

(No Model.)

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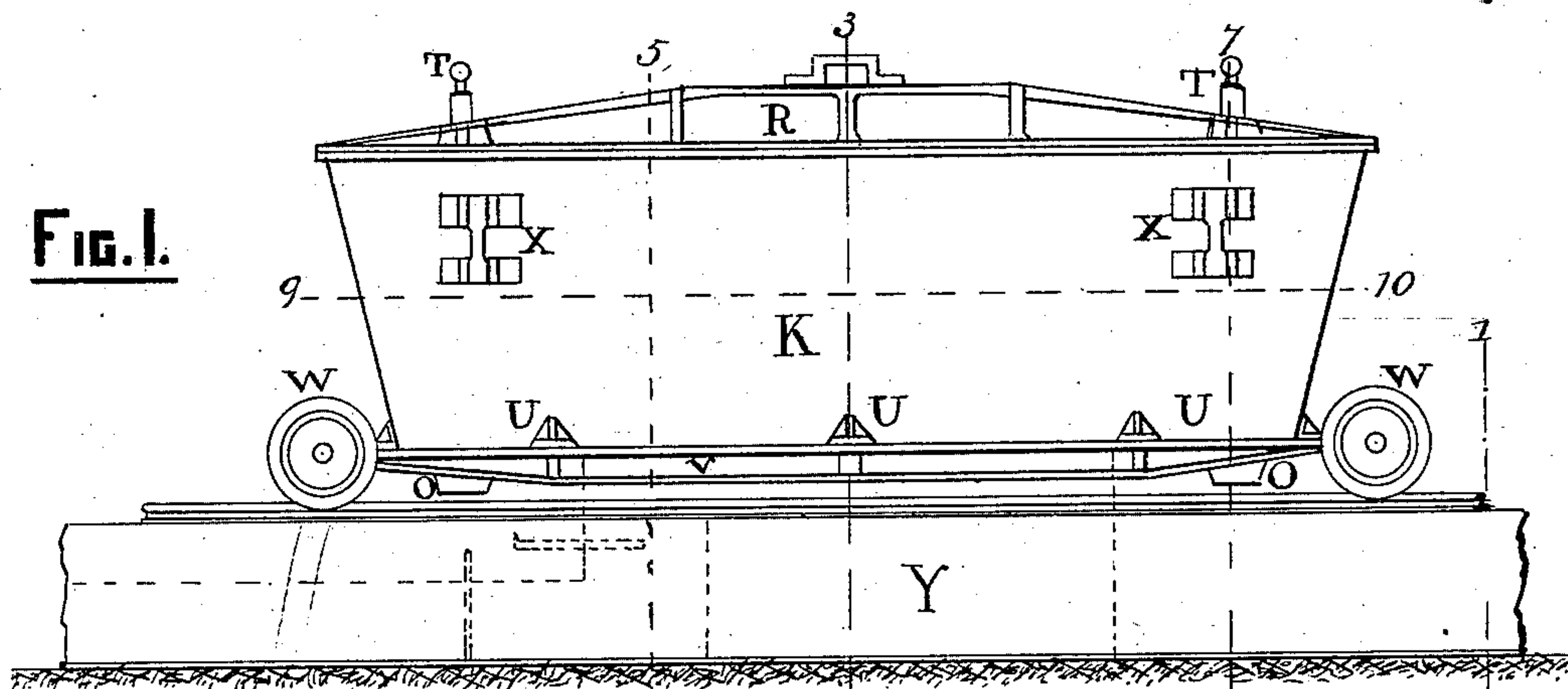
J. E. BOTT.

CRUCIBLE AND MEANS FOR HEATING THE SAME.

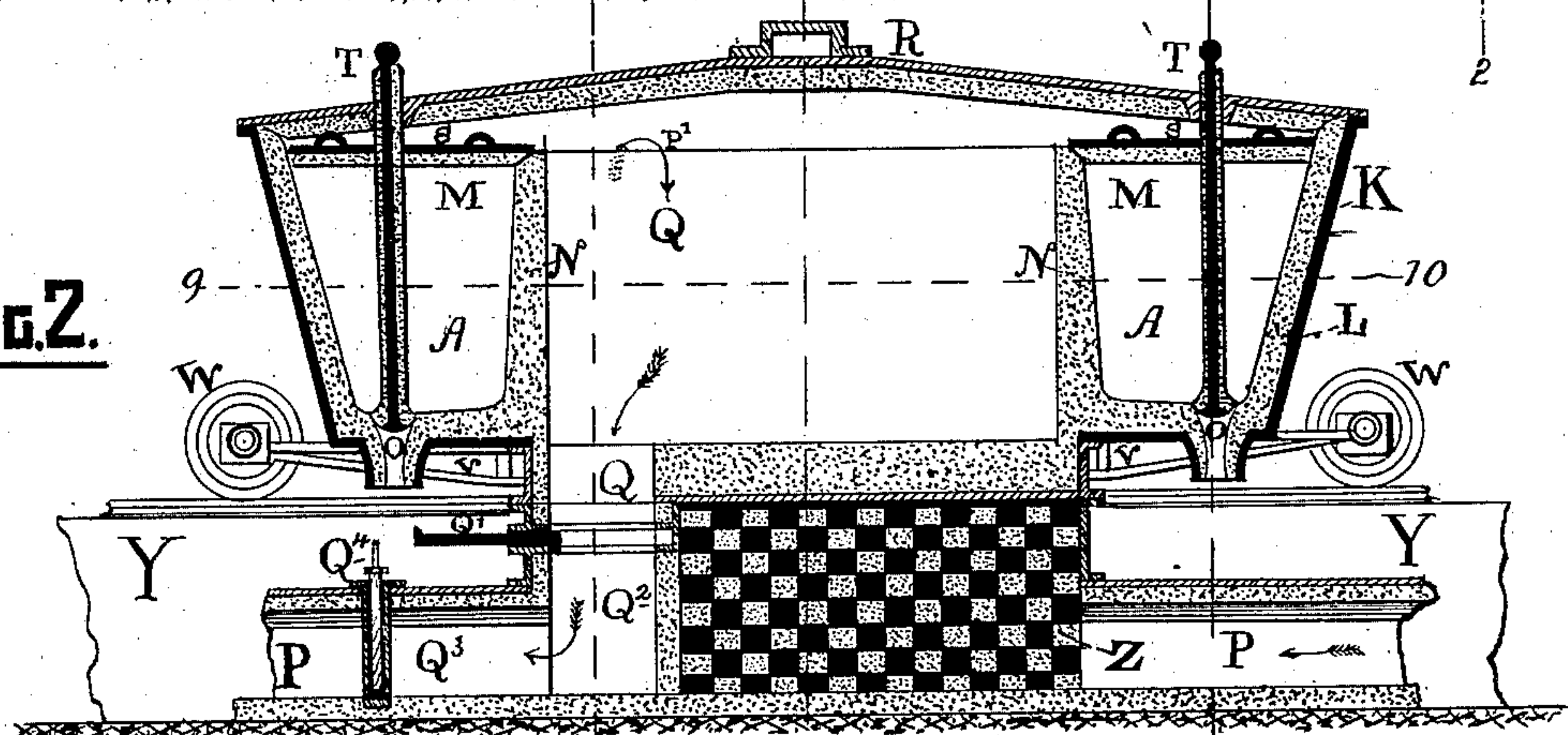
No. 285,214.

Patented Sept. 18, 1883.

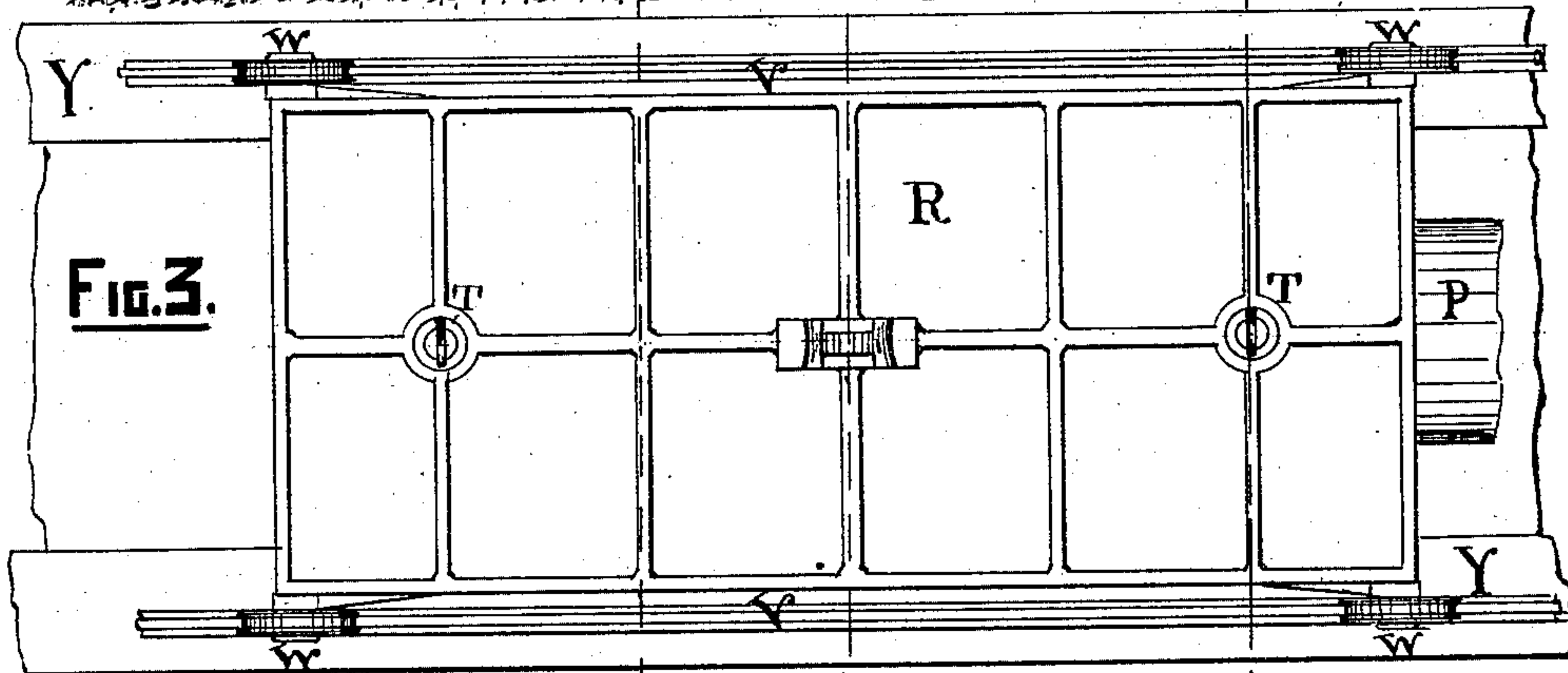
**FIG. 1.**



**FIG. 2.**



**FIG. 3.**



WITNESSES:

Hamilton D. Turner.  
Harry Drury

INVENTOR

Joseph E. Bott  
by his Attorneys  
Howson and Sons

(No Model.)

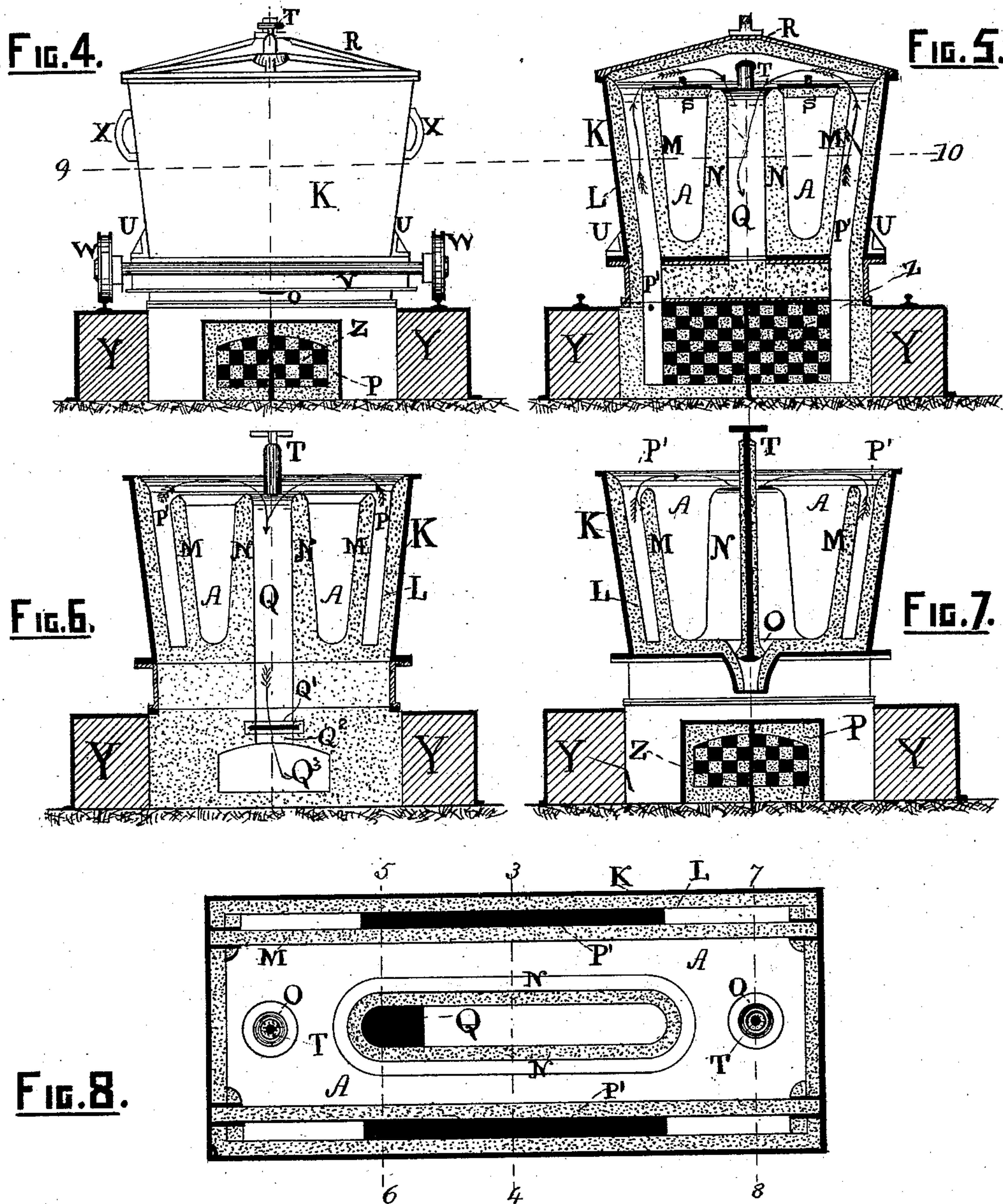
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# UNITED STATES PATENT OFFICE.

JOSEPH ELTON BOTT, OF MARCUS HOOK, PENNSYLVANIA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO JOHN M. BROOMALL, JR., OF MEDIA, AND EDDY L. CLARK AND EDWARD H. BURR, OF PHILADELPHIA, PENNSYLVANIA.

## CRUCIBLE AND MEANS FOR HEATING THE SAME.

SPECIFICATION forming part of Letters Patent No. 285,214, dated September 18, 1883.

Application filed March 5, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH ELTON BOTT, a subject of the Queen of Great Britain and Ireland, and a resident of Marcus Hook, Delaware county, Pennsylvania, United States of America, have invented certain Improvements in Crucibles and Means for Heating the Same, of which the following is a specification.

The object of my invention is to so construct and heat a crucible that large masses of metal can be melted, refined, or converted therein, and can be poured therefrom directly into molds for ingots or castings without the use of ladles and without tilting the crucible.

In the accompanying drawings, Figure 1, Sheet 1, is a side view of a crucible made in accordance with my invention, and also of the supporting-structure therefor; Fig. 2, a longitudinal section of Fig. 1, showing the flues for conveying the gaseous products of combustion to and from the crucible; Fig. 3, a plan view; Fig. 4, Sheet 2, a transverse section on the line 1 2, Fig. 1; Fig. 5, a transverse section on the line 3 4; Fig. 6, a transverse section on the line 5 6; Fig. 7, a transverse section on the line 7 8, and Fig. 8 a sectional plan on the line 9 10.

The crucible consists of an outer casing, K, preferably of plate-iron, said casing having a lining, L, of fire-brick or other refractory material. The interior of the crucible is divided by refractory partitions M and central well, N, into side flues, P', a central flue, Q, and a melting or treating chamber, A, surrounding the well N. The chamber A has a lid or cover, S, and the crucible has a cover, R, preferably dome-shaped, so as to have a reverberatory effect. In the bottom of the crucible are tapping-holes O, communicating with the chamber A, and having plugs T, the stems of which pass through openings in the lids R and S. The crucible is carried by a truck, V, which has wheels W running on rails on the supporting-structure Y, and in the latter are flues for conveying gaseous products of combustion to and from the crucible. When the crucible is in the position shown in the drawings, the side flues, P', communicate with the

flue P, in which is an accumulator, Z, and the central flue, Q, communicates with an exit-flue, Q<sup>2</sup> Q<sup>3</sup>, having valves Q' Q<sup>4</sup>.

The chamber A of the crucible having been filled with the metal or mixture to be melted or otherwise treated, the gaseous products of combustion are permitted to flow through the flues P' and Q, so as to pass over, around, and through the chamber A. When the process has been continued for the proper length of time, the flow of gas is discontinued and the truck V, carrying the crucible, is wheeled off to the molding floor or pit, the molten metal being run from the tapping-holes directly into the molds for forming ingots or castings. The metal is thus protected from the air, oxidation and loss of heat are prevented, no skimming of the molten mass preparatory to pouring is required, and large masses of metal may be handled at one time with very little labor, a continuous flow from the crucible into the molds being possible, so that the production of more perfect and homogeneous castings can be effected than by pouring from a number of small hand-crucibles, or where the metal is run from the furnace into a ladle and poured from the latter. When the metal has been withdrawn, the crucible may be run over the slag-pit and the slag discharged into said pit; or, if the slag is not in condition to flow freely from the crucible, the latter may be run back over the flues and the gases allowed to pass through the crucible for a short time prior to discharging the slag.

In some cases it may be desirable to handle the crucible by means of a crane instead of a truck, and for this purpose the casing K is furnished with ears or shackles X.

If it be necessary to introduce into the crucible at any time fluxes or other materials to facilitate the melting, or which may be required for the proper treatment of the metal, such introduction can be readily effected after first removing the lids or covers R and S, or portions of the same, if they are made in sections. The cover R acts as a reverberator, and the cover S prevents any impurities carried by the gases from gaining access to the chamber A.



The construction and arrangement of the flues and tapping-holes of the crucible may be varied as circumstances may suggest, the arrangement shown being convenient, but not  
5 essential.

I am aware that crucibles have been made with tapping-holes, and also that glass melting-pots and annealing-vessels have been provided with flues, through which products of  
10 combustion have been caused to circulate; hence I claim neither of these features separately considered; but

I claim as my invention—

1. A crucible having a melting-chamber  
15 with a tapping-hole at the base, and inlet and outlet flues, whereby products of combustion are caused to circulate through the crucible, as set forth.

2. A crucible having a melting-chamber  
20 with a tapping-hole at the base, a cover, S, and a central flue, Q, passing through the cover, as set forth.

3. A crucible having a melting-chamber with tapping-hole at the base, flues for the passage of the products of combustion, a cover, 25 R, and a tapping-hole plug the stem of which passes through the cover, as set forth.

4. A crucible having an outer casing, internal partition, M, and well N, forming internal flues, P' and Q, and melting-chamber A, as  
30 set forth.

5. The combination of a crucible having a tapping-hole at the base and internal inlet and outlet flues, with a supporting-structure having flues communicating with the inlet and  
35 outlet flues of the crucible, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOSEPH ELTON BOTT.

Witnesses:

HARRY L. ASHENFELTER,  
HARRY SMITH.