

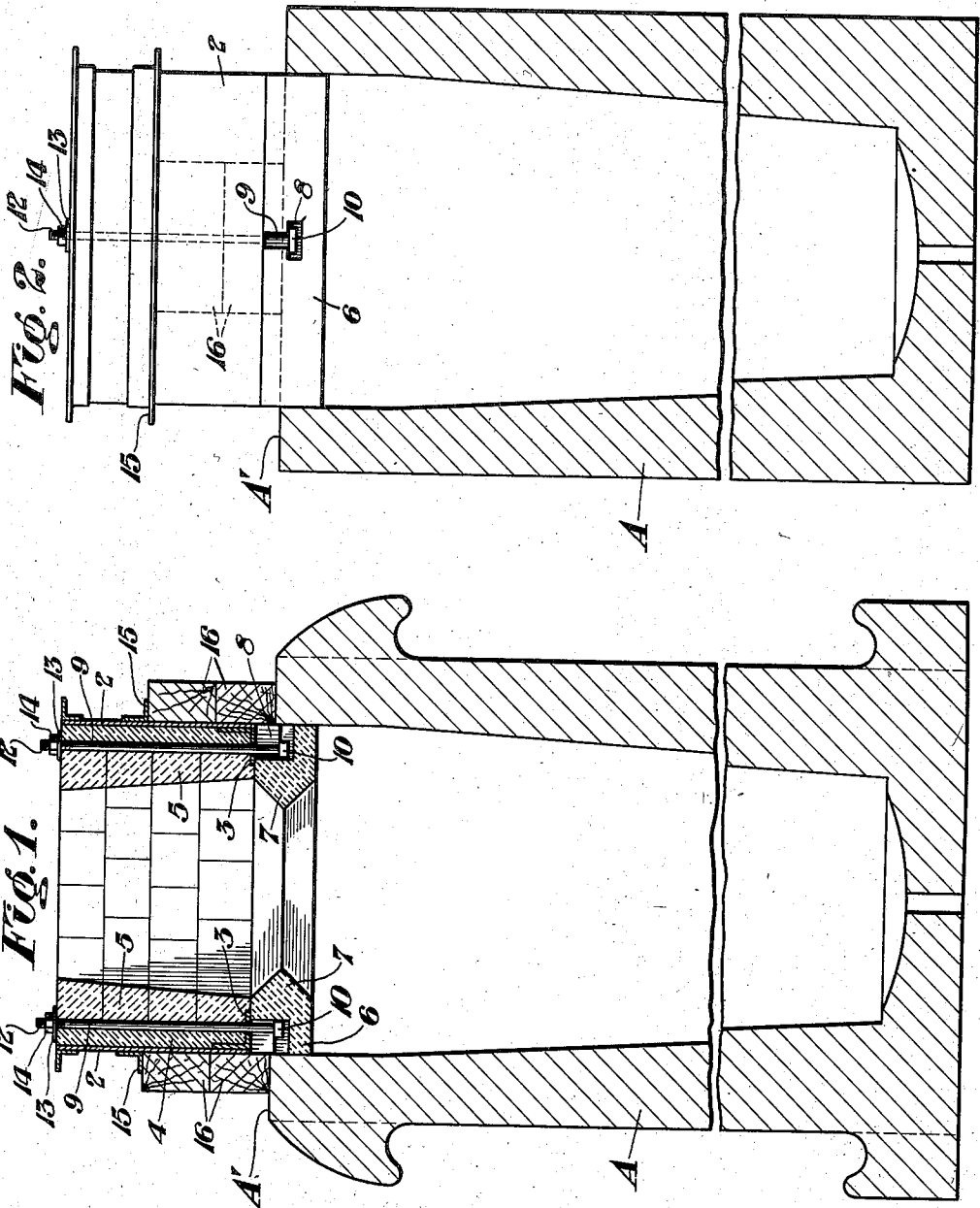
March 19, 1935.

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APPARATUS FOR CASTING INGOTS

1,994,683

Filed Dec. 30, 1933

2 Sheets-Sheet 1



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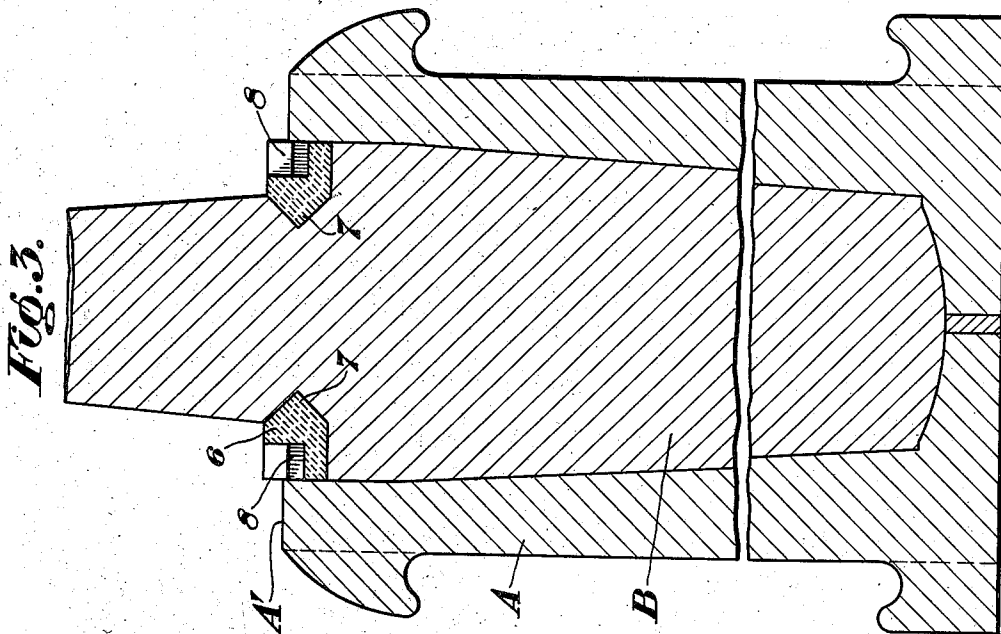
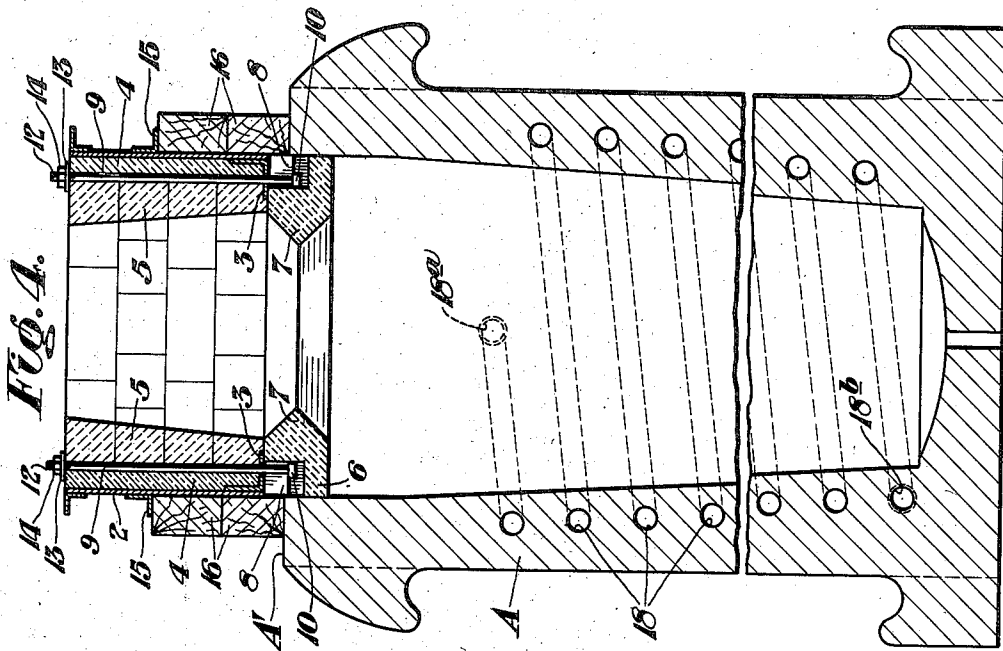
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APPARATUS FOR CASTING INGOTS

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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APPARATUS FOR CASTING INGOTS

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Application December 30, 1933, Serial No. 704,737

2 Claims. (Cl. 22-147)

This invention relates to a novel apparatus for casting ingots.

One object of the present invention is the provision of a novel apparatus for casting ingots, the use of which results in a highly improved quality of product.

Another object is to provide a novel "hot-top" having readily detachable portions, some of which may be used again, and another portion of which is intended to remain on the ingot and serve to enhance its characteristics.

Still another object is to provide a novel ingot mold to be used with the "hot-top" of the invention which is extremely efficient in service, and one which may be easily and economically manufactured.

These and further objects will be apparent after referring to the drawings, in which:

Figure 1 is a sectional elevation of the device of the invention as applied to a conventional type of ingot mold.

Figure 2 is a side elevation with the ingot mold shown in section.

Figure 3 is a sectional elevation of an ingot mold having disposed therein the novel ingot of the invention, together with a portion of the hot-top.

Figure 4 is a view similar to Figure 1 but disclosing a modified form of ingot mold.

Referring more particularly to the drawings, the letter A designates a conventional ingot mold of the "big-end-up" type, it being understood, however, that this is solely for the purpose of illustration, as the invention may be practiced on any existing construction of this class.

The novel hot-top of the invention comprises a metallic shell 2 preferably composed of welded or riveted steel construction, and which has a continuous inward projection 3 adjacent one of its ends. The shell 2 is provided with a heat insulating material 4 of any well known composition, the latter having a fire brick lining 5. In assembling, the heat insulating lining 4 and the fire brick lining 5 are both so adjusted with respect to the shell 2 as to rest upon the continuous inward projection 3.

A continuous block 6, which is composed of a suitable refractory material such as, for example, a mixture of ground coke and brick which have been suitably baked, is shaped in such manner as to provide a constricted opening in the center thereof. The block 6 is provided with a plurality of slots 8, and a corresponding number of bolts 9 are provided with rectangular heads 10 that are adapted to seat in the slots in such manner as to permit the bodies of the bolts to

extend upwardly through the continuous inward projection 3 of the shell 2 and between the heat insulating lining 4 and the fire brick lining 5.

The bolts 9 are threaded on their other extremities and provided with washers 13 and nuts 14, which make for a unitary assembly of the elements described.

A continuous angle, or projecting lug, 15, is provided on the outer surface of the shell 2, and adapted to cooperate with a plurality of spacer blocks 16, preferably of wood, for spacing the shell 2 relative to the top of the ingot mold, which is designated at A'.

After the "hot-top" of the invention has been used on a conventional ingot mold, the nuts 14 may be removed from the threaded ends 12 of the bolts 9, permitting the shell 2 with its heat insulating lining 4 and refractory brick lining 5 to be stripped from the top of the ingot and reused for the pouring or "teeming" of the other ingots.

The block 6 adheres to the upper portion of the ingot and must be broken away therefrom and a new block provided and installed by the bolts 9 for reuse.

Due to the constricted portion 7 of the block 6 and the heat dissipating qualities of the ingot mold A, decidedly superior metallurgical results are obtained.

Referring to Figure 4, a modified form of the invention is disclosed as providing a cooling coil 18 embedded in the material of the ingot mold A, and adapted to contain a cooling medium, such as water, for the purpose of accelerating the high rate of heat transfer from the walls of the mold. The coolant is distributed through the coil 18 by means of suitable inlet and outlet openings, as shown at 18a and 18b, respectively.

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

I claim:

1. A hot-top for ingot molds comprising a metallic shell having an inwardly projecting portion adjacent its lower extremity, a lining of heat insulating material for said metallic shell, a fire-brick lining for said heat insulating lining, both of said linings being adapted to rest upon the inwardly projecting portion of said metallic shell, a substantially wedge-shaped removable refractory ring having a continuous inwardly projecting portion, a plurality of bolts secured

to said ring and extending between the heat insulating and fire brick linings, and means for securing said bolts to the upper portions of said head insulating and said fire brick linings.

- 5 2. A hot-top for ingot molds comprising a metallic shell having an inwardly projecting portion adjacent its lower extremity, a lining of heat insulating material for said metallic shell, a fire-brick lining for said heat insulating lining, 10 both of said linings being adapted to rest upon the inwardly projecting portion of said metallic

shell, a continuous block having an inwardly projecting portion, a plurality of bolts secured to said block and extending between the heat insulating and fire-brick linings, means for securing said bolts to the upper portion of said heat insulating and said fire-brick linings, lugs on the outer surface of said metallic shell, and means for spacing said lugs from the upper portion of the ingot mold.

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