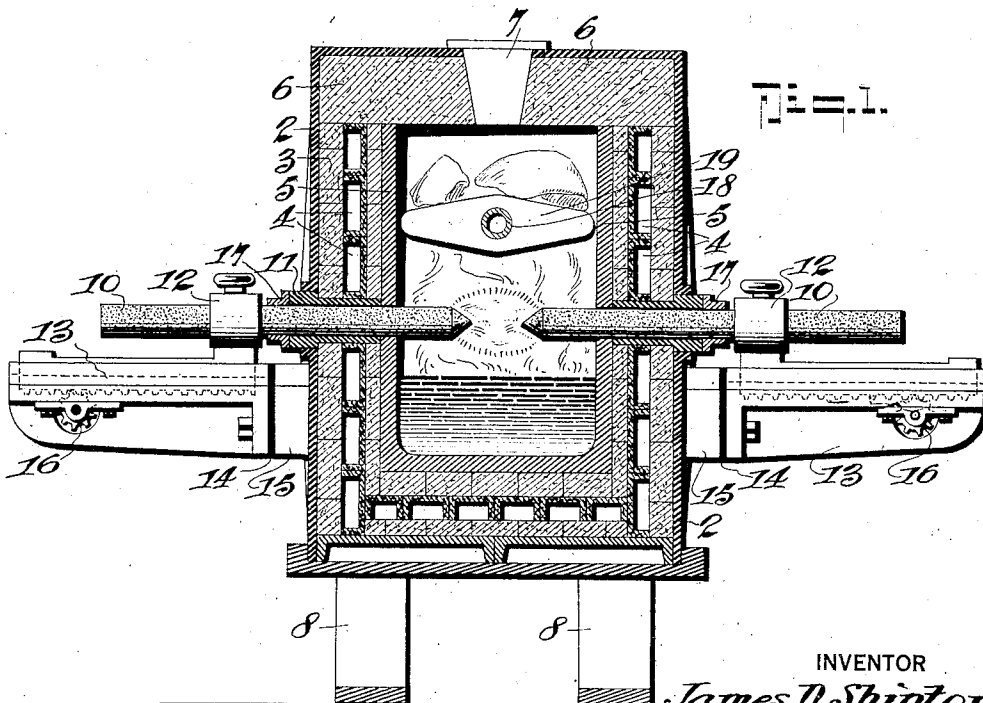
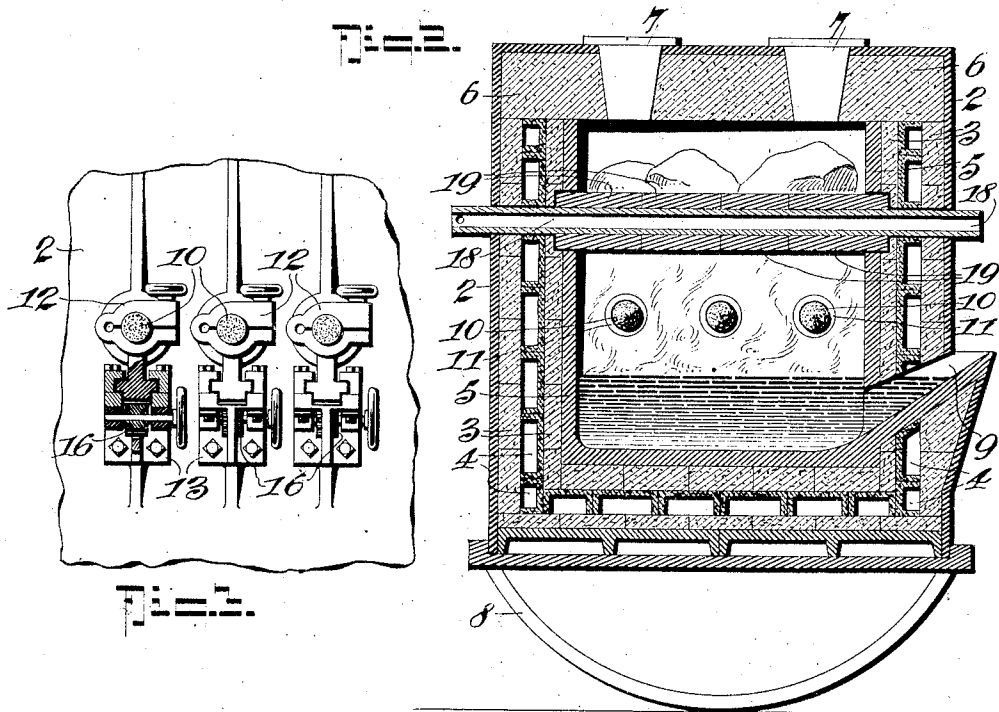


J. D. SHIPTON.
ELECTRIC MELTING FURNACE.
APPLICATION FILED FEB. 8, 1919.

1,313,746.

Patented Aug. 19, 1919.



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ELECTRIC MELTING-FURNACE.

1,313,746.

Specification of Letters Patent.

Patented Aug. 19, 1919.

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To all whom it may concern:

Be it known that I, JAMES D. SHIPTON, a citizen of the Dominion of Canada, residing at Vancouver, in the province of British Columbia, Canada, have invented certain new and useful Improvements in Electric Melting-Furnaces, of which the following is a specification.

This invention relates to an electric melting furnace which has been particularly designed for melting brass or other non-ferrous metals and is of that class wherein the metal is melted by the radiated heat from the arc between carbon electrodes.

The objects of the improvements are the deflection of the heat onto the metal to be melted, and the retention of the greater part of it in the lower part of the furnace chamber.

This provision for deflecting the heat of the arc to the lower part of the chamber is also used as a tiltable shelf whereon additional metal is placed to be heated by the surplus heat from the lower part of the chamber prior to delivery thereto, whereby an economy of heat is effected, time of melting is saved and the upper part of the chamber is not exposed to excessive heat.

The invention is fully described in the following specification, reference being made to the drawings by which it is accompanied, in which:

Figure 1 is a vertical cross section in a plane parallel to the axis of the electrodes.

Fig. 2 is a vertical section across the axis of the electrodes.

Fig. 3 is an end view of the carbon holders and of the brackets in which they are slidably carried.

In these drawings 2 represents the outer metal casing of the melting chamber which is preferably rectangular and is lined with fire-brick as at 3 with air spaces 4 formed in the brick or in the building of it. The chamber is provided with an inner lining 5 of special refractory material such as is commonly used in such furnaces. The cover 6 which is relatively permanent and is designed to be removable only when access is required to the interior of the chamber, is provided with one or more charging apertures which are closed with removable plugs 7.

This melting chamber is mounted on

rockers 8 to facilitate pouring of the molten metal through the pouring aperture 9, the outlet of which is closed when the furnace is in use, with a brick or slab of refractory material placed on it.

The carbons 10 are slidable through a bushing or sleeve 11 of special refractory electrical, non-conducting material, secured in the side walls of the melting chamber.

The carbon holders 12 are slidably supported in brackets 13 which are secured with suitable insulation 14 to projections 15 formed on the casing 2 of the furnace chamber. They are adjustable by pinions 16, the teeth of which mesh with rack teeth formed on the underside of the slidable part of the carbon holder 12.

On each carbon 10 between the outer end of the sleeve 11 and the adjacent end of the carbon holder 12 a gas check ring 17 of cast iron is closely slidably fitted and is faced to fit closely against the end of the bushing 11 to prevent escape of the furnace gases around the carbon and to radiate the heat therefrom before it reaches the carbon holder 12.

Rockably mounted in the walls of the upper part of the chamber with its axis across those of the carbons 10 is a hollow shaft 18 on which a series of shelf members 19 of refractory, electrical, non-conducting material are secured to form a tiltable shelf conforming closely to the cross section dimensions of the chambers in plan.

When the lower part of the chamber is charged with metal to be melted by the heat radiated direct from the arc, the shelf 19 is charged with metal to be preheated by such surplus heat as is radiated and conducted from the lower part of the chamber, which preheated metal may later be dumped into the lower part of the chamber and to come under the influence of the heat directly radiated from the arc and form part of the melted charge.

The surplus heat over what is used in melting the metal in the lower part is thus utilized in preheating metal to be later added to the charge and incidentally prevents that surplus heat from being wasted in unnecessarily heating the upper part of the chamber.

By the attachment of the carbon holder slideways on suitable insulation to the casing

2 of the melting chamber, the carbons do not require to be withdrawn from the chamber or the current cut off from them while pouring which is an advantage as the chamber
5 does not cool down and heat is economized.

Having now particularly described my invention, I hereby declare that what I claim as new and desire to be protected in by Letters Patent, is:

10 1. In an electric furnace of the class described wherein is provided an internal chamber and a charging opening, and wherein the heat of the arc is radiated onto the metal to be melted, means located in the upper part of the furnace chamber for preheating the metal intended later to form a
15 part of the charge in the lower part of the chamber.

2. In an electric furnace of the class described, means located immediately above
20 the carbons for deflecting the heat of the arc on to the metal to be melted, said deflecting means forming a shelf on which metal may be preheated in readiness to form a later part of the charge.

25 3. In an electric furnace of the class described, a shelf of refractory electrical non-conducting material conforming to the cross section plan of the chamber and pivotally
30 supported above the carbons that it may be

tilted to deliver its contents into the lower part of the chamber.

4. In an electric furnace of the class described, the combination with the carbons
35 slidable through the walls of the furnace in bushings of refractory electrical non-conducting material, means for checking escape of the furnace gases past the carbons and for radiating the heat therefrom before it reaches the carbon holders, a sleeve of metal
40 slidably mounted on each carbon and adapted to fit closely against the outer end of its bushing.

5. An electric furnace of the class described, comprising a metal casing lined
45 with refractory material, a cover relatively permanently secured, said cover provided with charging apertures with removable closing plugs, carbons slidable through opposite walls of the furnace in bushings of
50 refractory electrical non-conducting material, carbon holders slidably mounted on brackets secured on suitable insulation to the casing wall of the furnace, a metal ring slidably
55 mounted on each carbon and faced to closely fit against the outer end of the bushing of the carbon.

In testimony whereof I affix my signature.

JAMES D. SHIPTON.