

No. 885,839.

PATENTED APR. 28, 1908.

W. H. CONNELL.  
MANUFACTURE OF COMPOUND INGOTS.  
APPLICATION FILED AUG. 30, 1907.

FIG. 2.

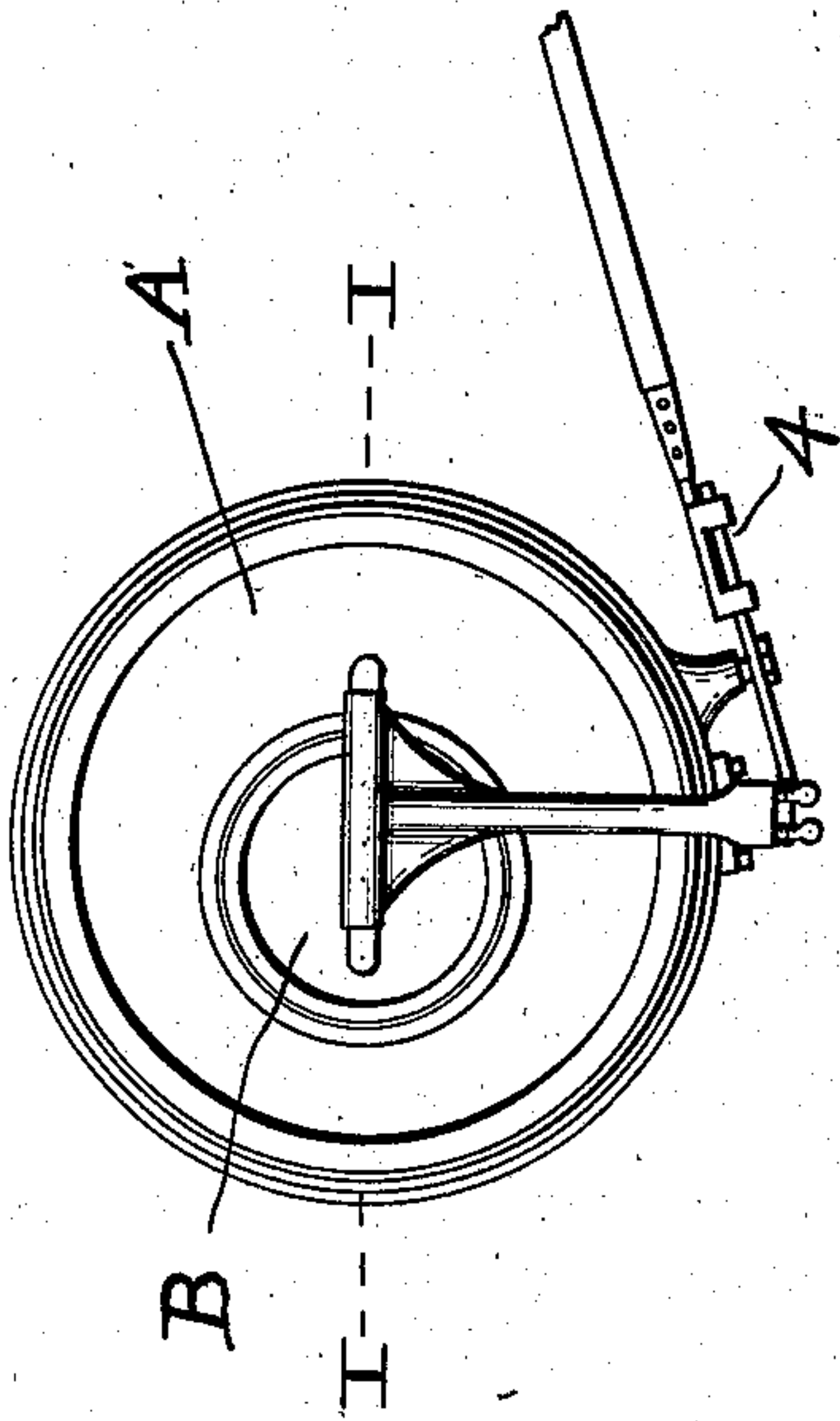


FIG. 3.

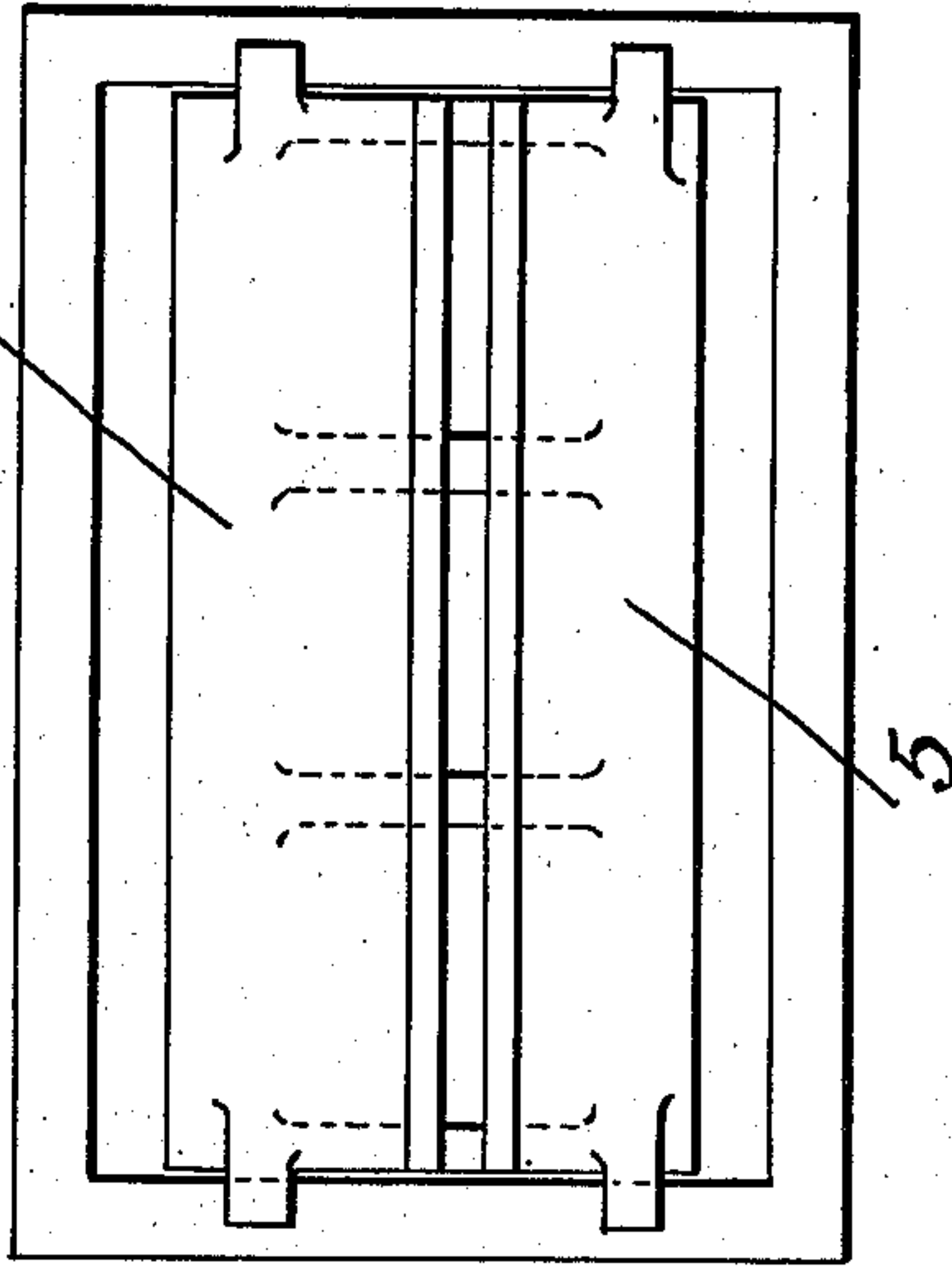
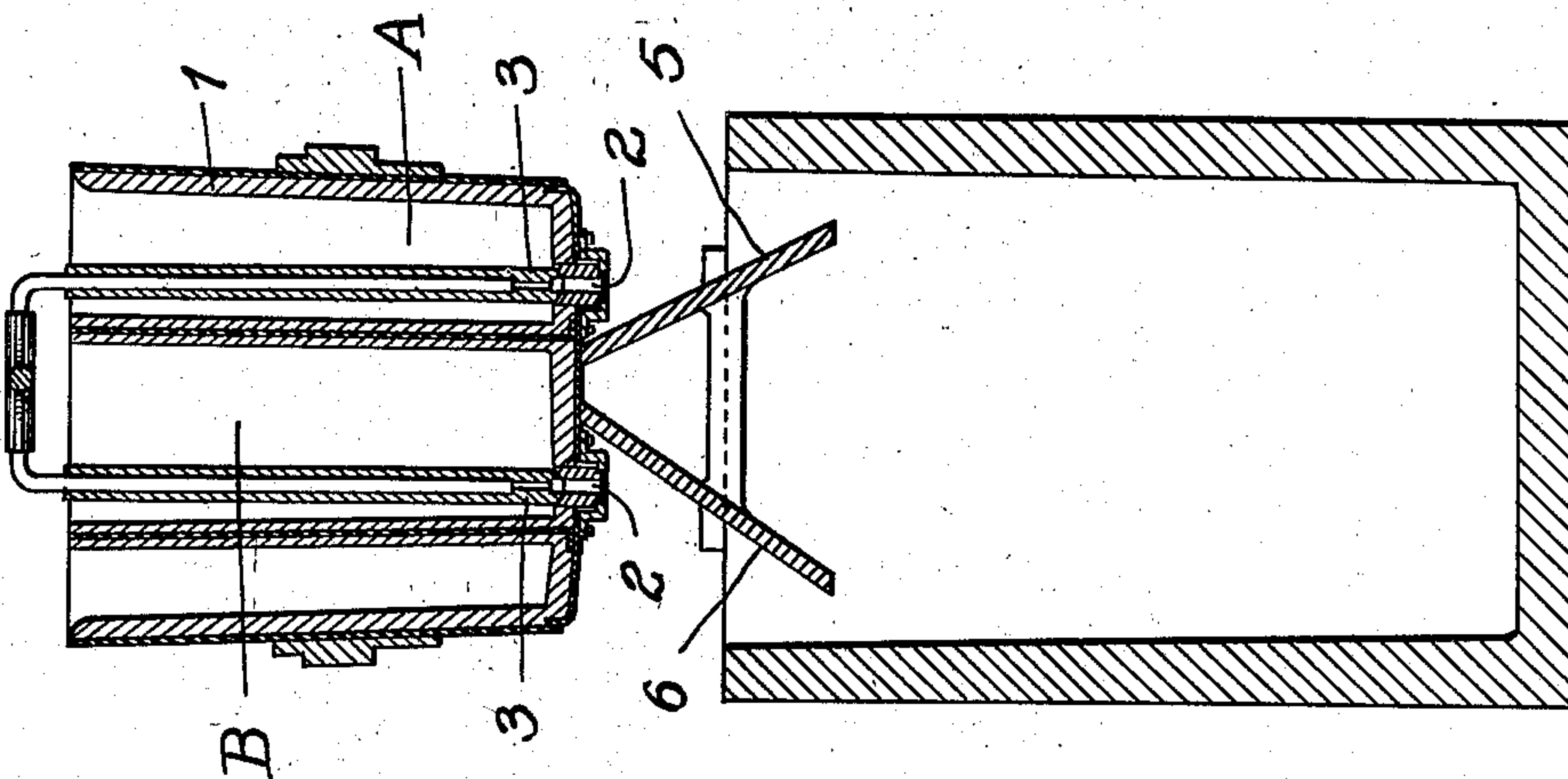


FIG. 1.



WITNESSES:  
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*Charles Barnett.*

INVENTOR  
*William H. Connell.*  
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# UNITED STATES PATENT OFFICE.

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## MANUFACTURE OF COMPOUND INGOTS.

No. 885,839.

Specification of Letters Patent.

Patented April 28, 1908.

Application filed August 30, 1907. Serial No. 390,797.

*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 the Manufacture of Compound Ingots, of which improvements the following is a specification.

10 It has been the practice in the manufacture of compound ingots to teem the two metals on opposite sides of a partition, which in some cases was adapted to be melted and become incorporated with the ingot and in 15 some cases the partition was withdrawn before the metals solidified. Another method of producing compound ingots consisted of casting one body of metal and while that was in a highly heated condition, teeming the 20 second body of metal thereunto. None of these methods have been practically successful, by reason of the fact that the line of demarcation between the two metals was sharp and distinct and in no case was there a merging or intermingling of the two bodies, so as 25 to form an integral mass having one quality on one face and a different quality or kind on the opposite face.

The invention described herein has for its 30 object the bringing together of two bodies of metal while in a molten condition under such conditions that the metal of the two bodies will intermingle in the interior of the ingot, but will maintain their distinct characteristics at opposite sides of the ingot. 35

The invention is hereinafter more fully described and claimed.

In the accompanying drawing forming a part of this specification, Figure 1 is a sectional elevation of a form of apparatus adapted for the practice of my invention; Fig. 2 is 40 a plan view of a suitable form or construction of ladle; and Fig. 3 is a plan view of a mold having the deflector in position thereon.

45 In the practice of my invention the two kinds or qualities are simultaneously teemed into the mold, care being taken that the two streams of metal shall not intermingle. Preferably the two streams should be separated as widely as possible while flowing into 50 the mold, and the flowing together of the two metals will take place only after the inflowing streams have reached the bottom of the mold or the metal previously formed. I 55 have found that when two bodies of metal

are thus brought together in a mold there will be sufficient agitation to cause a thorough commingling of the metals in the interior of the ingot, and that the metals will be commingled in approximately equal portions 60 in and adjacent to a certain plane, but that the percentage will change on opposite sides of such plane, that is the percentage of one metal will decrease and that the other will increase from such to the sides of the ingot, 65 where only one metal will be found. In an ingot cast in this manner no plane of cleavage will be formed, but one metal will be found on one side of the ingot and will gradually decrease in quantity towards the other 70 side, while the other metal will correspondingly increase, thus avoiding sharply defined zones.

In the drawing I have shown a convenient form of apparatus for the practice of my 75 method, but as regards the broad terms of the claims the invention is not limited to such apparatus, since other means will readily suggest themselves to those skilled in the art for carrying out my improvement. 80

The ladle 1 is divided into two compartments or chambers A and B, each provided with outlet openings 2, adapted to be controlled by plugs 3. As both ports should be 85 opened simultaneously the plugs are connected to a common operating lever 4. When it is desired to produce ingots in which the proportions of the two metals vary, provision should be made, either by varying the sizes 90 of the outlets or the movement of the plugs, so that the flow of the metals will vary with the proportions desired in the ingot. It will be understood that compartments and ports in the ladle may be so arranged that the 95 streams of metal will flow closely adjacent to opposite sides of the ingot. But it is preferred that the stream of metal should be spread out, and to that end I employ deflecting plates 5 and 6 which are supported 100 on the ingot mold. As the streams of metal strike these plates, they are spread out and deflected towards opposite sides of the mold. When these flat streams strike the bottom of the mold or metal contained therein, they 105 will flow laterally and meet in a plane the position of which will vary in accordance with the relative volumes of the metals. It is characteristic of my improved method that the two streams of metal are kept separate and distinct one from the other, and that the 110



metals commingle only when they move in directions at an angle to the original direction of the streams.

In lieu of top teeming, bottom casting  
5 may be employed the metals entering the mold through the bottom in separate streams and preferably at points adjacent to opposite sides of the mold, so as to avoid any commingling of the metals except by a flow  
0 thereof in a direction at an angle to the line or direction of flow at the time they enter the mold.

I claim herein as my invention:

1. As an improvement in the art of making compound ingots, the method herein described which consists in teeming metals differing in characteristics simultaneously into a mold, and preventing the intermingling of the metals or the modification of the characteristics of one by the other while flowing into  
20 the mold.

2. As an improvement in the art of making compound ingots, the method herein de-

scribed which consists in simultaneously introducing metals varying in one or more  
25 characteristics into the mold in distinct streams side by side and permitting the metals to move laterally in opposite directions and intermingle in the zone of meeting or junction. 30

3. As an improvement in the art of making compound ingots, the method herein described which consists in simultaneously pouring the metals into the mold in streams having volumes proportional to the relative  
35 quantities of the metals desired in the finished ingot, and keeping the streams separate and distinct while moving in a vertical direction.

In testimony whereof, I have hereunto set  
40 my hand.

WILLIAM H. CONNELL.

Witnesses:

C. T. CLACK,

F. J. TOMASSON.