

(No Model.)

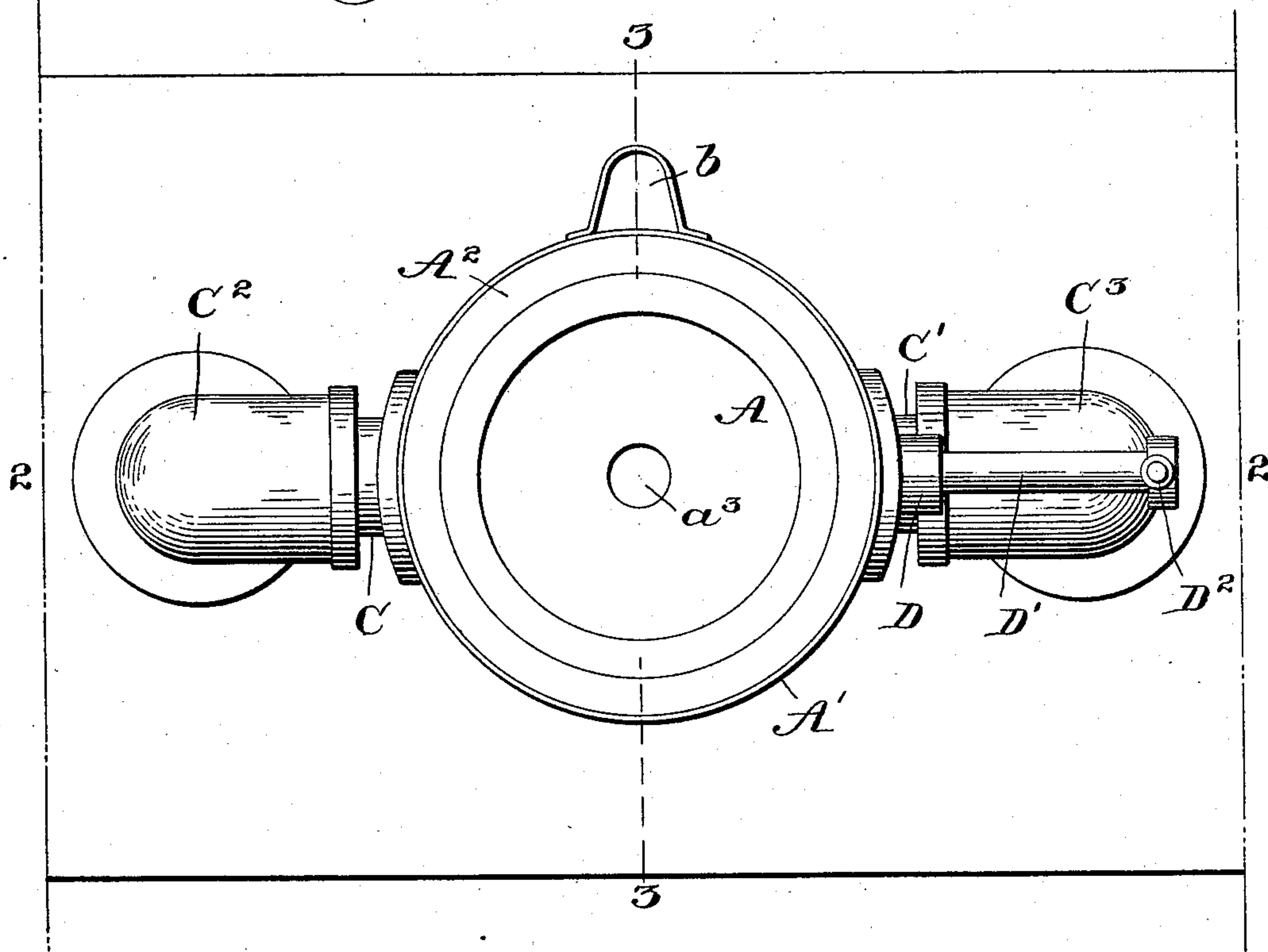
3 Sheets—Sheet 1.

H. CHARLIER.  
SMELTING FURNACE.

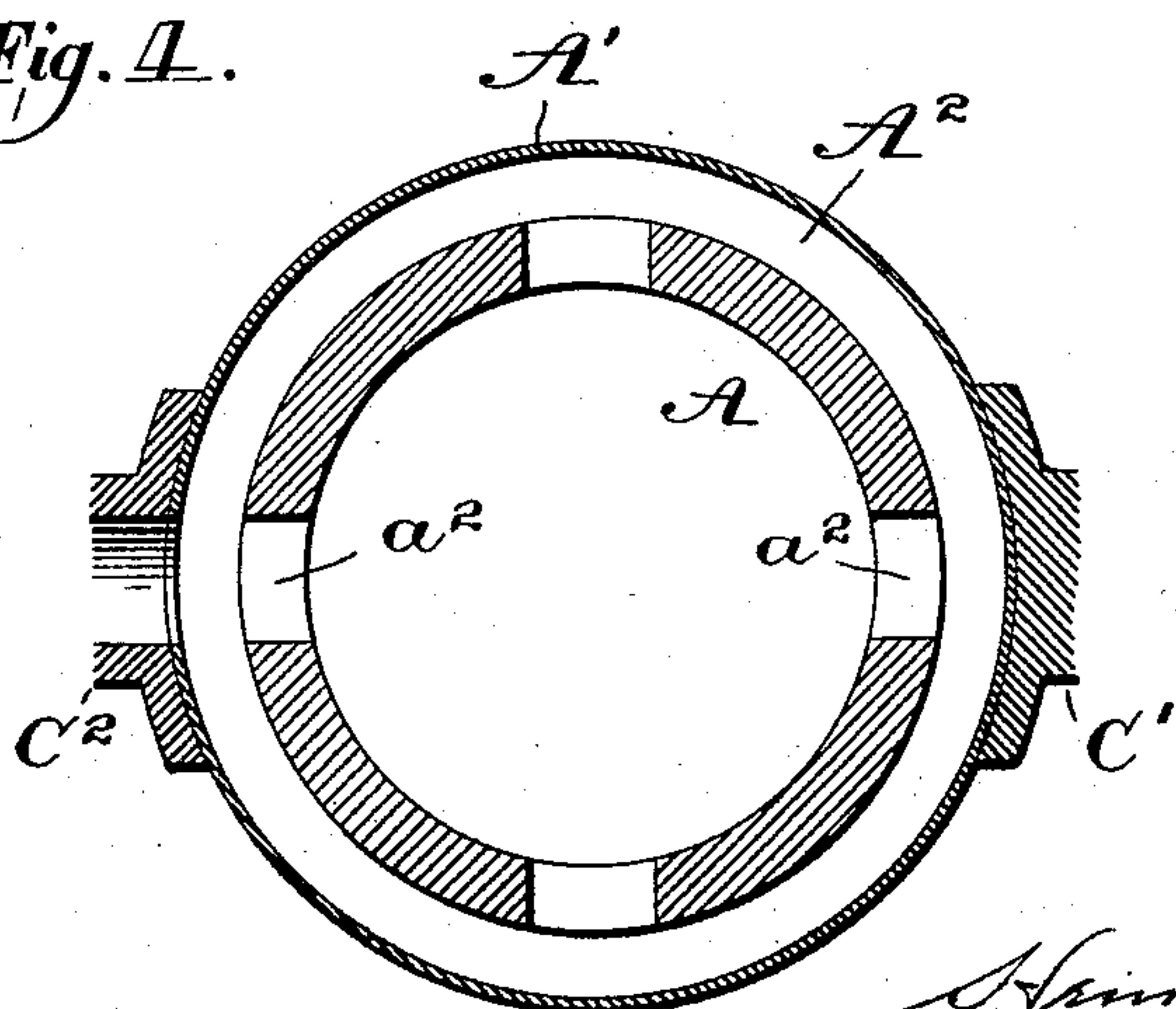
No. 570,981.

Patented Nov. 10, 1896.

*Fig. 1.*



*Fig. 4.*



Witnesses.

*M. Loe*  
*J. A. Schaub*

Inventor.

*Henri Charlier*  
*by Thomas Snowdys*  
his Attorney.

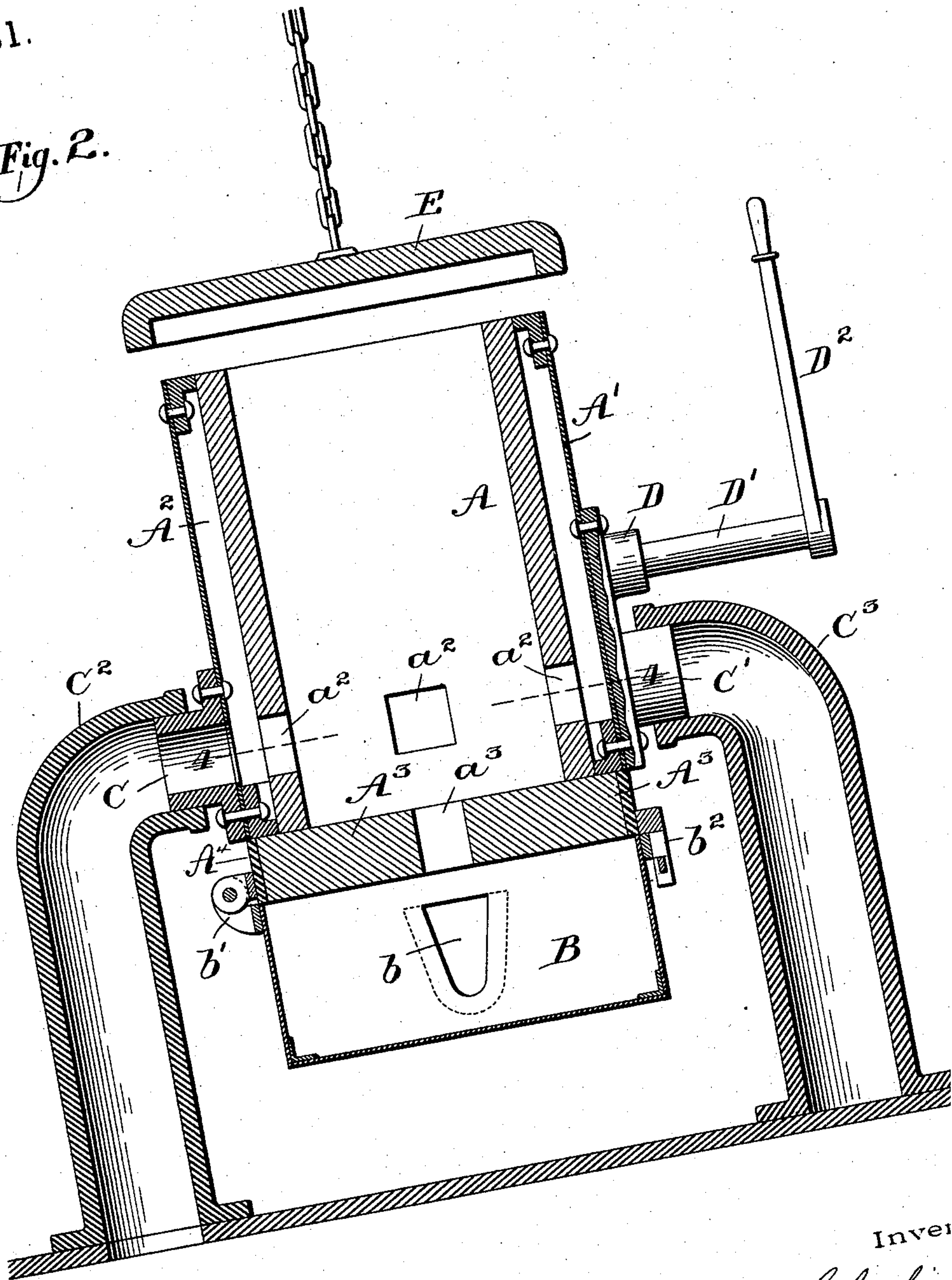
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Fig. 2.



Witnesses.

*Wm. Lore*  
*J. A. Straub*

Inventor

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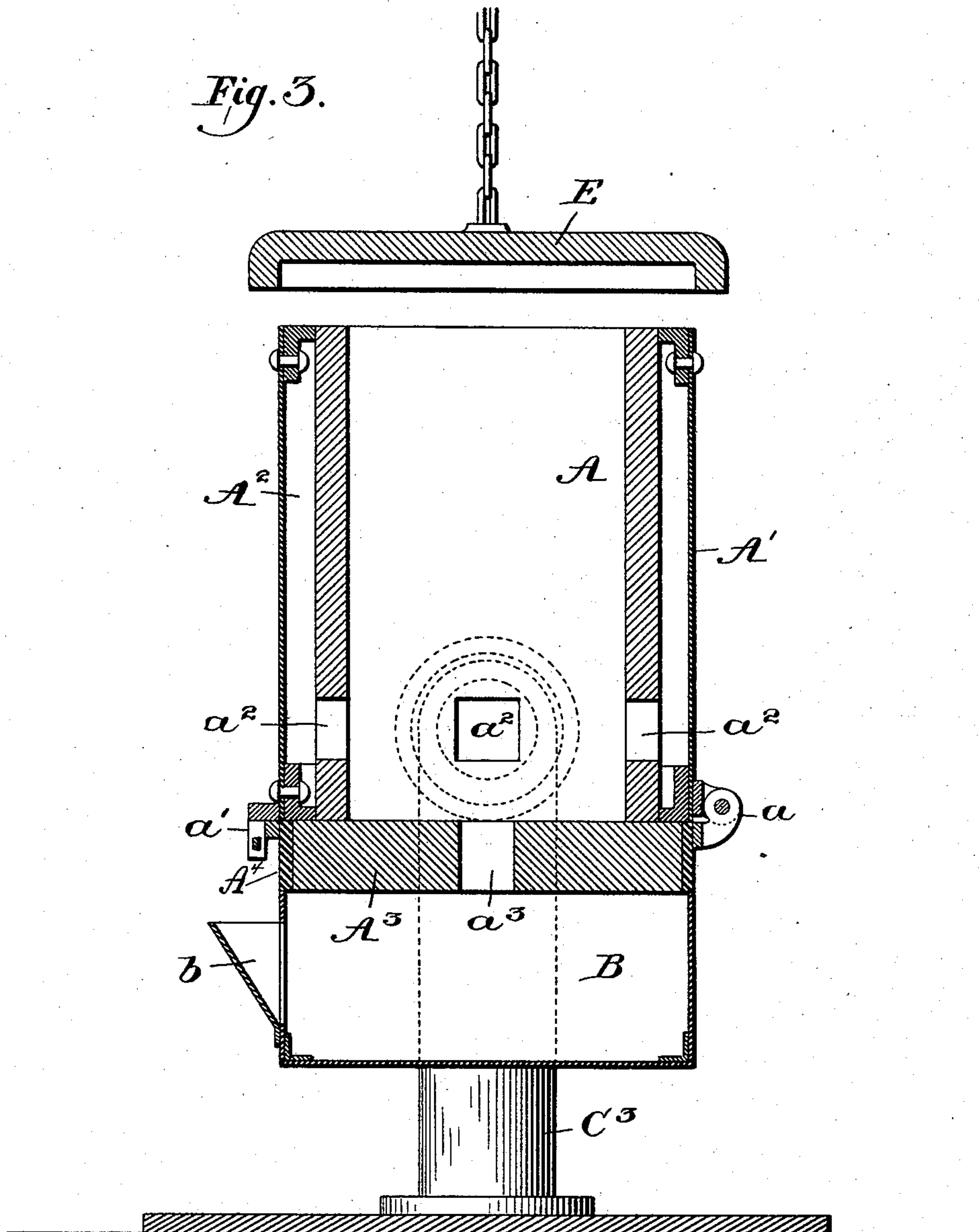
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SMELTING FURNACE.

No. 570,981.

Patented Nov. 10, 1896.



Witnesses.

Mrs. Lore  
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# UNITED STATES PATENT OFFICE.

HENRI CHARLIER, OF PARIS, FRANCE, ASSIGNOR TO JOSEPH G. HENDRICKSON, OF PHILADELPHIA, PENNSYLVANIA.

## SMELTING-FURNACE.

SPECIFICATION forming part of Letters Patent No. 570,981, dated November 10, 1896.

Application filed August 24, 1895. Serial No. 560,334. (No model.)

*To all whom it may concern:*

Be it known that I, HENRI CHARLIER, a citizen of the Republic of France, residing in Paris, France, 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 the letters of reference marked thereon, which form a part of this specification.

My invention relates to smelting-furnaces, and the object of my improvement is to construct a furnace that may be charged continuously and the melted metal poured therefrom without stopping the operation or allowing the furnace to cool down. I accomplish the desired result by constructing and arranging the several parts of the furnace in the manner hereinafter shown, and more particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan view of my improved furnace. Fig. 2 is a vertical sectional view on the line 2 2 of Fig. 1. Fig. 3 is a vertical section on the line 3 3 of Fig. 1. Fig. 4 is a horizontal section on line 4 4 of Fig. 2.

A represents a stout clay crucible, into which the fuel and the metal to be melted is placed.

A' is a wrought-iron casing or jacket surrounding the crucible and joined thereto at the top and bottom.

A<sup>2</sup> is an air-space formed between the crucible A and the iron outer casing A'.

A<sup>3</sup> is a removable bottom on the crucible A. This bottom is connected to the iron casing A' by means of the hinge *a* and the fastening *a'* on the opposite side, being securely luted with fire-clay to prevent the metal leaking out around the joint between the crucible and the said bottom.

*a*<sup>2</sup> *a*<sup>2</sup> *a*<sup>2</sup> *a*<sup>2</sup> are four openings in the lower part of the crucible A.

*a*<sup>3</sup> is an opening formed in the center of the bottom A<sup>3</sup> of the crucible.

B is a wrought-iron reservoir or receptacle, into which the melted metal flows from the

crucible through the opening *a*<sup>3</sup> in the bottom A<sup>3</sup>.

*b* is a spout on the reservoir.

*b'* is a hinge connecting the reservoir B to the wrought-iron ring A<sup>4</sup>, surrounding the bottom A<sup>3</sup>.

*b*<sup>2</sup> is a fastening secured opposite to the hinge *b'* for the purpose of holding the reservoir in the position shown in Fig. 2. This fastening may be of any desired or convenient pattern.

C C' are trunnions formed on opposite sides of the outer iron casing A'. One or both of these trunnions are hollow to allow an air-blast to pass through into crucible A.

C<sup>2</sup> C<sup>3</sup> are hollow supports for the trunnions C C'.

D is an iron boss bolted or otherwise fastened to the outer casing A'.

D' is an extension or arm fastened to the boss D.

D<sup>2</sup> is a lever secured to the arm D' at right angles thereto.

E is a movable top or cover of any suitable material secured over the crucible in such a position as to be readily raised or lowered.

The hollow support C<sup>2</sup> being connected with an air-blast, the operation of the furnace is as follows: The necessary fuel is placed in the crucible A and the fire lighted. The air-blast is then turned on. After the fuel is thoroughly ignited the cover E is lowered, so as to close the top of the crucible A. The fire is then kept up until the lower reservoir B is hot enough to retain or keep metal in a liquid condition, after which the cover E is raised and the metal to be melted is placed in the crucible A along with any additional fuel that may be necessary. As the metal in the crucible melts it will flow downward into the reservoir B, passing through the opening *a*<sup>3</sup>. When the cover E is lowered, so as to close the top of the crucible A, the air-blast passing through the hollow trunnion C will enter the space A<sup>2</sup>, and pass through the openings or ports *a*<sup>2</sup> *a*<sup>2</sup> *a*<sup>2</sup> *a*<sup>2</sup> into the inside of the crucible, forcing all of the flame and heat to pass downward through the opening *a*<sup>3</sup> into the reservoir and out at the spout *b*. When the desired quantity of metal has been melted



down and collected in the reservoir B, it is poured out by tilting the whole furnace, using the lever  $D^2$  for the purpose of turning it on the trunnions  $CC'$ . The furnace being tilted  
 5 in this manner the melted metal will flow out of the spout  $b$  into any receptacle conveniently placed to receive it. After melting down a sufficient quantity of metal to fill the reservoir B and pouring it out, the cinder,  
 10 ash, and other refuse contained in the crucible is cleaned out and a fresh charge of fuel and metal is placed in said crucible and the operation repeated without allowing the furnace or crucible to cool down, thus making  
 15 the operation practically continuous.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

20 1. In a smelting-furnace, the combination of the crucible A, having air-inlets  $a^2$ , and bottom  $A^3$ , hinged to the crucible A provided with the opening  $a^3$ , the air-space  $A^2$  surrounded by the casing or jacket  $A'$ , having attached thereto the handle  $D^2$ , the trunnions C,  $C'$ , the

supports  $C^2$ , and  $C^3$ , one of said supports being tubular and connected with an air-blast, the reservoir B, provided with a spout  $b$ , and hinged to the bottom of the crucible and the movable top or cover E, substantially as shown and for the purpose described. 25 30

2. In a smelting-furnace the crucible A having a bottom  $A^3$  hinged thereto and an opening  $a^3$  therein, a metallic jacket  $A^2$  surrounding said crucible A, air-space between said jacket and crucible, and openings  $a^2$  connecting said air-space with the interior of the crucible, in combination with a metallic receiving-reservoir B hinged to the hinged bottom  $A^3$  and held in position by the latch  $b^2$ , spout  $b$  in said reservoir B, and means for tilting  
 35 40 the said crucible and reservoir, as set forth.

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

HENRI CHARLIER.

Witnesses:

SAML. H. KIRKPATRICK,  
 ARTHUR LANTHIE.