

W. H. CONNELL.

INGOT MOLD.

APPLICATION FILED MAR. 5, 1910.

Patented Nov. 15, 1910.

2 SHEETS—SHEET 1.

975,511.

FIG. 1.

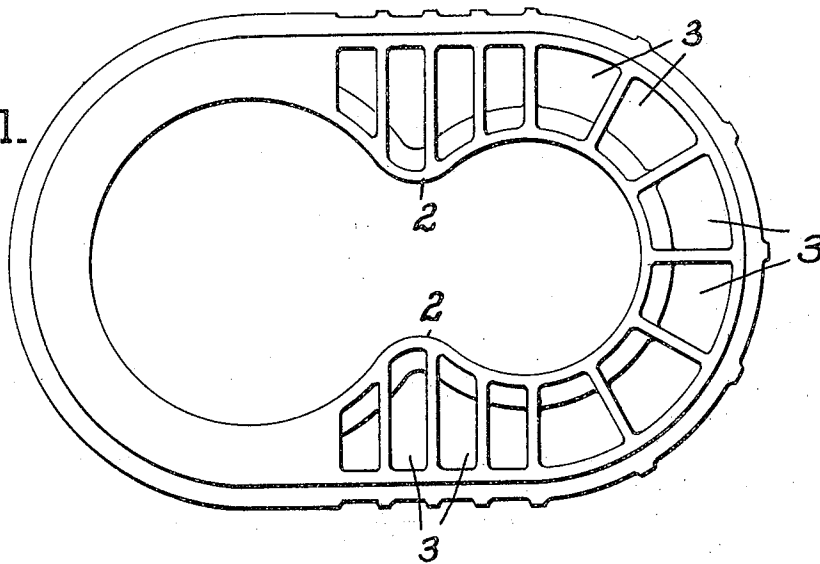
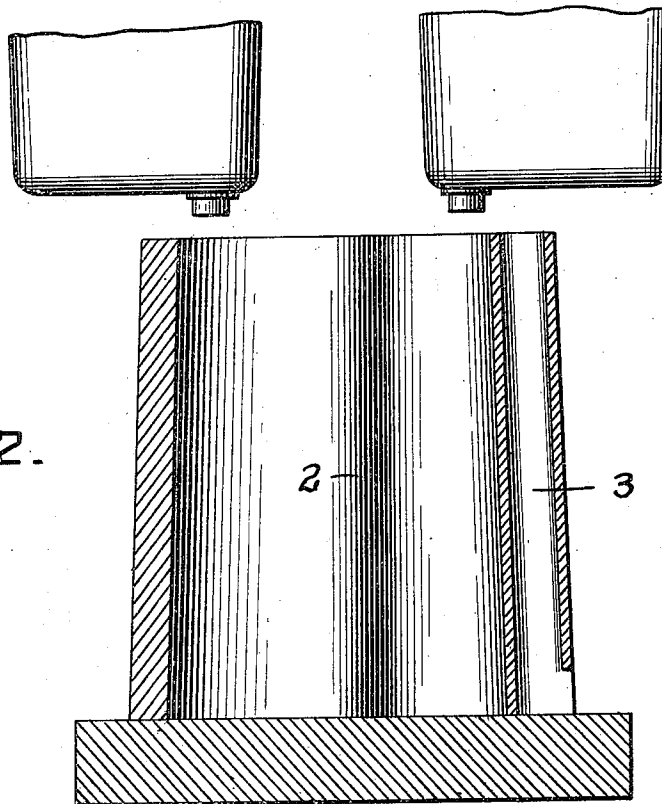


FIG. 2.



WITNESSES:

J. Herbert Bradley
Thomas J. Elbert

INVENTOR

William H. Connell
by *Dennis B. Wolcott*
Atty

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FIG. 3.

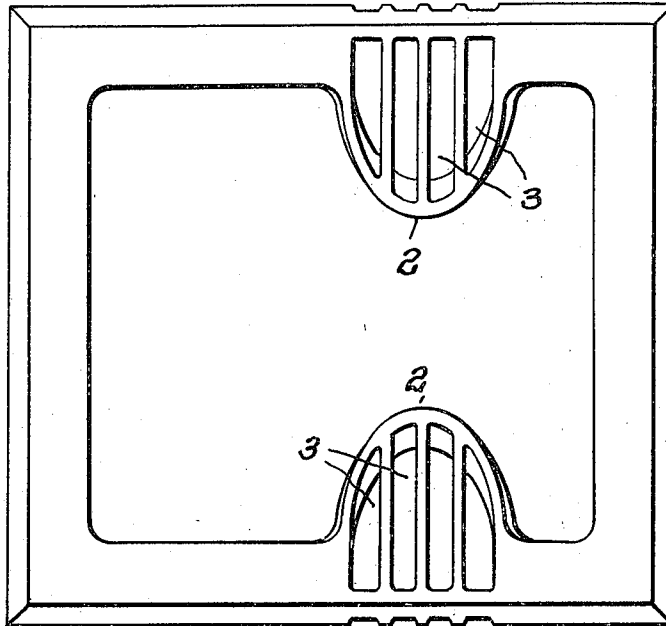
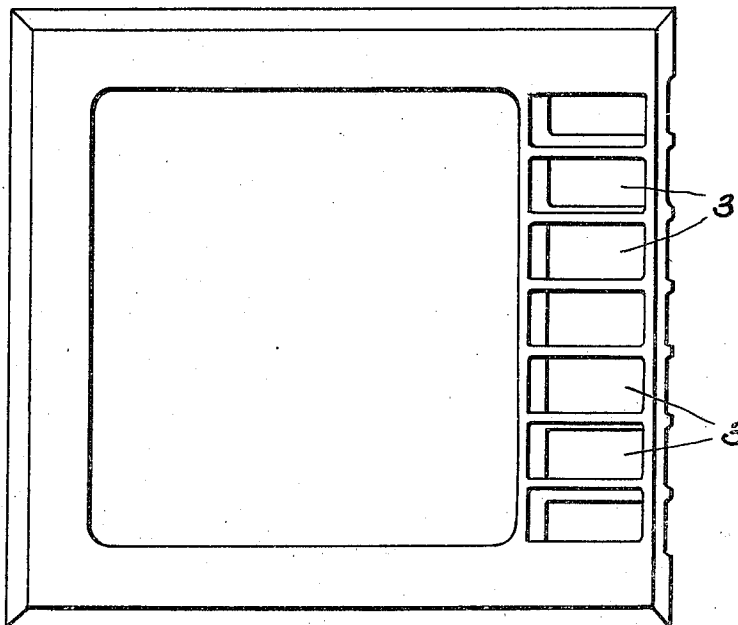


FIG. 4.



WITNESSES:

J. Herbert Bradley.
Thomas J. C. Bell

INVENTOR

William H. Connell
by *Demetrius B. Wolcott*
Att'y

UNITED STATES PATENT OFFICE.

WILLIAM H. CONNELL, OF PITTSBURG, PENNSYLVANIA.

INGOT-MOLD.

975,511.

Specification of Letters Patent.

Patented Nov. 15, 1910.

Application filed March 5, 1910. Serial No. 547,429.

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 Ingot-Molds, of which improvements the following is a specification.

In an application filed January 13th 1910 a method of making compound ingots is described and claimed, said method consisting generally stated in so teeming a metal into a mold as to establish a movement of the metal away from the entering stream and teeming another metal into the mold at a point distant from the first stream in the line of flow formed by the metal first teemed.

The invention described herein relates to a form of mold adapted to the practice of said method, and is hereinafter more fully described and claimed.

In the accompanying drawings forming a part of this specification, Figure 1 is a top plan view of a mold adapted to the practice of my invention. Fig. 2 is a sectional elevation of the same, showing the manner of teeming the metals into the molds. Figs. 3 and 4 are views similar to Fig. 1, illustrating the modifications in the construction of the mold.

In the practice of my invention the mold 1 is provided with wings or abutments 2 projecting inwardly toward each other and forming a comparatively narrow throat or passageway 4 connecting the chambers A and B. The position of the wings or abutments will vary in accordance with the desired relative dimensions of the treated and untreated portions of the ingot. In forming an ingot, the metal to form the base or larger portion of the ingot is poured into one of the chambers or compartments of the mold preferably at as great a distance from the throat as possible, so as to prevent as far as possible the extension of the agitation due to the falling stream, into or through the throat. The metal will flow from the receiving compartment through the throat into the second compartment, into which the other or alloying metal is teemed at the same time and preferably at a point distant from the throat. As the metal is poured into the receiving portion of the mold, there will be a constant flow toward the part of the mold into which the treating or alloying metal is

added, and hence there will not be any material movement of metal in the reverse direction.

The chemical change will occur only or mainly while the metal is highly heated and may be limited by cooling the metal as rapidly as possible in the alloying chamber, in the throat or in both portions. To this end the walls of the alloying chamber or compartment or of the throat or of both portions are provided with passages 3, the walls of which are comparatively thin, so that air or other cooling medium may flow therethrough, and effect a rapid reduction of the temperature of the metal in the alloying chamber or throat or both portions of the mold and thereby check further chemical diffusion. It will be observed that the passages 3 are open at the top of the mold and that openings 5 are formed at the lower ends of the passages preferably by cutting away a portion of the walls of the passages. A strong flow of air through these passages is established preferably by the heat of the molten metal conducted through the inner walls of the passages. By this upward flow of air the walls of the mold are kept comparatively cool and hence will be more effective to chill the molten metal and prevent material extension of the chemical action between the different metals through the throat into the chamber into which the base metal is teemed.

While it is generally preferred to employ a mold having a contracted passageway or throat portion between the portions of the mold into which the respective metals are teemed, a mold having uniform transverse dimensions, such as shown in Fig. 3, may be employed. In this construction the cooling passages 3 are formed at and adjacent to the mold at which the alloying or treating metal is teemed. The flow from point of entrance of the base metal toward the opposite side of the mold may not be so pronounced as in the other forms of mold, but nevertheless will be sufficient, it is believed, to prevent any reverse movement being set up by the alloying or treating metal. By teeming the alloying or treating metal at a point closely adjacent to the wall of the mold having cooling passages, the temperature of the mixed metals may be reduced sufficiently to prevent material extension of chemical action,

by cooling the wall of the mold most nearly adjacent to the point of entrance of the treating or alloying metal.

I claim herein as my invention:

- 5 1. A mold for ingots provided with vertical inwardly projecting wings extending substantially the full height of the mold, thereby dividing the mold into two compartments, the walls of one of said compartments being formed with vertical passages for the circulation of a cooling medium whereby the cooling of the metal in said compartment may be accelerated.
- 10 2. A mold for ingots provided with vertical inwardly projecting wings or abutments extending substantially the full
- 15

height of the mold, thereby forming a comparatively narrow throat for the horizontal flow of the metal from one portion of the mold to another during the entire teeming operation. 20

3. A mold for ingots provided with inwardly projecting wings or abutments having passages for the circulation of a cooling medium. 25

In testimony whereof, I have hereunto set my hand.

WILLIAM H. CONNELL.

Witnesses:

FREDERICK E. WILEY,
C. T. CLACK.