A. JAMESON.

CASTING APPARATUS.

APPLICATION FILED JUNE 29, 1907.

990,816. Patented Apr. 25, 1911.

Fig. 7.

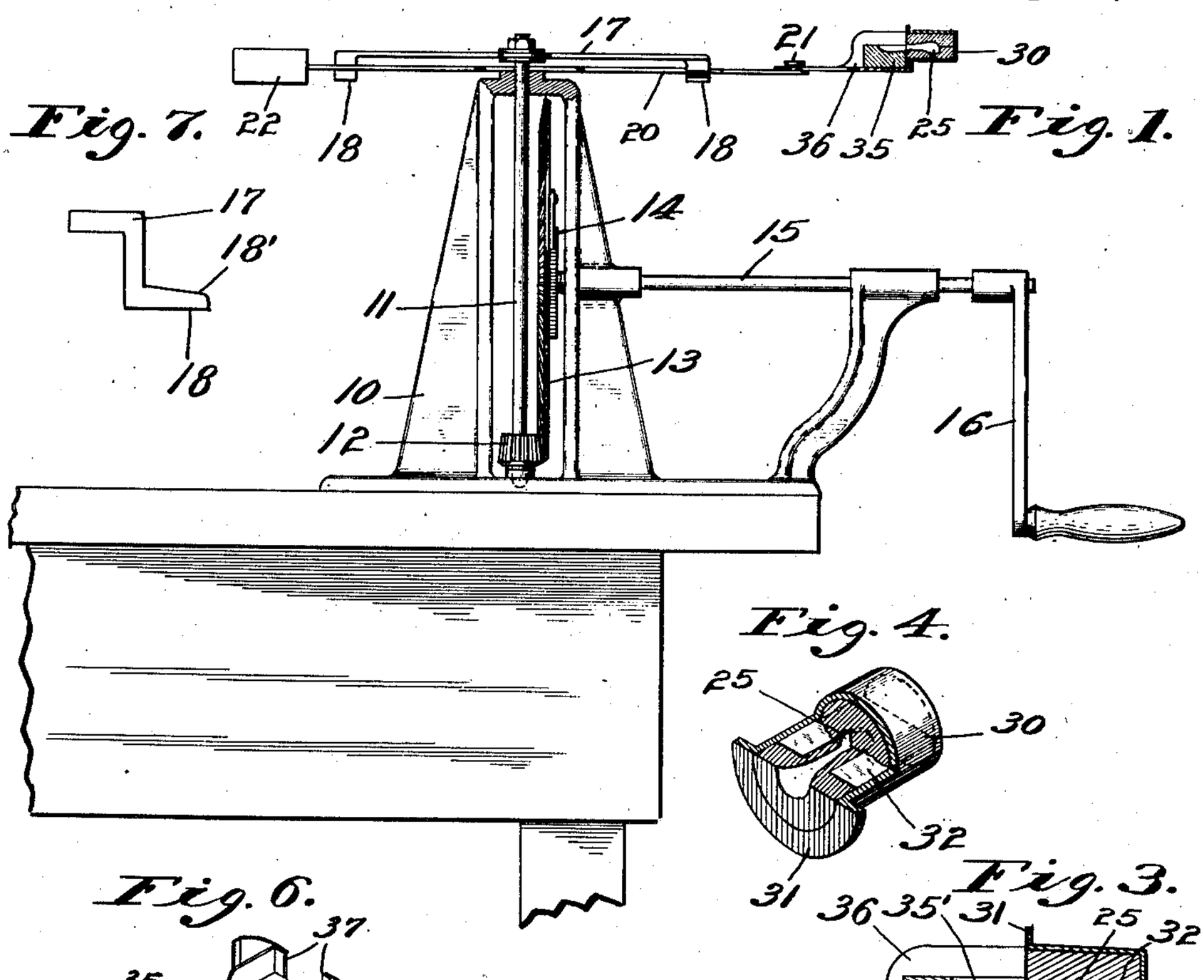

Fig. 1.

Fig. 4.

Fig. 6.

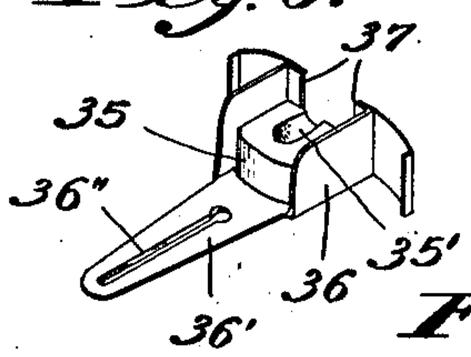

Fig. 3.

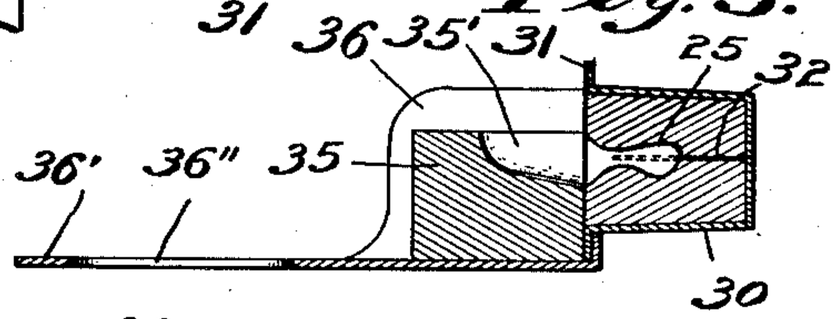

Fig. 2.

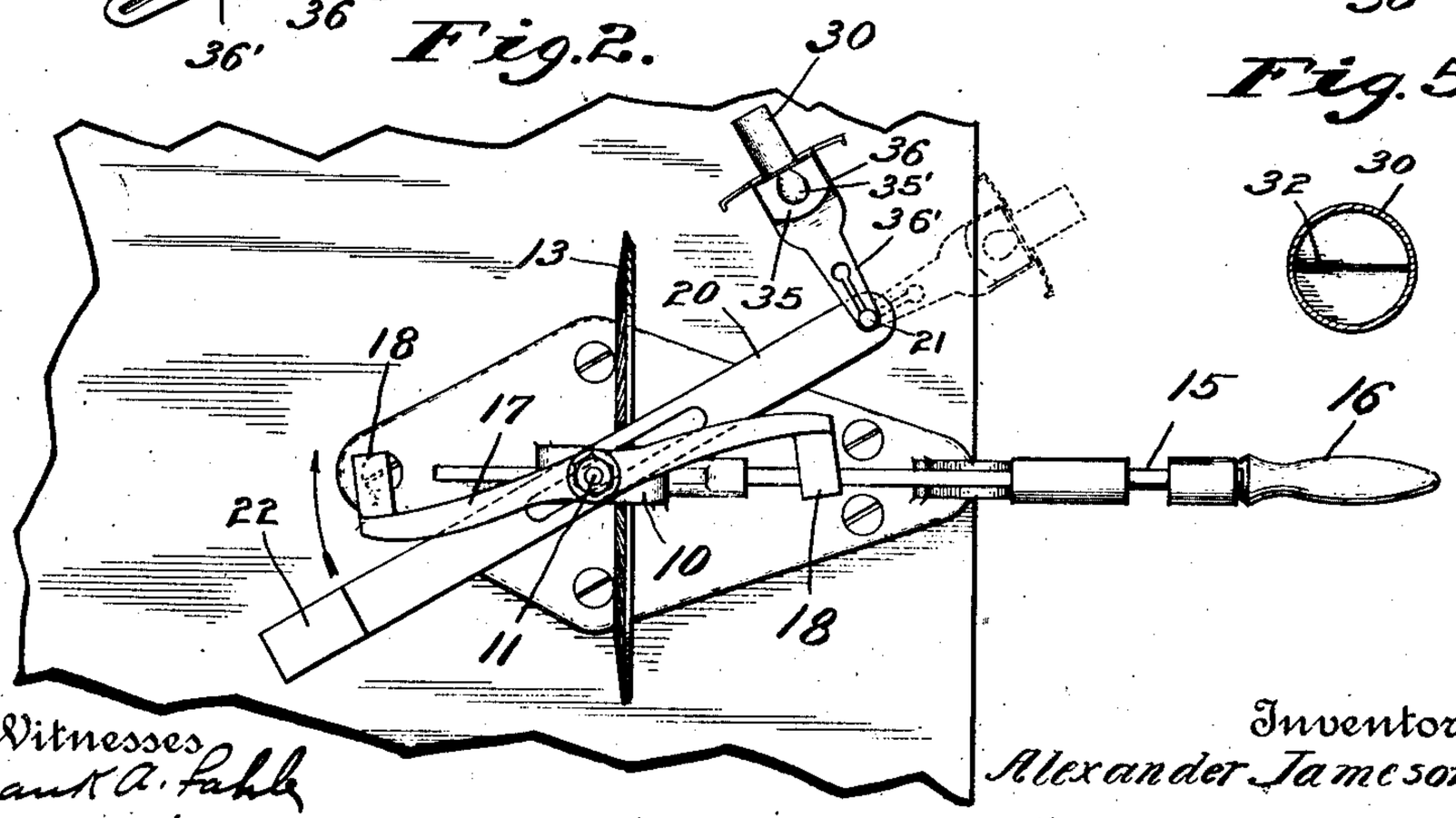

Fig. 5.

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UNITED STATES PATENT OFFICE.

ALEXANDER JAMESON, OF INDIANAPOLIS, INDIANA.

CASTING APPARATUS.

990,816. Specification of Letters Patent. Patented Apr. 25, 1911.

Application filed June 29, 1907. Serial No. 381,416.

To all whom it may concern:

Be it known that I, ALEXANDER JAMESON, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Casting Apparatus, of which the following is a specification.

The object of my invention is to provide an improvement in the art of casting metal, more especially in the art of casting gold and other metals into matrices for the purpose of producing metal inlays for teeth; and an apparatus for facilitating the practice of said improved art.

My improvement in the art comprises first the formation of a matrix or mold of the desired figuration, second, the reduction of the metal to a fluid state, third, the propulsion of the metal into the mold (preferably by a sudden movement of the mold relative to the molten metal), and fourth, the revolution of the mold and the contained molten metal about an external axis so as to crowd the metal into the mold by centrifugal force during the cooling thereof.

The accompanying drawings illustrate a desirable form of apparatus for facilitating the performance of my improved method.

In the drawings Figure 1 is a side elevation in partial vertical section of the apparatus; Fig. 2 a plan with the parts in starting position; Fig. 3 a vertical section of an improved form of mold, the mold carrier, and crucible; Fig. 4 a sectional perspective of the improved mold; Fig. 5 a transverse section of the mold carrier and splitting plate, and Fig. 6 a perspective detail of the crucible, and Fig. 7 an elevation of one end of the driving arm.

In the drawings 10 indicates a suitable supporting bracket or frame in which is journaled a shaft 11, preferably vertical, and carrying a pinion 12 meshing with the gear 13, which gear is connected by a ratchet connection 14 with a driving shaft 15 provided with a suitable driving handle 16. Secured to the upper end of shaft 11 is an arm 17, the opposite ends of which are provided with substantially horizontal fingers 18 slightly tapered upward on their upper faces at 18′, for a purpose which will appear. Sleeved upon shaft 11 and normally resting upon the upper end of frame 10, is an arm 20 which, at each end, extends beyond the fingers 18 of arm 17 and lies in the horizontal plane between the tip and rear of the upper surface 18′ of fingers 18. One end of arm 20 is provided with a shoulder pin 21 to receive the crucible and mold while the opposite end of said arm is provided with a counter weight 22 to balance the crucible and mold when attached. The mold consists of a matrix 25 formed by any suitable method, such for instance as by first forming a wax impression and investing it in a suitable and common investiture. For convenience in production, and in order to be able to use a wax having a high melting point, I prefer to form the matrix in the following manner. A metal cup 30 is provided with a slightly tapered interior and a surrounding radial flange 31. Fitting diametrically in the interior of the cup is a U-shaped plate 32, the opening between the arms being sufficiently large to permit the formation of any desired matrix. The U-shaped splitting plate is first placed within the cup, and the wax impression then suspended in a cup between the arms of the plate. Thereupon the investing material is placed in the cup around the wax, and allowed to harden. A slight heat applied to the cup will then permit the withdrawal of the matrix and, by a slight pressure exerted at the splitting plate, the matrix may be split into two sections so as to permit the ready withdrawal of the wax without the need of prolonged heating. The matrix sections are then replaced in the cup and arranged in conjunction with the melting block 35 of the crucible 36, said crucible being conveniently provided with a pair of flanges 37 which lie a sufficient distance from the end of the melting block to permit the insertion of the flange 31 of cup 30 so that the mouth of the matrix will form a continuation of the cup 35′ of the melting block. The crucible 36 is provided with an arm 36′ having a button hole perforation 36″ which may be slipped over the head of pin 21. The crucible is first placed in the position shown in full lines in Fig. 2, substantially at right angles to arm 20 and arm 17 is turned backward as far as possible so that nearly a half turn of the shaft 11 will be necessary before there is an engagement between arm 17 and arm 20. The gold or other metal is then placed in the cup 35′ of the melting block 35 and melted by any

suitable means, the matrix having, of course, been first preliminarily heated, as is customary in the art.

As soon as the metal has been melted to a sufficient degree of fluidity, the operator grasps crank 16 and turns shaft 15 with sufficient rapidity to rotate shaft 11 rapidly. The first action is to bring fingers 18 of arm 17 beneath arm 20 and lift it from the upper end of the frame 10 and start arm 20 to rotating about the axis of shaft 11 very suddenly and rapidly, the initial movement of the arm 20 being in the nature of a blow or sudden jerk upon the crucible 36 and, said crucible lying substantially tangentially to the movement of the arm 20, the molten metal will be suddenly propelled with considerable force into the matrix. Continued revolution of the crucible and mold about shaft 11 will cause the crucible and mold to swing into a radial position, as indicated by dotted lines in Fig. 2, and the molten and cooling metal will be caused to move sharply into all of the minute depressions of the matrix and thus produce a perfect and sharp casting. The ratchet connection between gear 13 and shaft 15 will permit a gradual slowing down of the movement of the parts after the operator has ceased to rotate crank 16.

The broad invention, of which the structure shown in the present application is one species, forms the subject matter of my pending application Serial No. 419,080, filed March 4, 1908, in which I have made broad and dominating claims.

I claim as my invention:

1. A casting apparatus comprising a mold, a fluid holder adjacent said mold, and means for driving the mold and fluid holder in a direction to carry the mold toward the position initially occupied by the fluid holder, whereby the fluid may be caused to enter the mold.

2. A casting apparatus comprising a mold, a fluid holder adapted to deliver to said mold, and means for shifting the fluid holder and for driving the mold to the position initially occupied by the fluid holder and beyond, in a direction to cause the fluid within the fluid holder to enter the mold and crowd thereinto.

3. A casting apparatus comprising a mold and a fluid holder, and means for delivering a shock to the mold and holder in a direction to propel the mold toward the position initially occupied by the holder.

4. A casting apparatus comprising a mold and a fluid holder, and means for delivering a shock to the mold and holder in a direction to propel the mold toward the position initially occupied by the holder and for subsequently continuing the movement of the mold in a direction to crowd molten material into the same.

5. A casting apparatus comprising a mold, a fluid holder adjacent said mold, a rotating arm carrying said mold, and means for first striking the arm in a direction to cause the mold to move to the initial position of the holder and subsequently continuing the rotation of said arm.

6. A casting apparatus comprising a mold, a fluid holder adjacent said mold, and means for revolving said mold about an external axis in an initial direction toward the fluid holder.

7. A casting apparatus comprising a rotating arm, a mold pivotally attached to said arm in a plane substantially at right angles to the axis of said arm whereby it may occupy an initial position substantially tangential to said arm and a subsequent position substantially in line with said arm, and a fluid holder arranged adjacent the mouth of the mold.

8. A casting apparatus comprising a rotating arm, a mold pivotally attached to said arm in a plane substantially at right angles to the axis of said arm whereby it may occupy an initial position substantially tangential to said arm and a subsequent position substantially in line with said arm, and a fluid holder arranged adjacent the mouth of the mold and moving therewith.

9. A casting apparatus comprising a rotating arm, a mold pivotally attached to said arm in a plane substantially at right angles to the axis of the arm thereof whereby said mold may occupy an initial position substantially tangential to said arm and a subsequent position substantially in line with said arm.

10. The combination, in a casting machine, of a revoluble member consisting of a hub or journal carrying an adjustable crossbar to which is attached a melting pot and a suitable counterweight, and a base plate provided with a pivot pin or stud forming a bearing for said revoluble member, substantially as shown and described and for the purpose specified.

11. The casting apparatus herein described, comprising a revolving carrier, and a flask swinging on a vertical axis relatively to the carrier, and having an entrance opening at its inner end, and a melting pot communicating therewith.

12. A centrifugal casting apparatus comprising a revolving carrier, and a flask connected therewith, and having at its inner end an entrance opening, and a melting pot communicating therewith, the direction of the entrance opening in the operation of the apparatus being approximately radial whereby the flow of molten material will operate to fill the entrance opening and prevent the egress of air at such point in the operation of casting.

13. In a machine for making castings, a

horizontal rotary plate, a flask containing a mold, a crucible adapted to contain molten metal, and a base plate on which the flask and crucible are mounted, said base plate being pivotally attached to the end of said first rotary plate.

In witness whereof, I, have hereunto set my hand and seal at Indianapolis, Indiana, this twenty-seventh day of June, A. D. one thousand nine hundred and seven.

ALEXANDER JAMESON. [L. S.]

Witnesses:

ARTHUR M. HOOD,

THOMAS W. MCMEANS.