

(No Model.)

A. GIBSON.
SMELTING FURNACE.

No. 299,534.

Patented June 3, 1884.

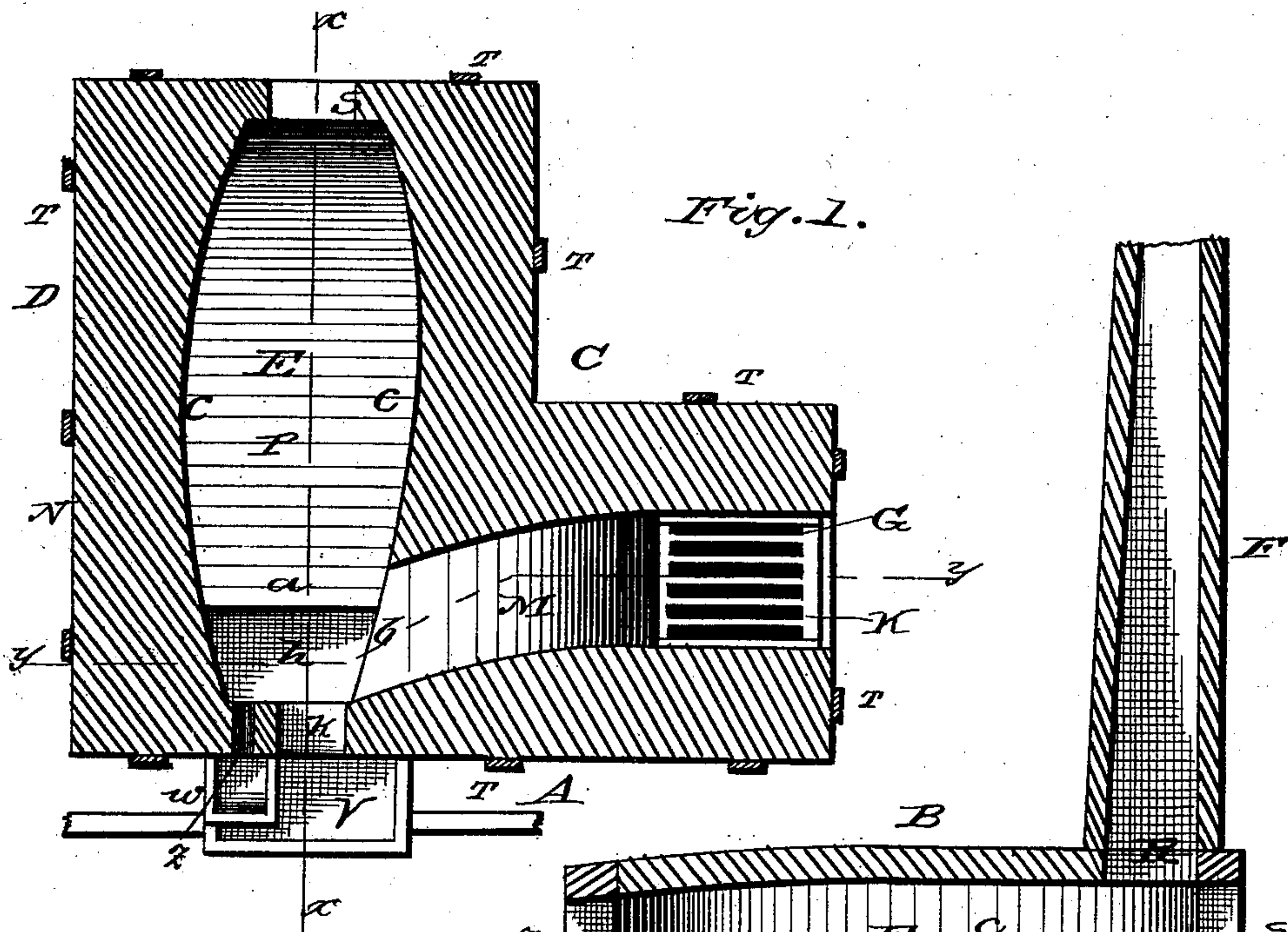


Fig. 1.

Fig. 2.

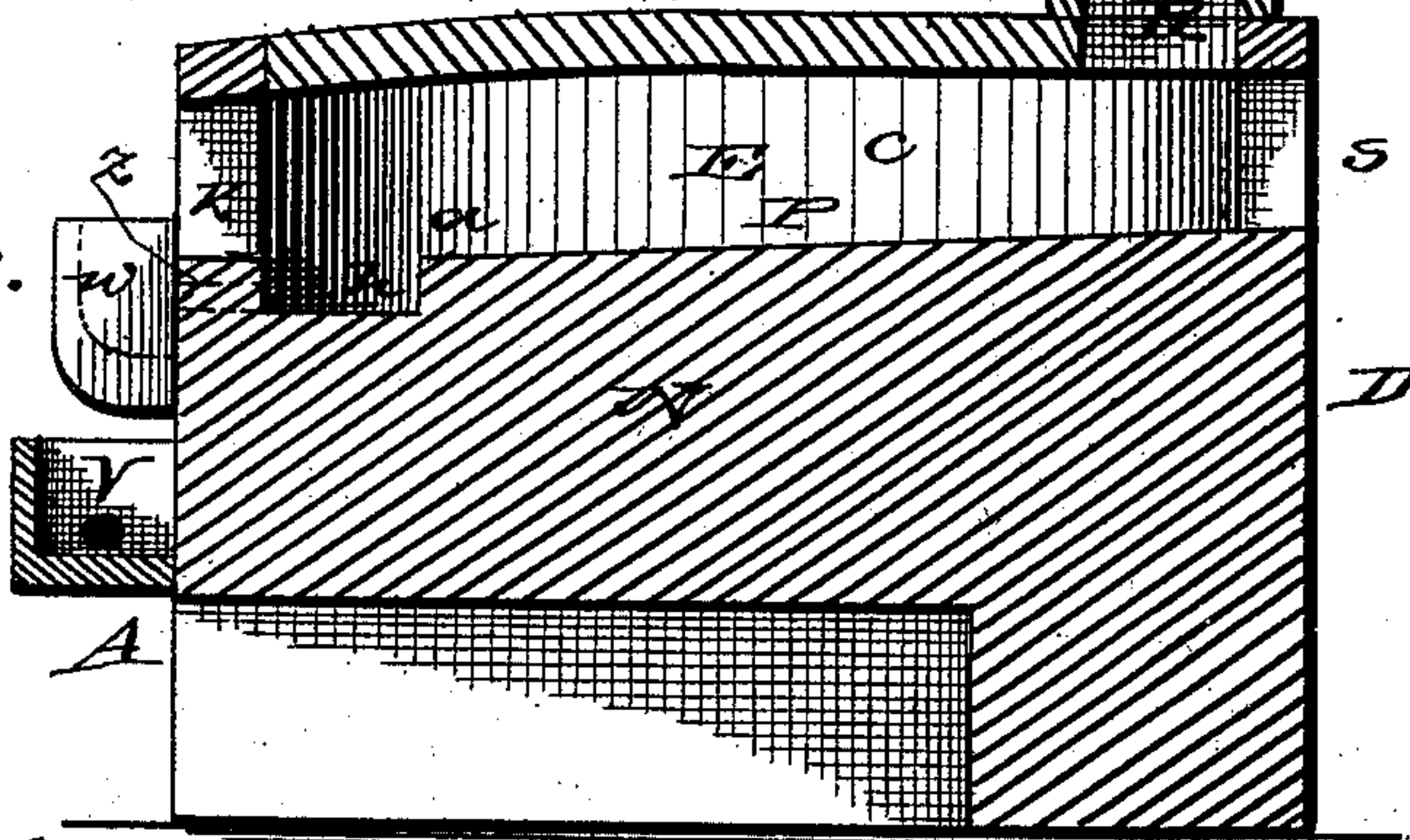
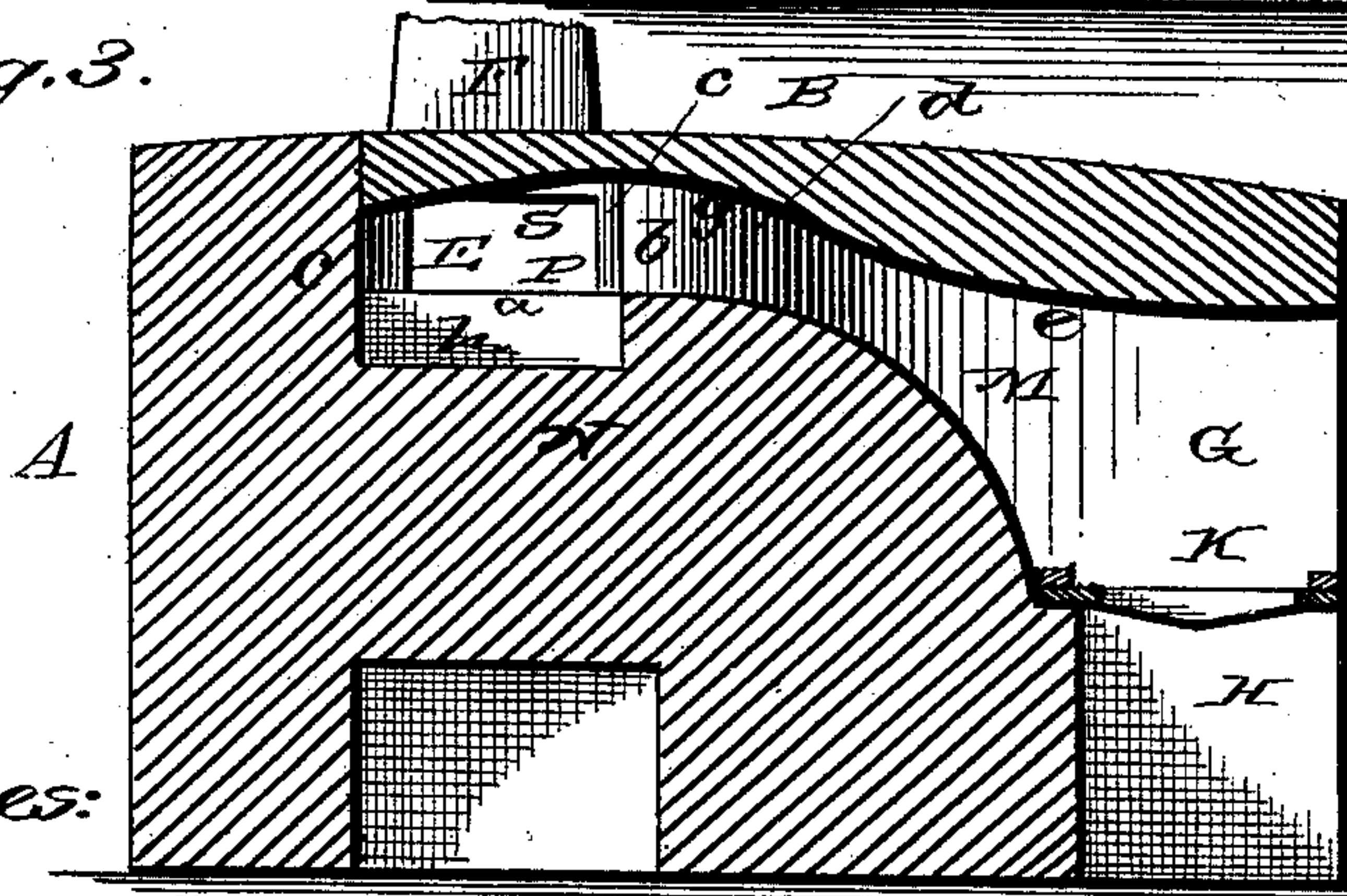


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

ABRAM GIBSON, OF HUGHESVILLE, MONTANA TERRITORY.

SMELTING-FURNACE.

SPECIFICATION forming part of Letters Patent No. 299,534, dated June 3, 1884.

Application filed June 23, 1883. (No model.)

To all whom it may concern:

Be it known that I ABRAM GIBSON, a citizen of the United States, residing at Hughesville, in the county of Meagher and Territory of Montana, have invented certain new and useful Improvements in Smelting-Furnaces; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Figure 1 of the drawings is a horizontal sectional view. Fig. 2 is a vertical section taken through line *x x*, Fig. 1. Fig. 3 is a vertical section taken on line *y y*, Fig. 1.

This invention has relation to smelting-furnaces for lead, carbonates, galena ore, &c.; and it consists in certain novel and useful improvements in the construction of the L-shaped furnace, as hereinafter set forth, and particularly pointed out in the appended claims.

In the accompanying drawings, the letter A designates the front of the furnace, and B the top. C indicates the re-entrant angle in the side of the furnace, and D the lateral rear extension, in which is the furnace-chamber E. F represents the smoke-stack. G indicates the fire-box, and H the ash-pit below the same. K is the grate.

The furnace is L form, and the ash-pit is designed to have its floor level with the ground on which the furnace is built, and is usually made about two feet in depth below the grate. The fire-box is about two feet square at the door-opening, its height gradually increasing to about forty inches, when the flames pass over the upwardly and rearwardly rounded fire-bridge M into the laterally-extending oven or furnace-chamber E, where the ore is smelted. The walls of the furnace-chamber E are usually made thicker than those of the fire-box, and between the walls of the furnace-chamber is built up the rock-work foundation-filling N, on which is the floor P of the furnace-chamber. This floor is inclined from the charging-door S at its end to its inner lip or edge, *a*, which is located

back of the rear wall, *b*, of the fire-bridge and joins the same. The floor of the oven or furnace-chamber E has an inclination of two inches to the foot. The longitudinal side walls, *c*, of the oven or furnace-chamber are of concave form, so that the middle portion of the oven is the widest, being usually about forty inches across to about two feet across at the stack-opening R. The throat *d* at the top or summit of the fire-bridge is about eight inches high and four inches wide, and just back of the throat, where the flames enter the oven, is about twenty-eight inches wide. The lining of the furnace is of fire-brick, as also the main portion of the arch. Iron binders T are employed to secure the walls of the furnace firmly in position, which binders may be applied in any ordinary manner. The arch-top *e* of the oven is on its under or fire surface curved, being highest immediately over the flue or throat in concave form, as indicated at *g*.

A recess or crucible is formed just beyond the inner end of the oven-floor and fire-chamber, as indicated at *h*. This crucible is directly back of the rear wall of the fire-bridge, so that it is under the entering flames from the fire-box. The crucible receives the lead from the charge. As the ore melts the crucible becomes filled with lead, and the slag running down on the lead is floated thereon and passes off through the opening *k* into the cooler V. The cooler is a tank of water, at one end of which is a supply-pipe, whereby the cool water passes into the tank, a discharge-pipe for the warm water being arranged at the other end. As the slag is cooled it is shoveled out and carried away to be discharged over the dump.

A lead-well, *w*, is arranged externally, being secured to the furnace-wall outside of the crucible-chamber, and communicates with the crucible by a bottom passage, *x*, so that the lead in the crucible may pass into the lead-well, whence it may be dipped into molds.

Having described this invention, what I claim, and desire to secure by Letters Patent, is—

1. In a smelting-furnace of angular or L form, the inclined transverse oven-floor P, terminating in a lip at *a*, and at the end of the floor below the lip, and directly in rear of the flame-throat a lead-well or crucible, *w*, having

an opening, *k*, through the furnace-wall for the escape of the slag, substantially as specified.

2. The combination, with the L-shaped furnace having the inclined oven-floor, and the crucible or lead-well *w*, having a discharge-opening, *k*, of a cooling-tank, V, having a supply-pipe for cold water and a discharge-pipe for the water which is warmed by the

slag passing over from the crucible, substantially as specified. 10

In testimony whereof I affix my signature in presence of two witnesses.

ABRAM GIBSON.

Witnesses:

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