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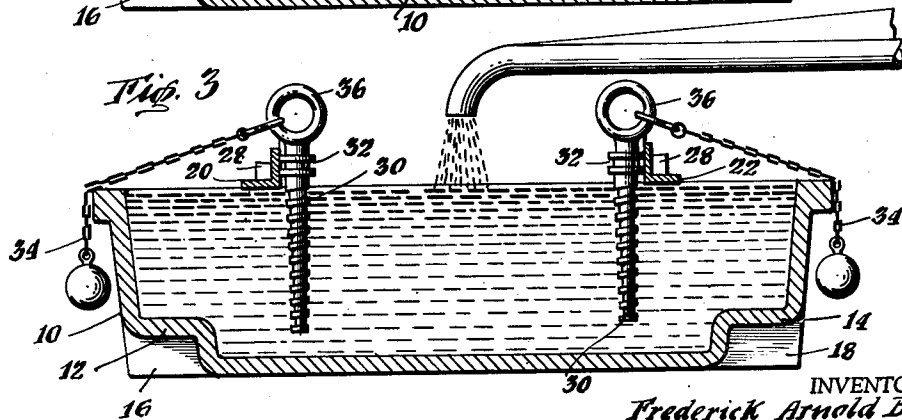
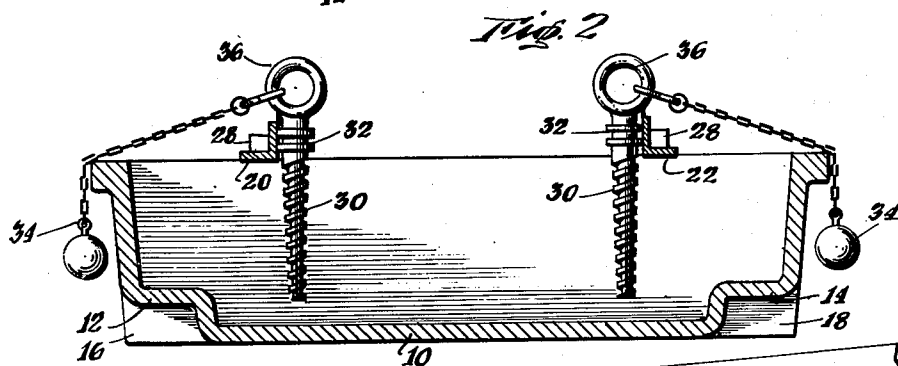
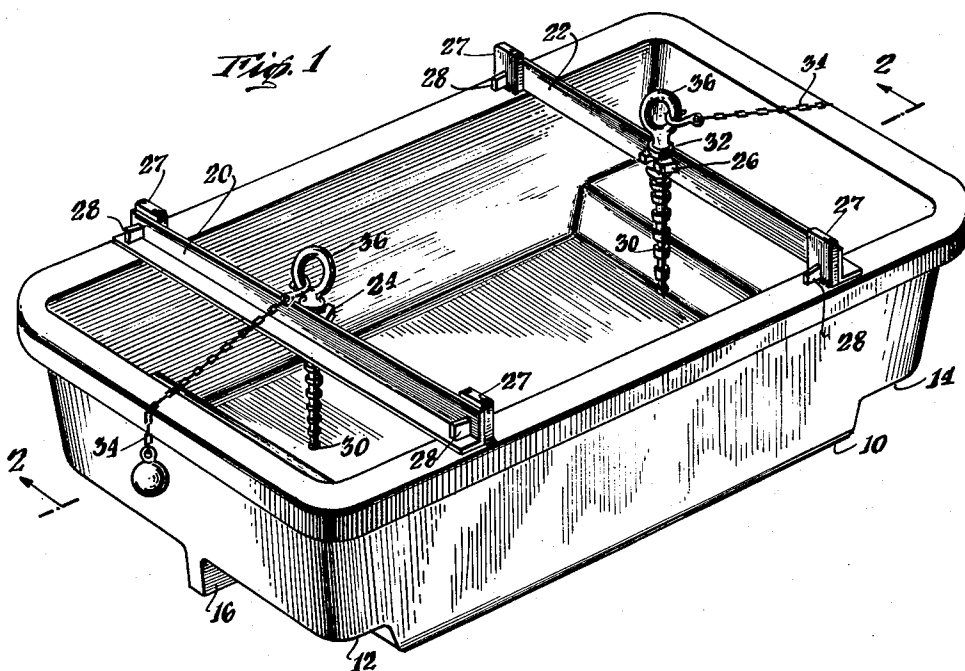
F. A. BOND

2,480,899

APPARATUS FOR CASTING MASSIVE BULLION BLOCKS

Filed April 12, 1946

2 Sheets-Sheet 1



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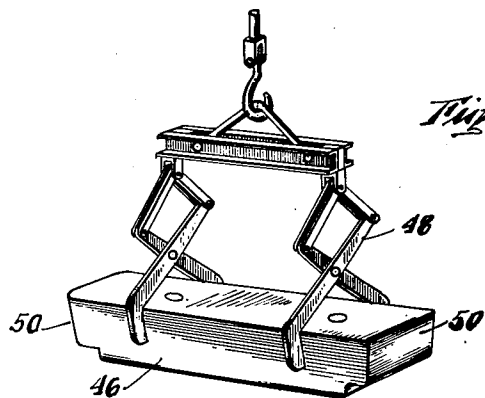
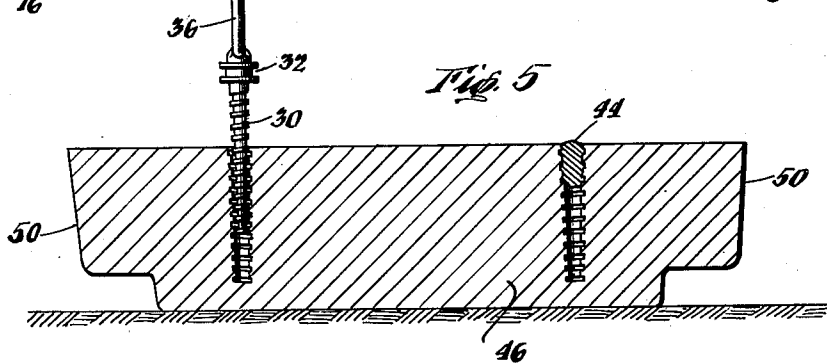
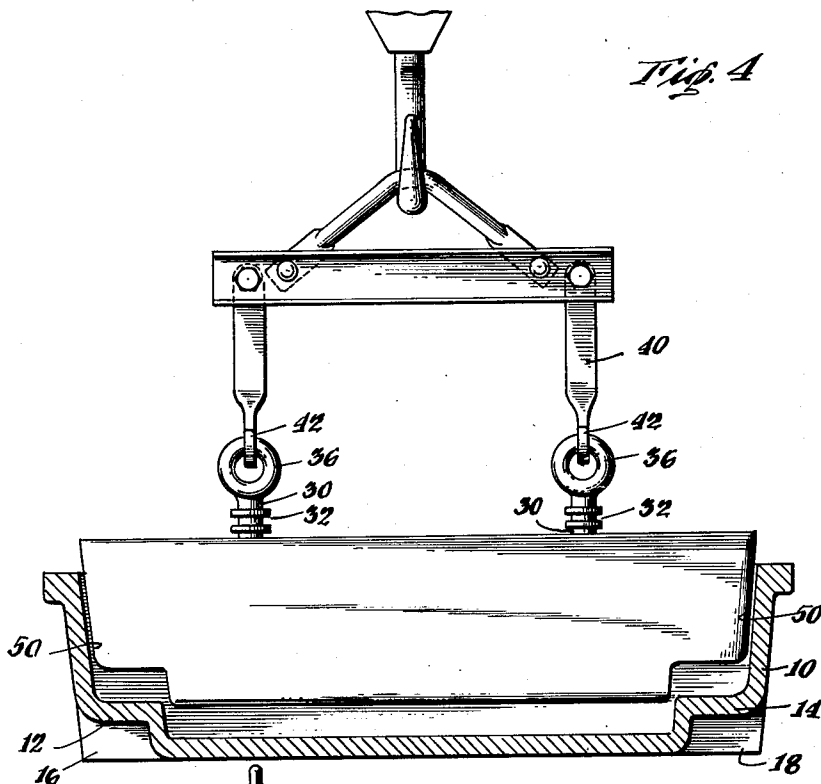
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APPARATUS FOR CASTING MASSIVE BULLION BLOCKS

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2,480,899

APPARATUS FOR CASTING MASSIVE
BULLION BLOCKS

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1 Claim. (Cl. 22-139)

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This invention relates to the casting of lead and particularly concerns apparatus for producing massive lead blocks which are readily amenable to handling and yet free from anchors or similar handling devices of extraneous metal or materials.

It has long been the custom in many lead smelters to cast lead bullion in bars of the order of 100 pounds for shipment to refineries. Upon arrival at the refinery it is found, almost invariably, that the bars have shifted in transit necessitating either restacking for unloading by truck or hand charging to charging machines.

Within the lead refineries themselves there has developed over the years the practice of making interdepartment or intradepartment transfers by casting lead blocks of several tons in which a steel anchor is embedded to permit easy handling of the blocks by crane. However, for interplant shipments, such as between lead smelter and refinery such practice is undesirable by reason of the shipment of the anchors of extraneous material from smelter to refinery and the difficulties in weighing which their presence occasions.

The present invention overcomes these and other difficulties by providing method and means for producing a massive lead block which is readily removed from the casting mold and which is thereafter free from handling devices of extraneous metal or material. By "massive" lead block is meant one of several tons weight, e. g., of the order of ten tons.

Although the novel features which are believed to be characteristic of this invention will be particularly pointed out in the claim appended hereto, the invention itself, as to its objects and advantages, and the manner in which it may be carried out, may be better understood by referring to the following description taken in connection with the accompanying drawings forming a part thereof, in which

Fig. 1 is a perspective view of a mold fitted for casting massive lead blocks in accordance with the invention;

Fig. 2 is a longitudinal section taken on the line 2-2 of Fig. 1;

Fig. 3 is a longitudinal view similar to that of Fig. 2; but showing the filling of the mold with molten lead;

Fig. 4 is a view showing a cast block being removed from the mold by means of a bail lift engaging the screws cast in the block;

Fig. 5 is a longitudinal section through a cast block showing one screw partially removed and

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another screw completely removed with the opening closed by a block of lead; and

Fig. 6 is a perspective view illustrating the handling of the cast block by double jaw automatic tongs after the screws have been removed.

Like reference characters denote like parts in the several figures of the drawings.

Referring to the drawings, particularly Figs. 1-3, 10 denotes a rectangular mold having offset portions 12 and 14 at either end of the bottom thereof and reinforcing ribs 16 and 18. Extending across the top of the mold 10 are a pair of cross pieces 20, 22 provided at their respective central portions with fork members 24, 26. Lugs 27 welded to either side of the top rim of the mold 10, as shown, secure the cross pieces 20, 22 in position by means of key members 28. A pair of screws 30 provided with slotted collar portions 32 are positioned in the mold 10 by engagement with the fork members 26 and the ball and chain members 34 which extend from the eyes 36 of the screws 30 over the ends of the mold 10.

In Fig. 4 there is illustrated a bail device 40 having hooks 42 for engaging the eyes 36 of the screws 30 for removal of the cast block from the mold 10. Reference character 44, Fig. 5, denotes a lead plug with which the hole in the cast block can be sealed following removal of the screw 30. Handling of the finished cast block 46 by means of a double jaw automatic tongs 48 is illustrated in Fig. 6.

In casting massive blocks of lead bullion in accordance with the invention, the mold 10 is fitted with cross pieces 20 and screws as illustrated in Figs. 1 and 2, the molten lead then being introduced into the mold as illustrated in Fig. 3. Following introduction of the molten metal, same is cooled for a sufficient period to firmly embed the screws therein. For a block of approximately 10 tons—say, 8 feet by 3¼ feet by 14 inches deep—a period of two or three hours will ordinarily suffice for solidifying the casting but this time can be shortened, to say, one hour, by chilling with water if desired.

Following the cooling period the cast block is readily removed by means of a crane (not shown) carrying the bail 40 whose eyes 42 engage the screw eyes 36.

If destined for interplant shipment the cast block is directly deposited in a gondola car for shipment—six such blocks constituting a carload. Upon depositing the block and removing the bail 40 the screws are readily removed from the massive block simply by inserting a bar through the eye 36 and giving same two and

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one-half to three turns, depending upon the pitch of the screw 30. The screw is then returned for casting new blocks and the cavity left in the block may be readily closed by hammering in a cylinder of lead 44 as illustrated in Fig. 5. This latter operation will effectively prevent the interference of any foreign materials, such as rain or snow, during transit. Alternatively, a bar can be placed in the screw cavity and driven down through the bottom of the block to provide a drain.

Further handling of the blocks may be by crane carrying a Gellert double jaw automatic tongs such as illustrated in Fig. 6, or, if desired, by chains engaging the noses 50 at either end of the block.

The advantages of the present invention will be self-evident to all those who have had to deal with the problems attending the unloading and handling of either the usual 100 pound lead bullion bars or the larger bullion blocks embodying the expedient of freezing steel anchors in the blocks.

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What is claimed is:

Apparatus for casting massive, lead blocks comprising: a rectangular-shaped mold, a pair of cross pieces extending across the top of the mold, each cross piece having a forked member affixed thereto, and a pair of screws, said screws having a slotted collar portion near their respective head ends for engaging the respective forked members of the cross pieces aforesaid during the casting operation.

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The following references are of record in the file of this patent:

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