

W. H. CONNELL.

CASTING INGOTS.

APPLICATION FILED MAY 8, 1909

945,019.

Patented Jan. 4, 1910.

FIG. 1.

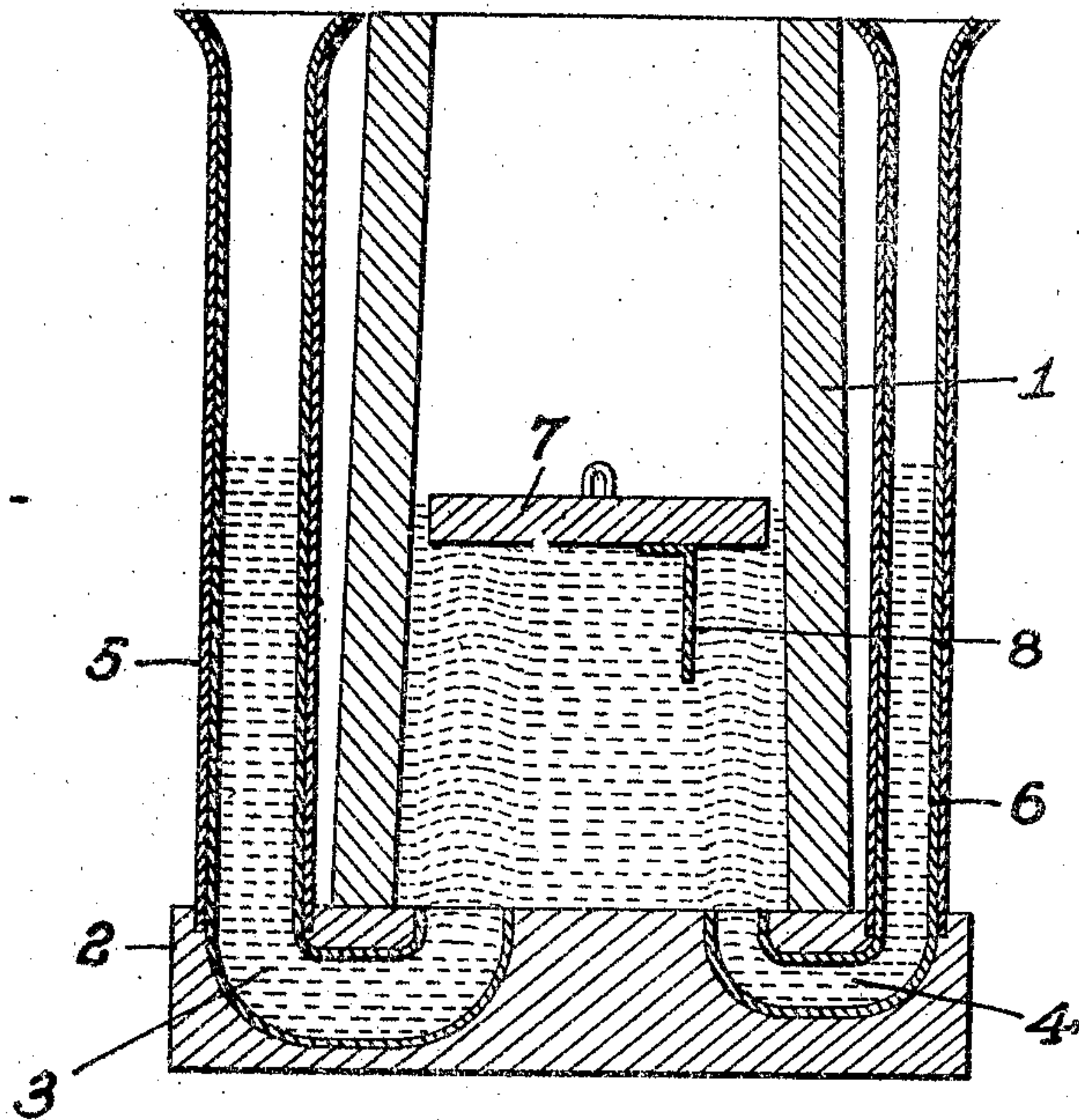
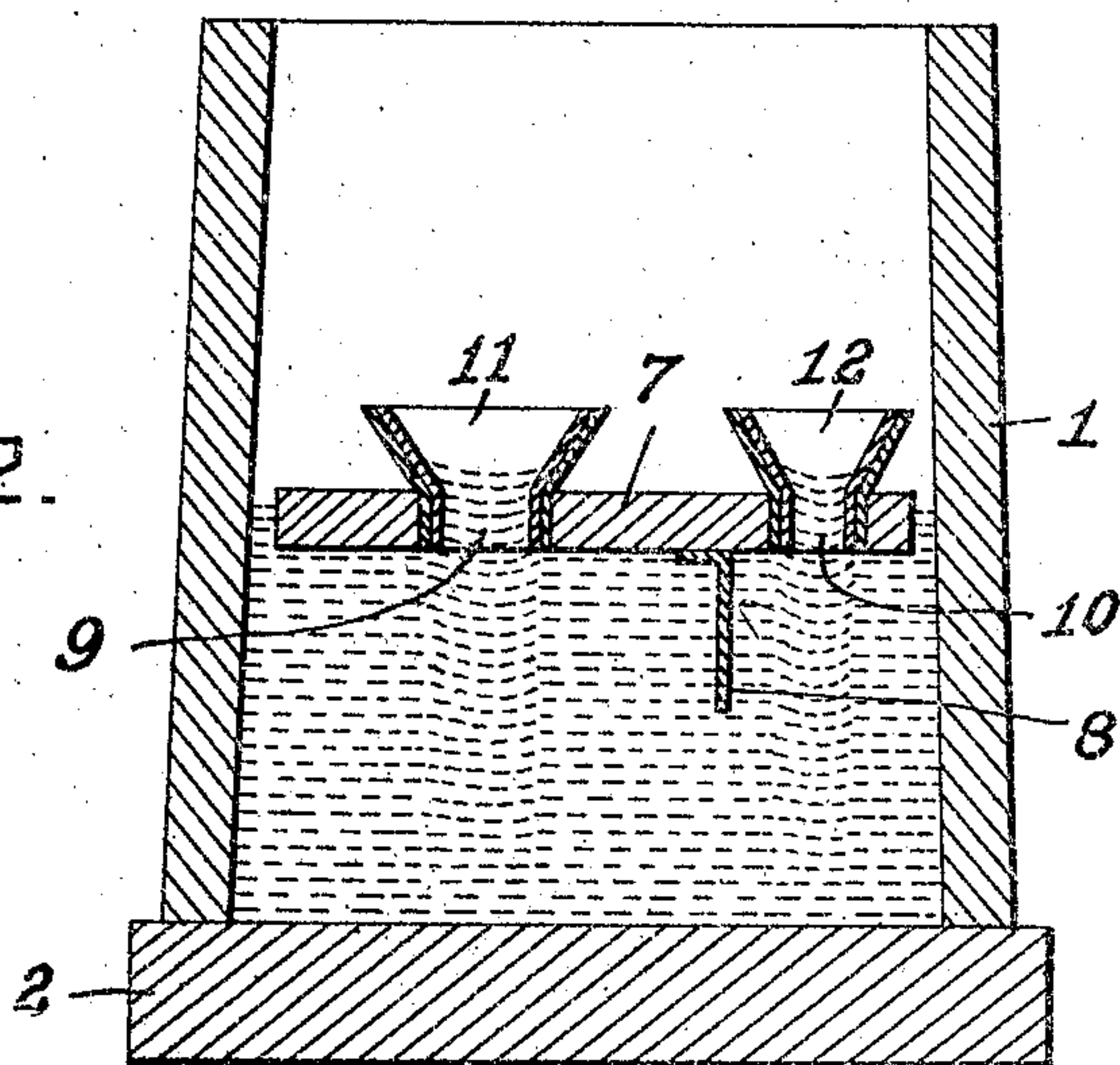


FIG. 2.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## CASTING INGOTS.

945,019.

Specification of Letters Patent.

Patented Jan. 4, 1910.

Application filed May 8, 1909. Serial No. 494,846.

To all whom it may concern:

Be it known that I, WILLIAM H. CONNELL, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, a citizen of the United States, have invented or discovered certain new and useful Improvements in Casting Ingots, of which improvement the following is a specification.

In Letters Patent No. 885,839, dated April 28th, 1908, No. 890,337, dated June 9, 1908, I have described and claimed certain improvements in the manufacture of compound ingots, said improvements consisting generally stated in simultaneously teeming two or more metals into a mold in such manner that the metals will not intermingle except along and adjacent to a vertical plane, the position of such plane being dependent upon the relative volumes of the streams of metal. The invention described herein relates to certain improvements in means for carrying out such method and consists generally stated in the interposition of a plate or partition between these portions of the two bodies of metal agitated by the inflowing streams, and automatically withdrawing such partition as soon as the metals have quieted down and before any solidification occurs the movement of the partition being concurrent with the filling of the mold.

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 showing a float adapted to be moved up through the mold by the metal and having a partition, the partition secured thereto; and Fig. 2 is a similar view illustrating a construction of apparatus for top pouring.

In the practice of my invention the ingot mold 1 may be of any suitable form or construction, dependent of course upon the style of ingot to be produced. The mold is supported upon a stool or bottom block 2 which for bottom casting is provided with passages 3 and 4 for the introduction of metal through the stool into the bottom of the mold. These passages are connected with stand pipes 5 and 6 extending up at least to the level, which the metal will have in the mold when the pouring is completed. Generally one of the bodies of metal to be united into a compound ingot, is smaller than the other body, and hence one of the sprues and stand pipes is made smaller than the other the dimensions

of the two being proportional to the volumes of the metal desired in the resulting ingot.

The partition 8 is secured to the underside of a float 7, which may be formed of fire clay or other suitable material. This float is made of a shape to correspond with the interior of the ingot mold and of such relative dimensions that it will freely move vertically therein. In the beginning of the teeming operation the float will be lowered by a suitable tool into the mold until the partition 8 rests upon the bottom 2, and the partition will be supported in a horizontal position until sufficient metal has flowed in to buoy the float. As the pouring proceeds and the metal rises in the mold, the float will be moved up carrying with it the partition 8.

While in Fig. 1 I have illustrated my improvement in connection with bottom casting, the two metals may be poured into the top of the mold. In Fig. 2, openings 9 and 10 are formed through the float on opposite sides of the partition for the passage of the metal. It is preferred that such openings should be provided with funnels 11 and 12 to direct the metal through the respective openings.

After the partition has been placed in position, using either the forms of apparatus shown and described, the two metals are simultaneously teemed into the stand pipes or into the funnels and will flow up in the mold on opposite sides of the partition. As is well known in the art, the greatest agitation of the metal will occur at the surface whether the pouring is done from the bottom or through the top. In bottom casting the metal seems to flow up through the previously teemed metal without producing any material agitation except in the direct line of flow, there being little agitation adjacent to such line of flow. But there will be considerable agitation at the surface of the metal where the inflowing stream seems to well up above the general surface of the metal. The partition is made of a vertical length such that when the float is supported on the surface of the metal, the lower edge of the partition will be below the agitated zone. In these constructions the upward movement of the partition is automatic.

Heretofore in using partitions to obtain compound ingots, such partitions have been either designed to be incorporated by the metals of the ingot, or the partition has been employed for dividing the mold into



two compartments and after one compartment has been filled and the surface metal hardened or solidified to a certain extent, the partition has been removed and the second body of metal teemed into the remaining space in the mold. It has been found that no matter how soon the second body of metal is teemed in, even if the exposed surface of the metal previously cast is at a white heat, a skin is formed on the surface of such metal preventing an intermingling of the two bodies of metal even if such skin should be melted by the second body. It is characteristic of my improvement that both bodies of metal are simultaneously introduced into the mold and are held separate only until the agitation thereof, due to the inflowing stream has quieted down, and before any chilling or skin can be formed on the surfaces of either of the metals.

I claim herein as my invention:

1. As a means for casting compound ingots, the combination of a mold, a float

adapted to be raised by the metal, a partition carried by the float and adapted to extend down into the metal and pouring funnels carried by the float to direct the metals to opposite sides of the partition. 25

2. As a means for casting compound ingots, the combination of a mold, a float adapted to be raised by the metal and a partition carried by the float and arranged to extend down into the metal. 30

3. As an improvement in the art of casting compound ingots the method herein described which consists in simultaneously pouring two streams of metal into a mold but on opposite sides of a plate or partition and raising said partition by the upward movement of the metal in the mold. 40

In testimony whereof, I have hereunto set my hand.

WILLIAM H. CONNELL.

Witnesses:

ALICE A. TRILL,

J. HERBERT BRADLEY.