

(No Model.)

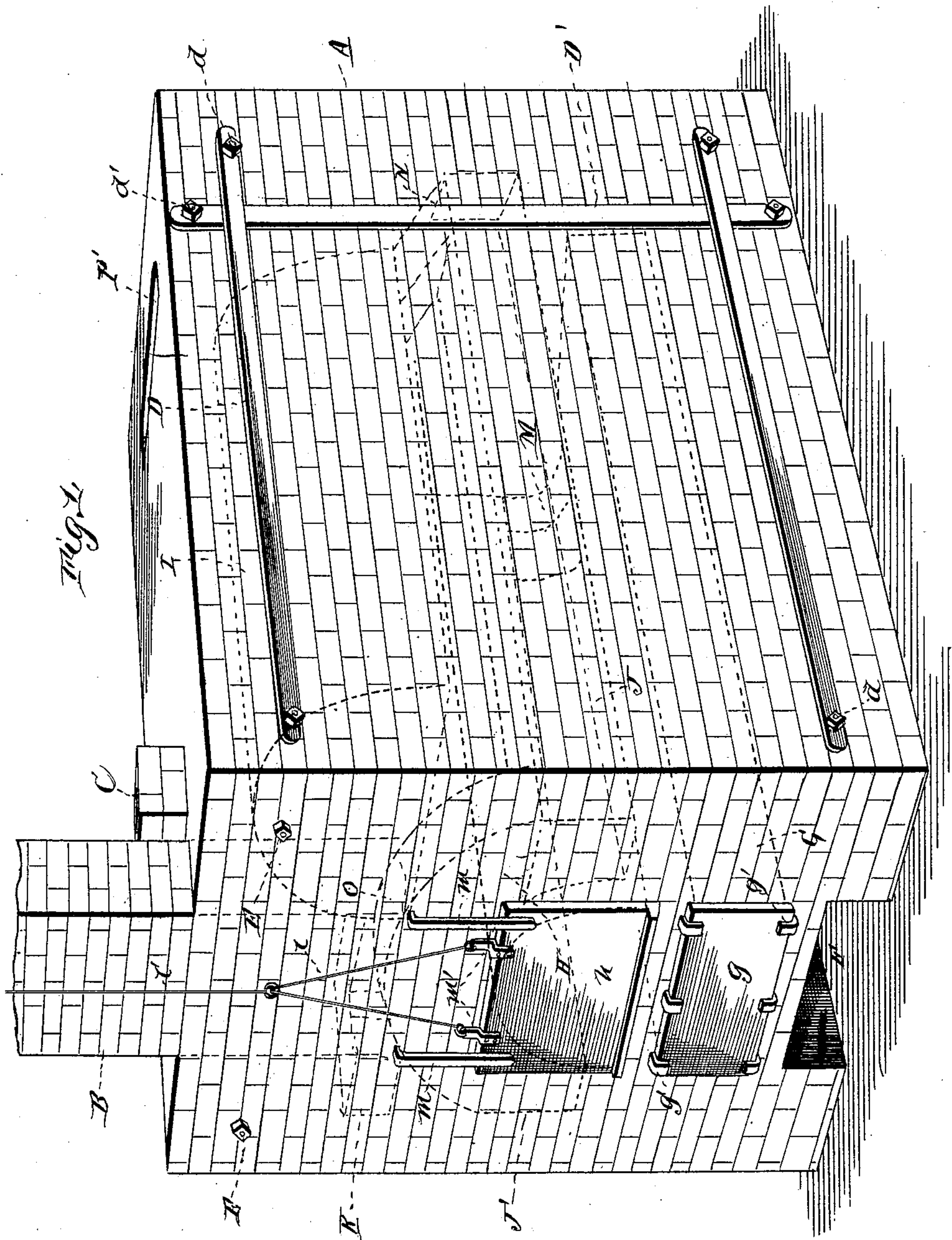
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G. H. CHICK.

MUFFLE FURNACE FOR DESULPHURIZING ORES.

No. 434,502.

Patented Aug. 19, 1890.



Witnesses:
Charles Taylor,
R. A. Balderson,

Inventor:
Geo. H. Chick,

By his Attorneys,
Higdon & Higdon

(No Model.)

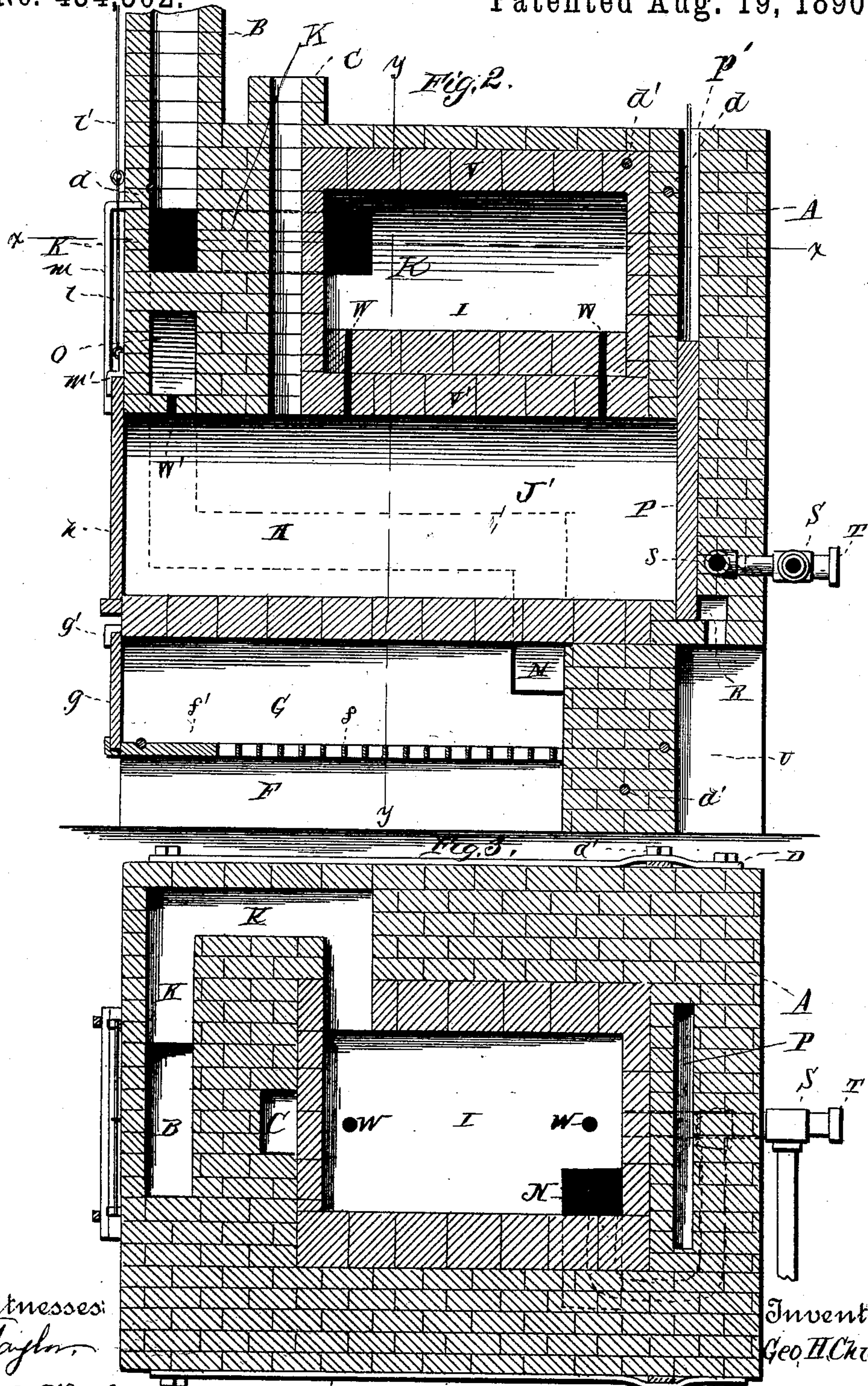
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Fig. 4.

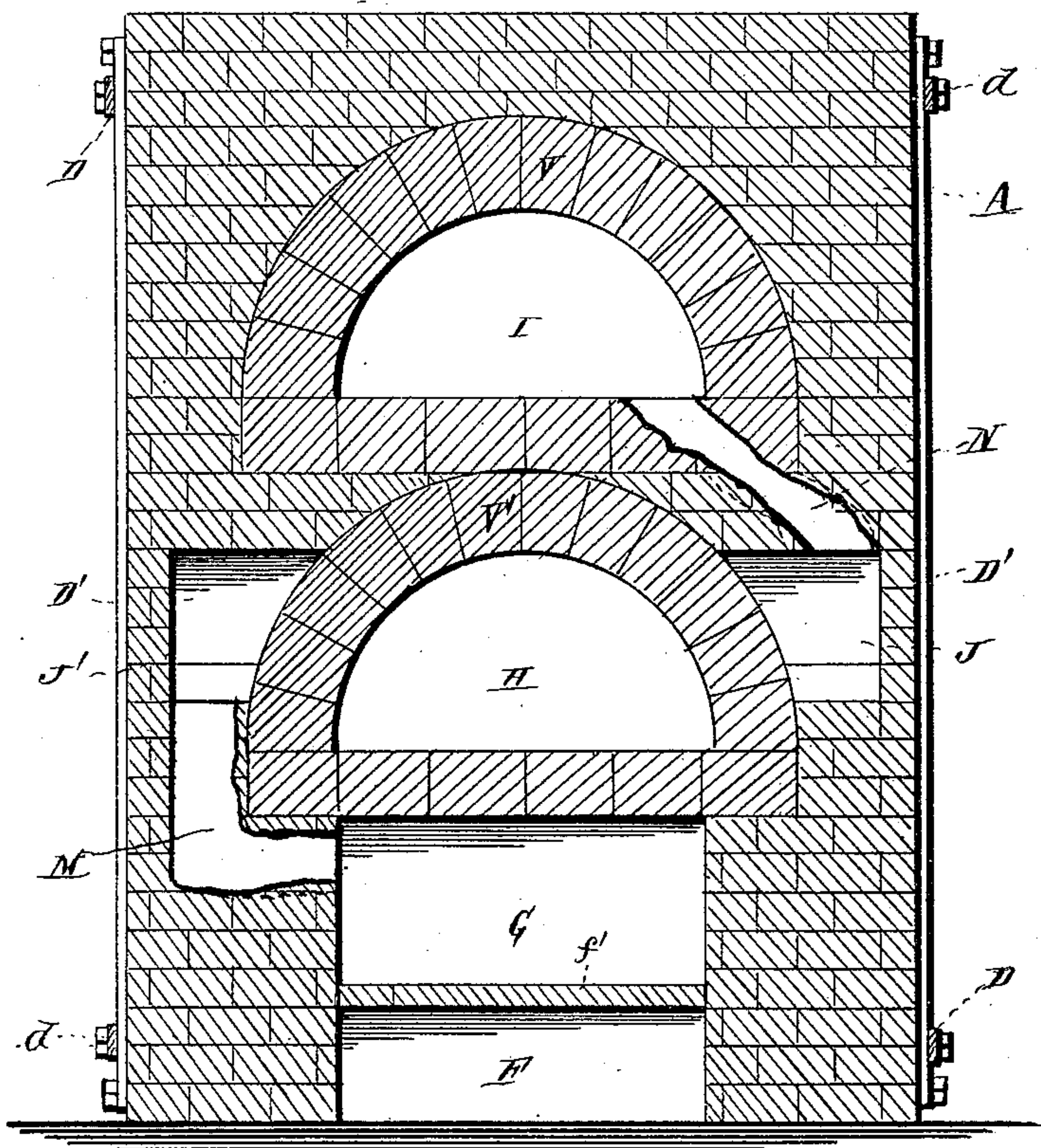
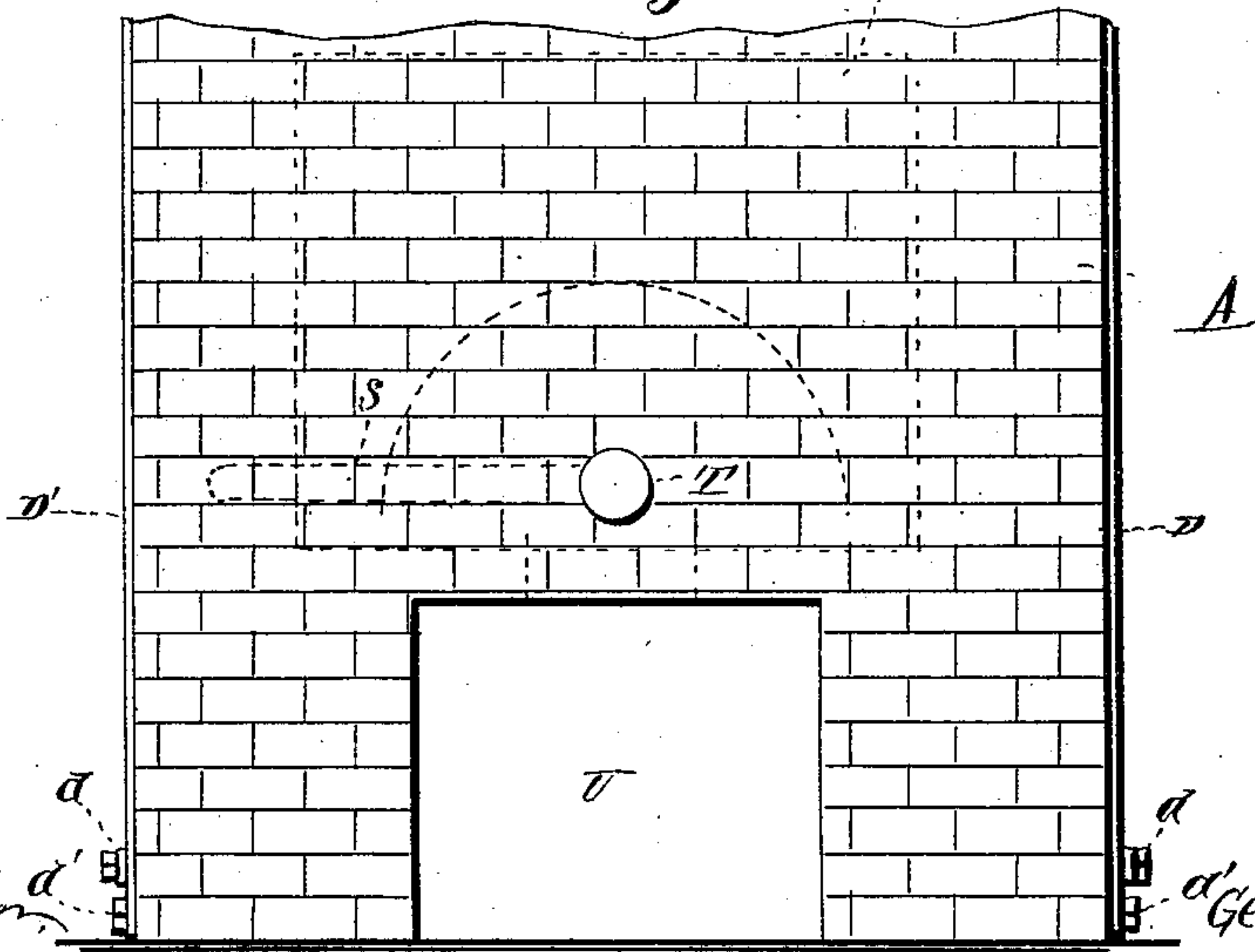


Fig. 5.



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UNITED STATES PATENT OFFICE.

GEORGE HORATIO CHICK, OF KANSAS CITY, MISSOURI.

MUFFLE-FURNACE FOR DESULPHURIZING ORES.

SPECIFICATION forming part of Letters Patent No. 434,502, dated August 19, 1890.

Application filed December 27, 1889. Serial No. 335,099. (No model.)

To all whom it may concern:

Be it known that I, GEORGE HORATIO CHICK, of Kansas City, Jackson county, Missouri, have invented certain new and useful Improvements in Muffle-Furnaces for Desulphurizing Ores, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to improvements in muffle-furnaces for desulphurizing ores; and it consists in the novel construction and arrangements hereinafter set forth and described.

In the drawings which illustrate the manner of carrying out my invention, Figure 1 is a perspective view of my furnace, showing the arches, flues, &c., in dotted lines. Fig. 2 is a central longitudinal section through the same. Fig. 3 is a sectional plan view taken on line xx of Fig. 2. Fig. 4 is a vertical cross-section taken on line yy of Fig. 2; and Fig. 5 is a rear view, partly broken away, showing the opening in which the receptacle is placed for catching the ores when the discharge is made.

Referring to the drawings by letter, A represents a brick furnace constructed in the manner illustrated and provided at its front with a smoke-stack B.

C is a feed-chute constructed directly behind the smoke-stack leading to the desulphurizing muffle-chamber H. (More clearly illustrated in Fig. 2.)

D and D' are suitable iron braces properly bolted to the sides of said furnace by rods d and d' . These rods pass entirely through the brick-work of the furnace and serve to hold it firmly together.

E are rods running longitudinally through the furnace, which serve the same purpose as rods d and d' .

F is the ash-pit, built in the ordinary manner under the fire-box, said fire-box being provided with suitable grates f and tile f' .

H is a desulphurizing muffle-chamber in which the ores are placed. At the rear of said chamber H is an air-chamber S, provided with a cap T, which may be removed for admitting air into said furnace when found desirable.

I is an arched chamber built directly over the desulphurizing-chamber H, through which the blast passes from the fire-box G, said chambers H and I being connected by vents W, which allow the accumulating gases to escape from the desulphurizing-chamber H through arched chamber I, and from thence through flue K up through smoke-stack B. When the fire is started in fire-box G, the blast finds an outlet through flue M, as shown in dotted lines in Fig. 1. This flue M is at the rear of said fire-box G. The blast thus passes forward parallel with the desulphurizing-chamber H through flue J', and is carried over front of said chamber through flue O, as illustrated in Figs. 1 and 2. The blast then passes back along another flue J, which runs parallel with chamber H, and then through passage N into arched chamber I, where it circulates over the top of desulphurizing-chamber H, and then around flue K into smoke-stack B, this latter passage being more clearly illustrated in Fig. 3. The flues J and J', which run parallel with desulphurizing-chamber H, are constructed in the manner illustrated in Fig. 4, thus giving greater heating-surface to said chamber.

g is a tile door, which closes the front of fire-box G, said tile door g being secured and held in position by the angle metallic bars or guides g' , which allow said tile g to slide laterally when fire-box G is to be replenished with fire. h is a similar tile door, which operates vertically in front of chamber H. This door h is drawn out of position by suitable wire rods i , which are secured in the lugs m' , said wires i and i' being operated by overhead levers constructed in any suitable manner, the depending guide-rods m serving to keep the door vertical when sliding.

P is a vertically-moving tile secured at the rear of desulphurizing-chamber H. This tile operates in the slot P' and is for the purpose of closing the rear of said chamber H, and is secured in such a manner that it may be raised when it is necessary to make a discharge, thus allowing the desulphurizing ores to pass from chamber H through the discharge-passage R into the opening U at the rear of said furnace. Said tile P is operated by a wire in the same manner as the front

tile *h*. All these chambers and flues are to have a lining of suitable fire-brick, built in a proper manner.

5 Having thus fully described my invention, what I claim as being new, and desire to secure by Letters Patent, is—

1. An ore-roasting furnace having a muffle-chamber adapted to receive the ore, a fire-chamber, a series of communicating passages
10 surrounding the ore-chamber and communicating with the fire-chamber, a supplemental chamber located above the muffle-chamber and in communication with said chamber and also with the passages described, and a stack in
15 communication with the supplemental chamber, substantially as described.

2. An ore-roasting furnace having a roasting-chamber *H*, a fire-chamber *G* beneath the

same, the passages *M*, *J'*, *O*, *J*, and *N*, surrounding the heating-chamber, the supplemental chamber *I*, located above the heating-chamber and in communication with the same by means of the passages *W*, the supplemental chamber being in communication with the fire-chamber by means of the passages *M*, *J'*,
25 *O*, *J*, and *N*, the stack *B*, passage *K*, connecting the stack and chamber *I*, the feed-chute *C*, and discharge-opening *R* and door *P*, for controlling said opening, substantially as shown and described.

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

GEORGE HORATIO CHICK.

Witnesses:

R. A. BALDERSON,
J. E. HIGDON.