

No. 684,773.

Patented Oct. 22, 1901.

J. W. ANDERSON.  
INGOT MOLD.

(Application filed Apr. 16, 1901.)

(No Model.)

2 Sheets—Sheet 1.

FIG. 1.

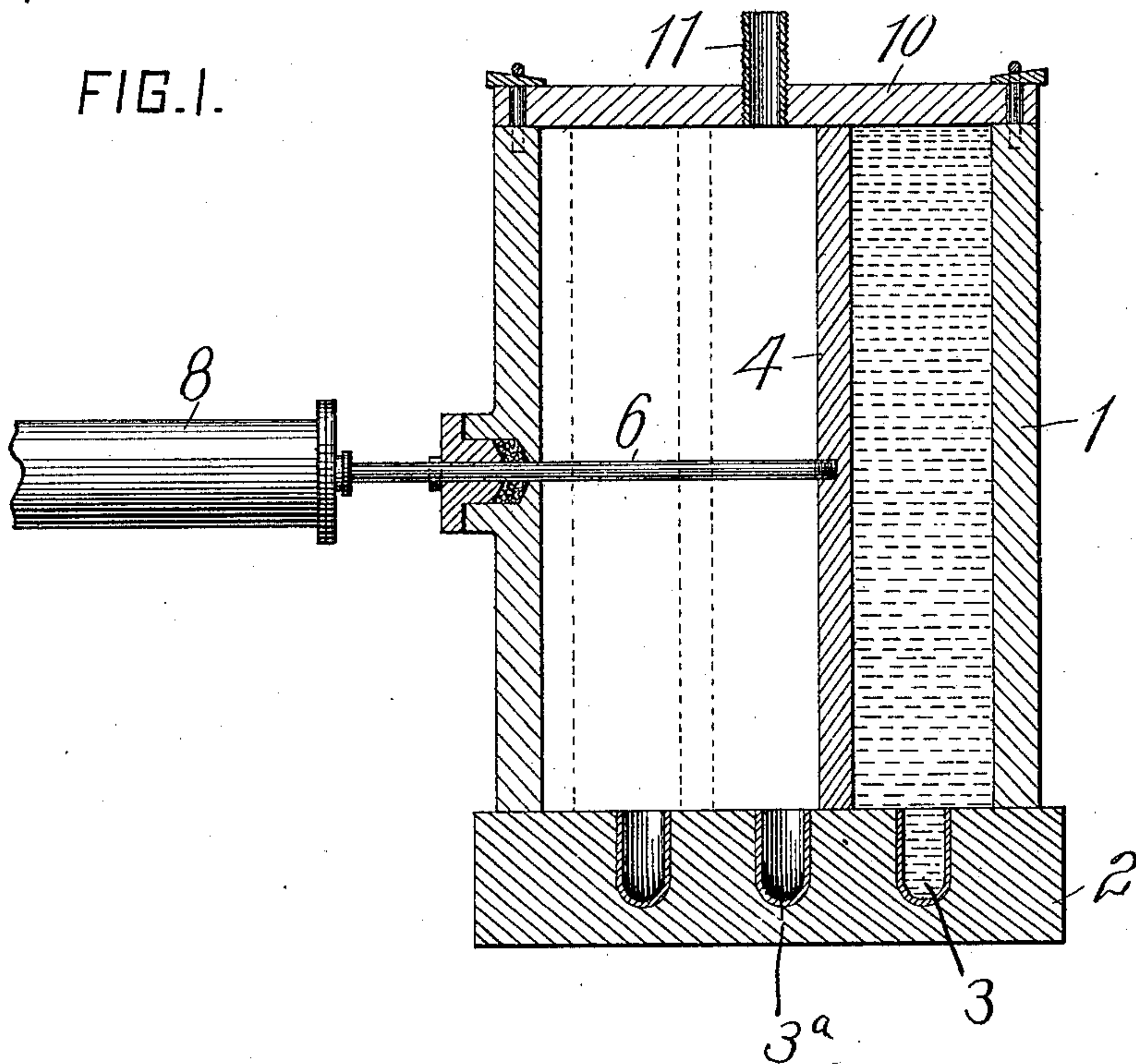
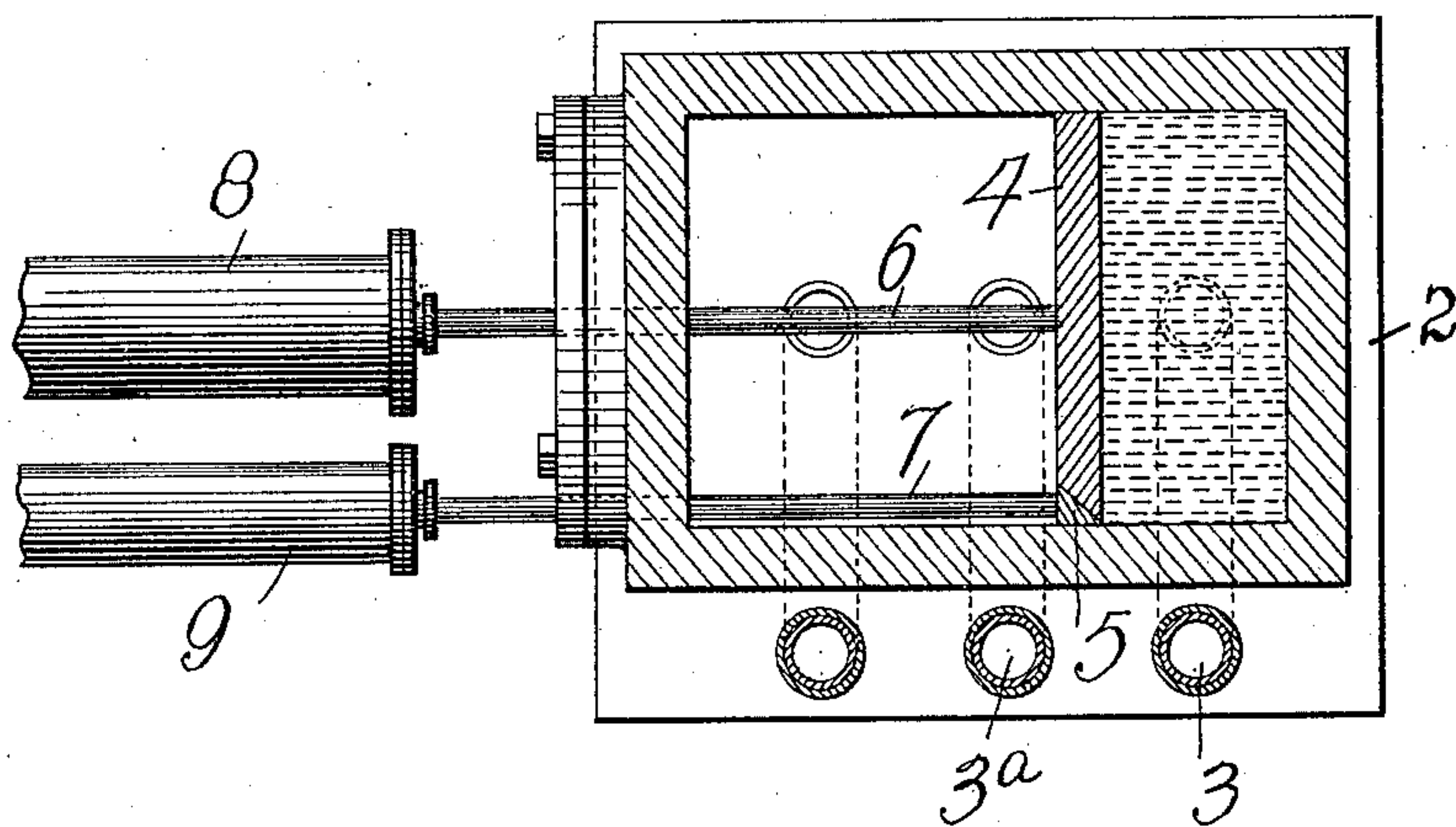


FIG. 2.



WITNESSES:

*Herbert Bradley.*  
*F. M. Daffer*

INVENTOR

*John W. Anderson*  
by *Darius B. Wolcott* Att'y.

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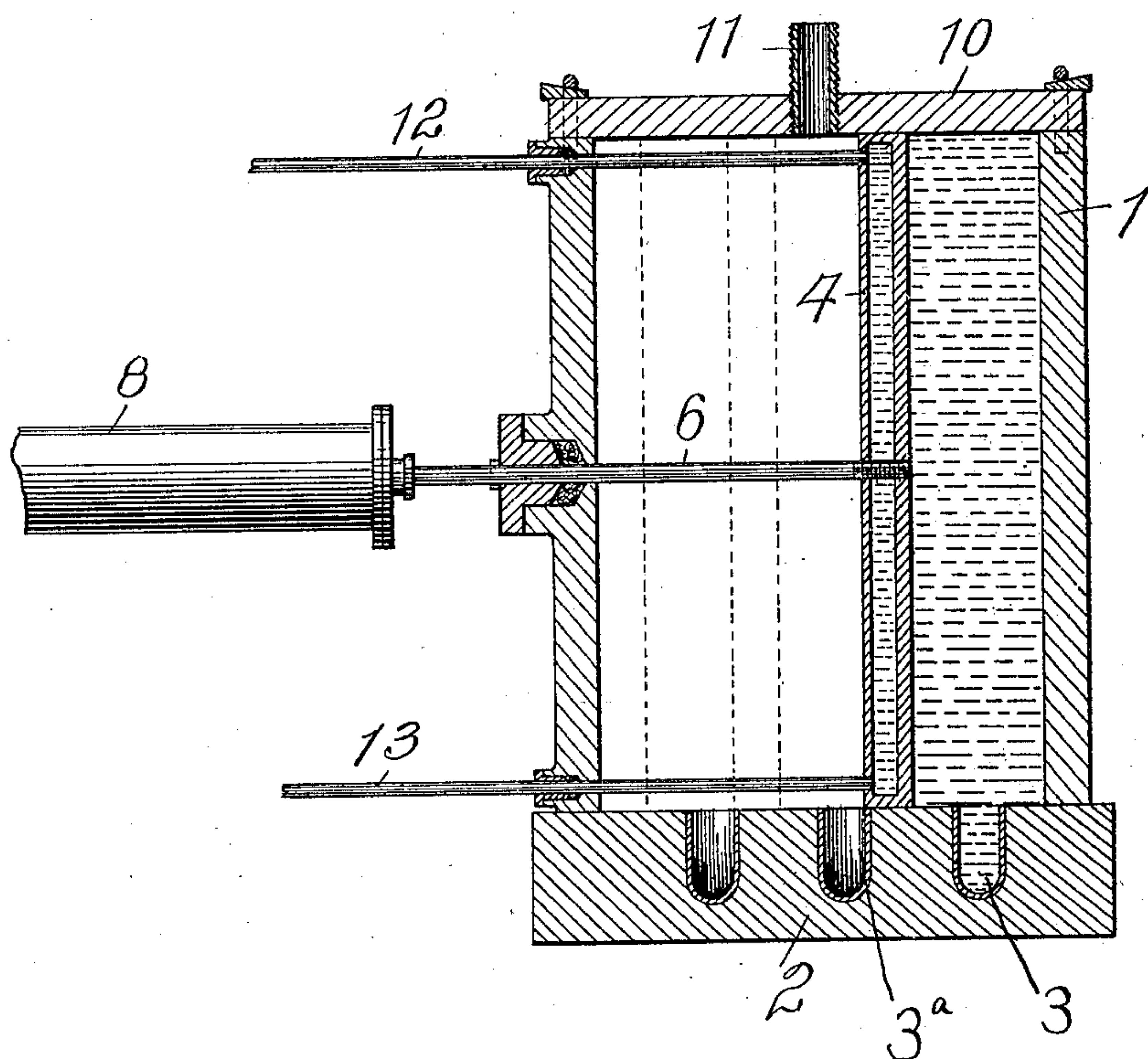
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FIG. 3.



WITNESSES:

*Herbert Bradley.*  
*F. M. Dapp.*

INVENTOR

*John W. Anderson*  
*by Dennis B. Wolcott* Att'y.



# UNITED STATES PATENT OFFICE.

JOHN W. ANDERSON, OF ALLEGHENY, PENNSYLVANIA.

## INGOT-MOLD.

SPECIFICATION forming part of Letters Patent No. 684,773, dated October 22, 1901.

Application filed April 16, 1901. Serial No. 56,037. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN W. ANDERSON, a citizen of the United States, residing at Allegheny, in the county of Allegheny and State of Pennsylvania, have invented or discovered certain new and useful Improvements in Ingot-Molds, of which improvements the following is a specification.

The invention described herein relates to certain improvements in molds for casting compound ingots, and has for its object a construction of molds and diaphragm whereby the latter can be moved back and forth in the mold as required.

The invention is hereinafter more fully described and claimed.

In the accompanying drawings, forming a part of this specification, Figure 1 is a sectional elevation of an ingot-mold having my improvements applied thereto. Fig. 2 is a sectional plan view of the same; and Fig. 3 is a view similar to Fig. 1, illustrating a modification in the construction of the diaphragm.

In the practice of my invention the mold 1 is constructed in any suitable manner and is supported upon a stool 2, in which it is preferred to form passages 3 3<sup>a</sup>, opening at their inner ends within the mold and having their outer ends adapted to be connected to vertical runways or sprues. A movable partition is arranged transversely of the mold, adapted to form, in connection with the walls of the mold or a previously-cast body of metal, shaping cavities or spaces. The partition or diaphragm is preferably formed in two sections 4 and 5, the section 4 forming the main or body portion of the diaphragm and the section 5 serving as a wedge to cause the opposite edges of the diaphragm to form tight joints with the side walls of the mold, and thereby prevent any leakage of metal past the diaphragm. These sections 4 and 5 are connected, respectively, to rods 6 and 7, which pass through one of the side walls of the mold and are adapted to be connected to any suitable mechanism for shifting the diaphragm, as the fluid-pressure cylinders 8 and 9.

The horizontal length of the mold will depend upon the number and thickness of the layers desired in the finished ingot, and the width and height of the mold will depend

upon the width and length of the desired plate. The number of sprues and passages 3 3<sup>a</sup> formed in the stool will also be dependent upon the number of layers to be formed. When it is desired to form an ingot, the mold is arranged upon its stool and the main section 4 of the diaphragm is moved toward one end until the space between such end wall of the mold and the diaphragm is equal to the desired thickness in the layer to be produced. The wedging-section 5 is then moved forward, so as to tightly clamp the main section in position, forming an impermeable diaphragm across the mold. The metal to form this layer is then teemed into the space thus formed and preferably through the passage 3 and its vertical sprue. As soon as the face of the metal in contact with the diaphragm or partition is sufficiently hard and rigid to prevent a bleeding of the metal the section 5 of the diaphragm is moved back, thereby unlocking the main section 4, which is then moved back the required distance and again wedged in position. The second layer is then teemed into the mold, and as soon as its face in contact with the diaphragm is hardened the latter is again shifted. In this manner a layered ingot of as many laminæ or layers as desired can be formed, such layers being of any desired thickness. The diaphragm or partition can be formed of or faced with any suitable material which will prevent the formation on the faces of the layers of metal of a scale, &c., which will prevent the welding or amalgamation of the two bodies of metal.

In order to prevent the formation of an oxid on the exposed surfaces of the metal when casting, it is preferred that the metal should be teemed in a vacuum or a non-oxidizing atmosphere. To this end a tight cover 10 is detachably secured to the top of the mold and is provided with a nozzle 11, whereby it may be connected to a pump, whereby a vacuum may be created in the mold or a non-oxidizing gas forced into the same. In such cases it is preferred to form a stuffing-box around the rods 6 and 7, so as to form a tight joint therewith.

If desired, the partition or diaphragm may be made hollow for the circulation of water. Inlet and outlet pipes 12 and 13 extend through stuffing-boxes in the side of the mold

and have their inner ends connected to the partition, preferably near its upper and lower ends.

I claim herein as my invention—

5 1. An ingot-mold having in combination therewith, a sectional partition or diaphragm arranged transversely of the mold and independent means for shifting the sections of said partition, substantially as set forth.

10 2. An ingot-mold having in combination therewith, a sectional partition or diaphragm

arranged transversely of the mold, the adjoining edges of the sections being beveled or inclined, and independent means for shifting the sections of the partition or diaphragm, 15 substantially as set forth.

In testimony whereof I have hereunto set my hand.

JOHN W. ANDERSON.

Witnesses:

DARWIN S. WOLCOTT,  
F. E. GAITHER.