

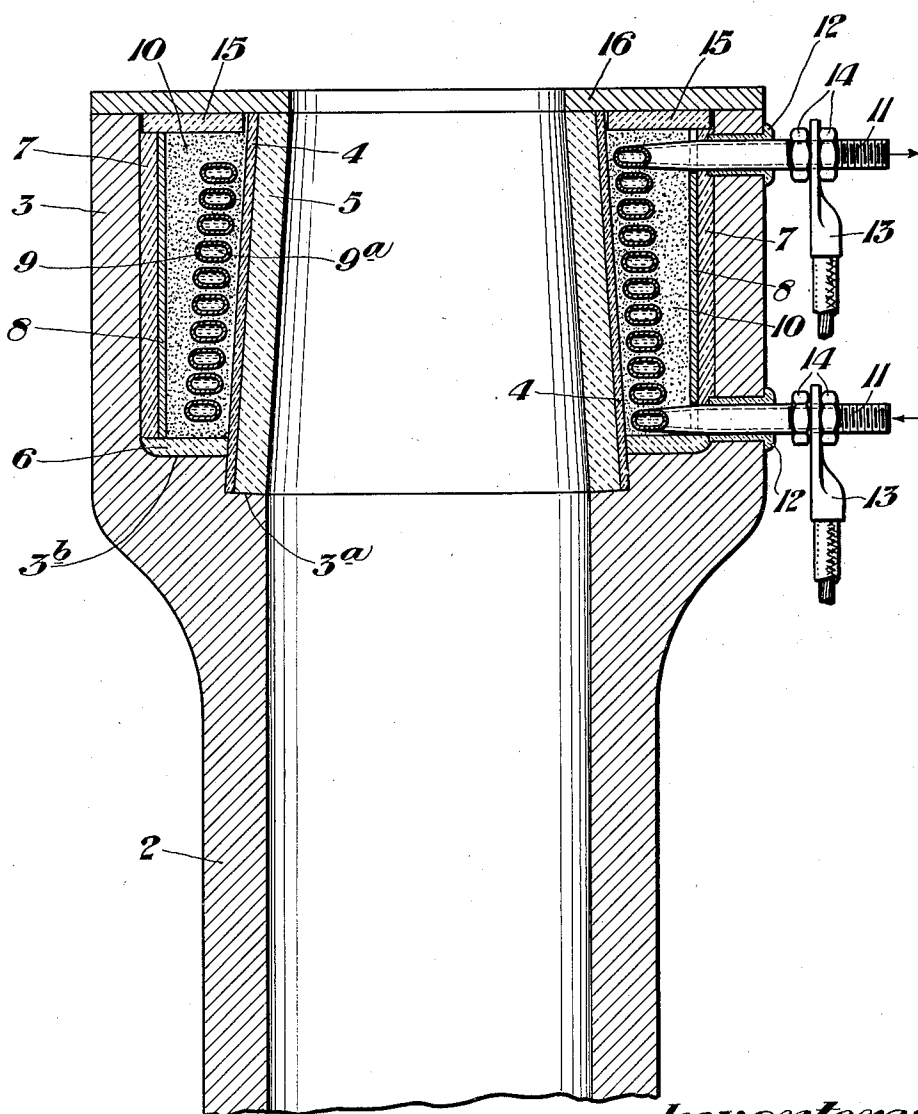
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INGOT MOLD

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INGOT MOLD

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2 Claims. (Cl. 22—139)

This invention relates to improvements in ingot molds, and has for one of its objects the provision of a novel electrical induction heated mold which will be highly efficient in operation and one which will be very durable and require but little attention.

These and other objects will appear after referring to the drawing, in which the single figure is a sectional elevation of the apparatus of the invention.

Referring more particularly to the drawing, the numeral 2 indicates an ingot mold having an enlarged upper portion 3. The upper portion 3 is provided with a shallow tapered recess 3^a, and an adjoining deeper recess 3^b, which does not extend downwardly into the wall of the upper portion of the ingot mold as far as the recess 3^a.

The recess 3^a is provided with a mica partition 4 to cover the deeper recess 3^b and an inner refractory lining 5 for the mica partition. An annular ring 6, of refractory material, is disposed at the bottom of the recess 3^b, and an asbestos wall 7 disposed between the upper wall of the ingot mold 3 and a copper lining wall 8.

An induction coil 9 is positioned in the recess 3^b between the mica wall 4 and the copper lining wall 8 and comprises a number of hollow convolutions which contain a suitable cooling fluid 9^a. Suitable refractory insulating material 10, which is shown in the drawing as being granular but which may be in practice of strip or other form, completely insulates the coil from its surrounding media. The ends 11 of the induction coil 9 protrude through suitable insulated openings 12 in the wall of the upper portion 3 of the mold, in order that they may be provided with threaded ends arranged in contact with power connections 13 by means of the nuts 14 on either side of the terminals of the power connections.

Suitable cooling fluid connections are attached to the extreme outer threaded ends of the coil. A second refractory ring is provided for closing

the upper end of the recess 3^b and a steel ring 16 placed over the entire apparatus.

High frequency current is passed through the coil 9 which functions as a primary unit and lines of electrical force are set up around the coil. Only those passing through the center of the mold, however, are used. The lines of force passing outside the mold proper are dampened by means of the copper lining wall 8. The electrical energy of these lines of force in the mold center is thus utilized as the heat energy in the molten metal itself, producing a high thermal efficiency.

While we have shown and described one specific embodiment of our invention it will be understood that we do not wish to be limited exactly thereto, since various modifications may be made without departing from the scope of our invention, as defined in the following claims.

We claim:

1. In an ingot mold, an annular recess, a tubular mica lining for said recess, a refractory inner lining for said mica lining, a second recess above and adjoining said first recess, a refractory ring seated within said second recess, an asbestos lining for said second recess, a copper inner lining for said asbestos lining, an induction primary coil disposed between said copper lining and said mica lining, refractory packing for said coil, terminals for said coil extending through and insulated from the wall of said ingot mold, a refractory ring for the top of said second recess and a cover for said ring and said first named recess.

2. In an ingot mold, a recess, a mica lining for said recess, a refractory lining for said mica lining, a second recess adjoining said first recess, an asbestos lining for said second recess, a copper lining for said asbestos lining and a water-cooled refractory insulated induction coil disposed in said second recess between said mica and said copper linings.

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