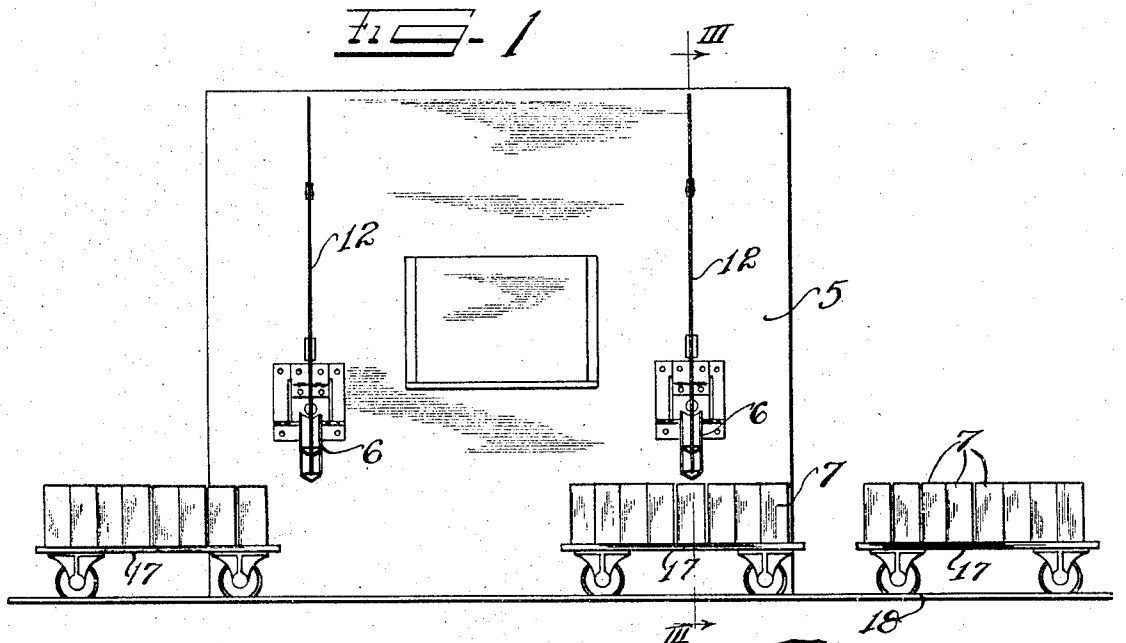
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METHOD OF CASTING BLOOMS OF ALUMINUM

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Fig. 1



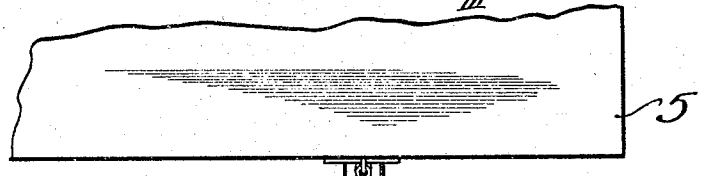
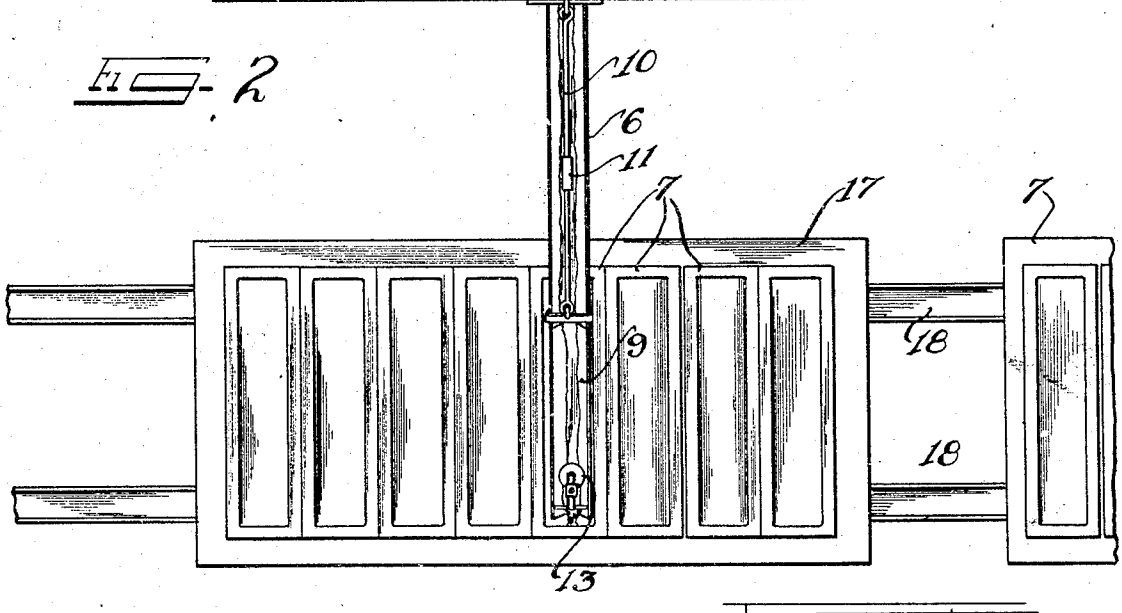


Fig. 2



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Fig. 3

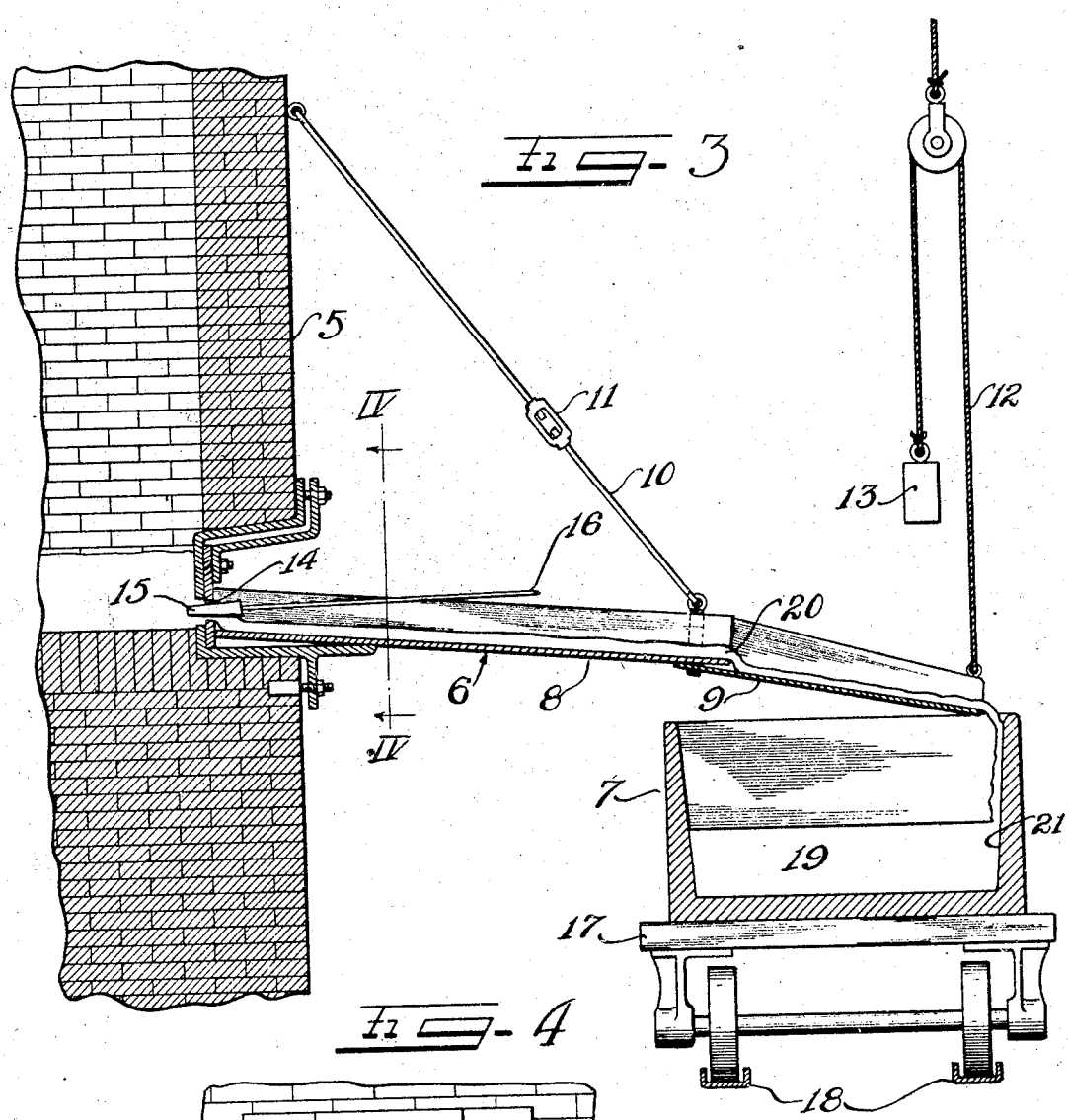
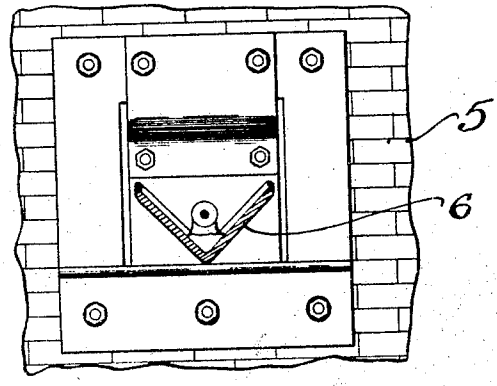


Fig. 4



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Patented Feb. 17, 1931 1,792,545

UNITED STATES PATENT OFFICE

ELMER P. McCLURE, OF WESTERN SPRINGS, ILLINOIS, ASSIGNOR TO ALUMINUM PRODUCTS COMPANY, A CORPORATION OF ILLINOIS

METHOD OF CASTING BLOOMS OF ALUMINUM

Application filed November 10, 1927. Serial No. 232,236.

The invention relates to a method of casting blooms of aluminum and metals of similar characteristics.

The blooms, so cast by my new method of procedure, and by the means herein fully to be disclosed, are used to be subsequently rolled into sheets.

Greater care must be exercised in casting aluminum into blooms than any other metal. If the stream of metal from the furnace be allowed to pour directly into the body of metal, a quantity of air will thus be entrapped in the body of molten metal by air bubbles thus formed and when the bloom, or ingot, is thereafter rolled into sheets, the incarcerated air will form blisters in the sheets and render them unfit for manufacturing purposes.

Copper, lead, iron and the like are sufficiently heavy to express the entrapped air and leave a solid mass of metal. Aluminum has not sufficient difference in specific gravity to perform this function and, therefore, the aluminum metal must be poured into the mold in such manner that it will not carry any air with it or induce its entrance into the liquid metal.

It is of much importance, also, that the aluminum metal shall be exposed to the atmosphere for as short periods of time as may be, from the time the stream leaves the furnace until it is safely deposited into the molds, to prevent oxidation and to prevent granulation by chilling.

One of the objects of my invention is to pour the metal in a continuous uninterrupted stream into a plurality of successive molds without repouring from ladles and the like.

Another object is to provide a guide for the flowing metal which it will follow from the furnace into the mold.

A further object is to flow the metal along a vertical guide or conductor from the opening or mouth of the mold into the body of the liquid metal, so that the metal will not enter the body in a manner to produce undulations of the body and air pockets therein by the impact of the flowing stream with the aforesaid body of metal.

Another object is the provision of an apparatus by which my mode of procedure may advantageously be carried into effect.

Other objects, advantageous and benefits will hereinafter appear from a consideration of the following description and accompanying drawings forming a part hereof, wherein:

Figure 1 is a front elevation of a furnace with a plurality of cars, each carrying a plurality of molds.

Figure 2 is an enlarged plan view with parts broken away, of a portion of the structure of Figure 1.

Figure 3 is a vertical sectional view taken substantially along line III—III of Figure 1.

Figure 4 is a transverse sectional view of the trough, thru which the metal flows, taken substantially along line IV—IV of Figure 3.

In all the views the same reference character indicates similar parts.

The necessity for the present invention has never been realized when casting relatively heavy metals, for the reason that air cannot find permanent residence in a body of molten metal of that character, and furthermore such metals do not possess the same affinity for the cold iron surface of the mold as manifested by the liquid aluminum.

In the drawings 5 is a furnace of any character in which the metal aluminum is melted to be cast into blooms or ingots. 6 is a trough thru which the melted aluminum flows and by which it is guided from the furnace to the molds 7. The trough is divided into two relatively movable sections 8 and 9.

The inner end of the section 9 is connected to a swinging support 10, adjustable by the turn buckle 11. This supports the outer end of section 8 and the inner end of section 9 and permits some relative movement, whereby to raise the outer end of section 9 and to move it laterally to some extent.

The outer end of section 9 is supported by the cable 12 and counterbalancing weight 13.

The furnace 5 has a metal discharge opening 14 thru which the metal flows into the trough 6, when open. The effective opening may be varied by the tapered plug 15, which is secured to an elongated rod 16.

The cars 17 are movable along a pair of channel rails 18—18.

The stream of metal 20 is shown flowing in an unbroken stream to the body of metal 19 in the mold 7. It will be observed that the stream 20 is discharged from section 9 of the trough directly into contact with the vertical wall 21 of the mold 7. The vertical wall 21 serves also as a guide for the flowing metal, as the latter will cleave to the wall in an unbroken stream on its way to the metal therebelow which it will enter in aquiform manner without carrying any air, to enter the body of metal.

I am aware that many changes may be made, and numerous details of construction may be varied through a wide range without departing from the principles of this invention, and I therefore do not purpose limiting the patent granted hereon, otherwise than necessitated by the prior art.

Having described my invention, what I claim is:

1. The method of casting blooms of aluminum, the said method including guidedly conducting a narrow unagitated continuous stream of molten aluminum substantially parallel to the bottom of a mold to a point adjacent the upper end of a wall of the mold and then directing the stream downwardly along the wall of the mold so as to avoid splashing of the metal.

2. The method of casting blooms of aluminum, the said method including guidedly conducting a narrow unagitated continuous stream of molten aluminum to a point adjacent and above the top of a mold and then directing the stream downwardly along the wall of the mold in an unbroken stream.

In testimony whereof I have hereunto subscribed my name.

ELMER P. McCLURE.