16. When a retort is to be discharged, the upper valve 12 is first opened and the matter allowed to drop into the space 17 between the valves. The valve 12 is then closed and the valve 13 opened, permitting the matter to be dropped from the retort into a car 18 on a track located in a space or passage 19 beneath the retorts. The car is preferably made wide enough so as to receive the deposit from both series of the retorts and is moved along the track until it is beneath the retort being discharged. The foreign matter can thus be allowed to escape from the retorts without the possibility of the entrance of air. The retorts are preferably made slightly tapering, smaller toward their upper ends, so as to freely discharge the foreign matter. The upper end of each retort is provided with two valves 20 and 21, the valve 20 being placed a short distance be-

neath the top of the retort and a space 22 being left between the valve 20 and the valve 21. The valves 20 and 21 are operated by levers 23 after the manner of the valves 12 and 13. The calamine and coal are shoveled from a car 24, located on a track situated at the upper end of the furnace, as shown in Fig. III, into the upper ends of the retorts above the valves 20. Then when a fresh charge is to be admitted into any one of the retorts the lever of the valve 20 is first moved to open the valve and permit the charge to pass into the space 22. The valve 20 is then closed and the valve 21 opened, permitting the charge to drop into the body of the retort, when the valve 21 will be closed again, ready for another charge.

My object is to charge the retorts, as well as to discharge them, without the possibility of the entrance of air.

Each retort is provided with a condenser 25, preferably located about midway of the length of the retort and projecting from the outer surface or side of the retort through the wall of the furnace, as shown in Fig. III. The vapors of zinc accumulate in these spouts 25 and are condensed therein and the condensed zinc allowed to escape therefrom at suitable intervals. By this arrangement of the retorts

the production of zinc is greatly facilitated both as to time and labor.

The retorts as used in my furnace are to be elliptical in shape, as shown in Fig. II, whereby a given amount of heat will affect the largest possible amount of ore, those heretofore used being round.

I claim as my invention—

1. The combination of a furnace, the retorts arranged in the furnace, means for heating said furnace, longitudinal air-pipes 9, arranged outside of the furnace, branch pipes 10, communicating between the air-pipes 9 and the furnace, and means for regulating the flow of air into the furnace through said pipes, substantially as set forth.

2. The combination of a furnace, means for heating the furnace, the retorts arranged in vertical or upright position in said furnace, longitudinal pipes 9, arranged along the outside of the furnace near the top, pipes 10, communicating between the longitudinal pipes 9 and the furnace, and valves in said pipes 10, whereby the temperature of the furnace can be regulated, substantially as set forth.

HERMANN G. TESSMER.

In presence of—

FRITZ DIETZ,

JOHN RANDOLPH.