(No Model.)

C. FRANCISCI.

FURNACE FOR DISTILLING ZINC.

No. 526,808. Patented Oct. 2, 1894.

Fig. 2.

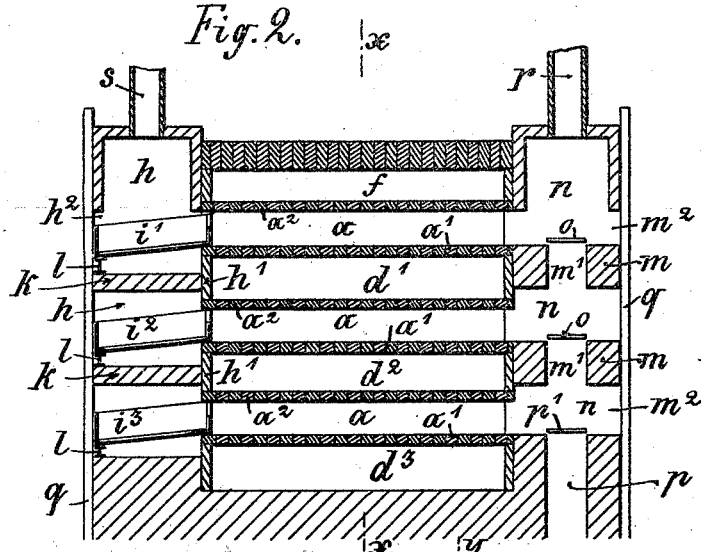
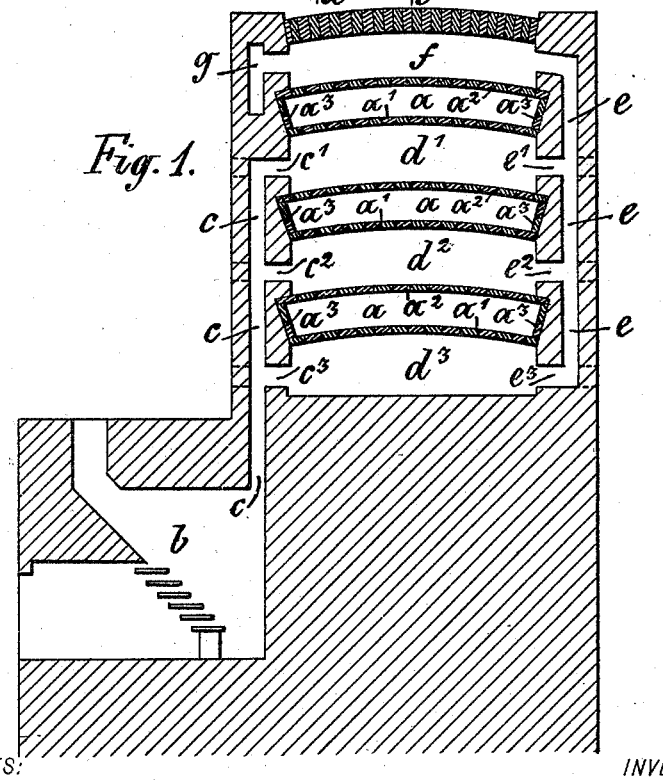


Fig. 1.



WITNESSES:

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CARL FRANCISCI, OF SCHWEIDNITZ, GERMANY.

FURNACE FOR DISTILLING ZINC.

SPECIFICATION forming part of Letters Patent No. 526,808, dated October 2, 1894.

Application filed January 3, 1894. Serial No. 495,506. (No model.)

To all whom it may concern:

Be it known that I, CARL FRANCISCI, a subject of the Emperor of Germany, residing at the city of Schweidnitz, in the Kingdom of Prussia and German Empire, have invented certain new and useful Improvements in Furnaces for Distilling Zinc, Cadmium, and the Like, of which the following is a specification.

This invention relates to a furnace for distilling zinc, cadmium and the like, and the objects of my improvements are first to enlarge the efficiency and durability of the furnace itself and secondly to protect the smelters from the effects of the poisonous gases.

In the accompanying drawings, Figure 1 is a vertical section of my improved furnace, on line *x x*, Fig. 2. Fig. 2 is a vertical section on line *y, y*, Fig. 1.

As will be seen from the drawings, the retorts *a*, do not form a single body, as is generally the case where fire brick is used. I have found that the retorts may be improved materially with reference to their conductivity of heat, incombustibility, and impermeability against gases, by using magnesia instead of fire brick. In order to utilize the physical qualities of this material, I transform it into bricks, by subjecting small quantities of it to pressure. The shape of the bricks allows the bottom a', and the roof a^2, of the retorts *a*, to be vaulted. The side walls a^3, a^3, are preferably constructed on the radius of the lower face of the roof a^2.

The furnace illustrated in the drawings shows three retorts of the above mentioned character. These retorts are heated by the gases escaping from a generator *b*. The gases enter a flue *c*, having branches c', c^2, c^3, which are in continuous communication with the combustion chambers d', d^2, d^3. The combustion itself takes place in the ordinary manner by admitting hot air, while the gases resulting from the combustion escape from a flue *e*, having three branches e', e^2, e^3, into a chamber *f*, situated above the upper retort *a*, and through an outlet *g*. At their front ends the retorts are secured to a rear wall h', of a vertical chamber *h*. This chamber contains the condensers i', i^2, i^3, the rear ends of which enter their respective retorts, while their front ends are supported by I beams *l* which are in turn supported upon partitions *k*. The interior of the condensers i', i^2, i^3, is in continuous communication with the chamber *h*. By reason of this arrangement, those gases which have not been condensed in the condensers i', i^2, i^3, may be sucked away. At their rear ends the retorts are in continuous communication with a chamber *n*, which is divided into three compartments by horizontal walls *m*. The upper face of the walls *m*, as well as the lower face of the chambers *n*, are level with the lower face of the retorts. The furnace should be provided in front opposite to every retort with a perforation h^2, and at the rear, with the perforations m^2, in line with the retorts, so that the feeding of the retorts may be effected in a simple manner. The walls *m*, are provided with perforations m', having slide valves *o*, by which the perforations may be closed while the retorts are fed, and opened while the retorts are emptied, so that the cinders may escape into a channel *p*. This channel may be closed by a slide valve p', while the retorts are fed, but during their discharge, the valve is thrown back and the cinders fall into the channel *p*, the lower end of which communicates with an ash-pit. Not shown in the drawings.

In order to prevent the poisonous gases from injuring the workmen during the charging and discharging of the retorts, the chamber *n*, is in continuous communication with the suction pipe *r*, of a pump not shown, while a second suction pipe *s*, is connected to the forward chamber *h*. In feeding the single retorts, those slide valves *o*, must be opened which are situated above the respective sections of the chamber *n*, while during the discharge of a retort, every one of the slide valves *o*, *o*, p', must be opened, so that the poisonous gases may move upward.

Bars *q*, at the front and rear end of the furnace, serve to stiffen the walls of the same.

What I claim is—

1. In a furnace for distilling zinc, cadmium and the like, the combination of retorts *a*, with a front chamber, a series of condensers within said chamber that communicate with the retorts, a rear chamber that also communicates with the retorts, and with suction pipes entering the chambers, substantially as specified.

2. In a furnace for distilling zinc, cadmium

and the like, the combination of retorts *a*, with a front chamber, a series of condensers within said chamber that communicate with the retorts, a rear chamber that also communicates with the retorts, perforated partitions within the rear chamber, valves for closing the same, and with suction pipes connected to the chambers, substantially as specified.

Signed at the United States consulate of Breslau, Province of Silesia, Empire of Germany, this 15th day of December, 1893.

CARL FRANCISCI.

Witnesses:
MAX JOSEPH SACHS,
L. E. HILL.