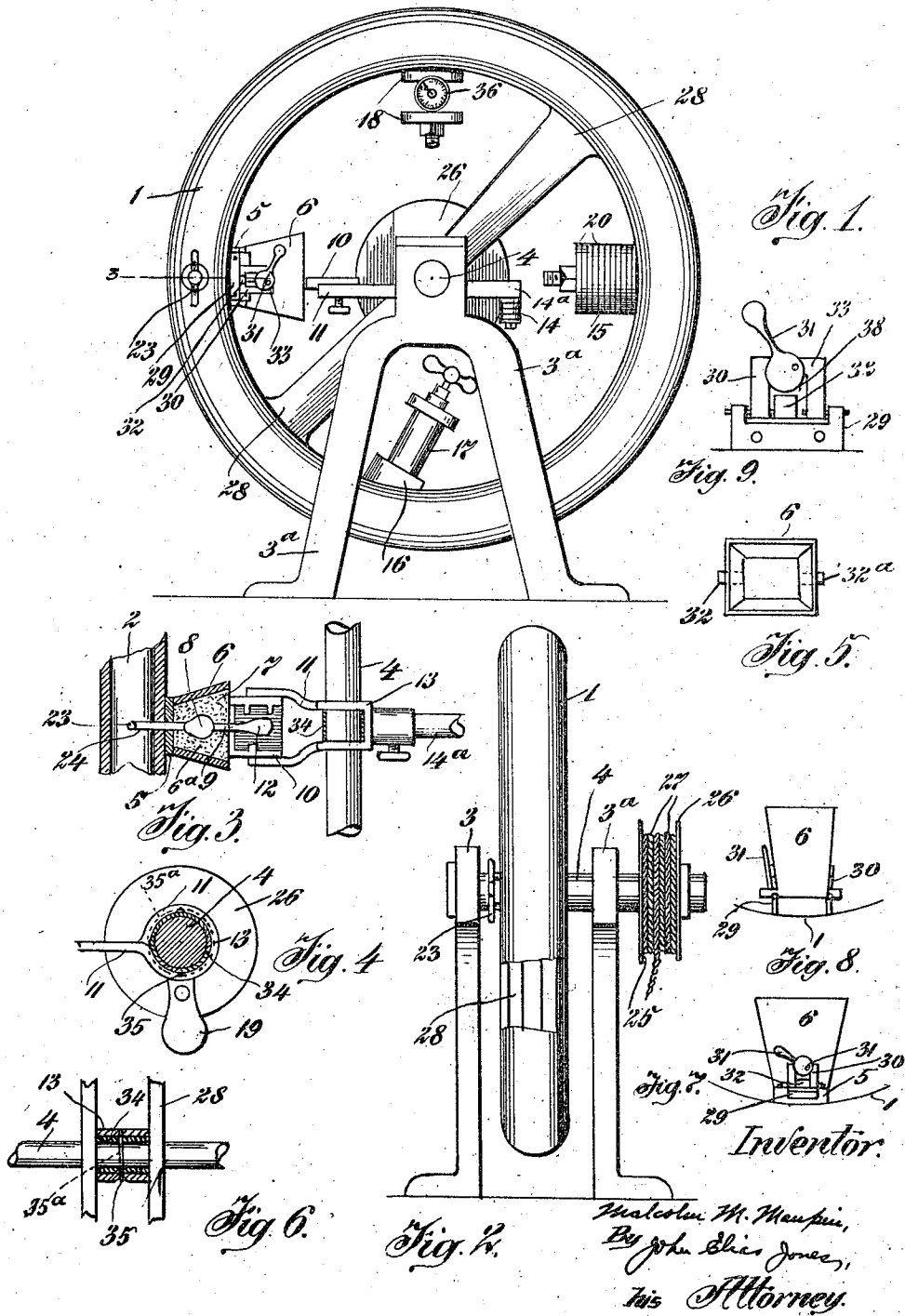


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M. M. MAUPIN
MOLDING AND CASTING MACHINE

Filed April 5, 1922



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UNITED STATES PATENT OFFICE.

MALCOLM M. MAUPIN, OF CINCINNATI, OHIO.

MOLDING AND CASTING MACHINE.

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To all whom it may concern:

Be it known that I, MALCOLM M. MAUPIN, a citizen of the United States of America, and a resident of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Molding and Casting Machines, of which the following is a specification.

My invention relates to molding and casting machines that are especially adapted to dentists' and jewelers' uses, and it has for its main object to combine the centrifugal and vacuum elements, that are at present separately used, into one unit and engage the same in mutual co-operation to displace the air from the molding-cup, keeping the cup from expanding and allowing the fluid for the casting to enter the mold when the same is cooled through the abstraction of heat.

Another object of my invention is to set up a relative axial and rotational movement, automatically adjusting the position of the mold, crucible and their appended parts, thus preventing an angular and linear separation from the same.

Another object of my invention is to construct a machine that is cheaply manufactured, easily assembled, quickly operated to any degree of accuracy, and adapted to meet the requirements of dental and jewelry castings and other kindred operations.

Such class of machines is not broadly new, but there is no device, for the specific purpose herein, that exhibits the results of careful study and skill to more than a limited extent, or that is so designed and organized as to constitute an efficient and a really desirable device. My object has been to design a more nearly perfect and effective machine of this character and to improve the construction of the details that enter into its construction.

In the accompanying sheet of drawings, Figure 1 is an elevation of my device; Figure 2, an end elevation of the same; Figure 3, a fragmentary sectional plan on the line 3, 3, of Figure 1; Figure 4, a cross section through the main shaft, showing the central adjusting-weight and the supporting terminals of the crucible thereon; Figure 5, a plan of the core or mold container or casing; Figure 6, a broken-off portion or section of the main shaft between the spoke-ribs; Figure 7, a plan view of the fastening device for the mold-casing; Figure 8, a side view

of the same; and Figure 9, a detached view of the clamping device on a larger scale.

The tubular casing or hollow wheel rim 1 that is composed of a circular shell having a chamber or bore 2, of any proportionate size, is secured to an upright supporting-frame 3^a that mounts, at its upper end, a horizontal rotatable shaft 4. Mounted on the inner frame-portion of the tubular-member 1, and integrally-extending from the same, is a rectangular shoulder 5 with reduced square portions adapted to coactingly-engage the core or mold container 6. Said container 6 is provided with the usual plastic material 6^a for mold forming, and has at its central portion, the typical cavity 8 of any desired structural elements, with an attached gutter or channel 9 at its upper end to receive the heated fluid within the prepared mold.

To more firmly grip the lower ends of the mold-casing 6 for an air-tight contacting-operation, a clutch device 29, Fig. 1, is arranged, such clutch comprising a rectangular face-plate 33 with a hinged-portion 30.

In operating the clamp 29 I insert the projecting lug 32^a into the aperture 38 between the standards 30. Said standards are rigid and not hingeable on the inner part of the mold-casing. The outer standards 30 are hingedly-connected to the frame-portion 29, and, by a downward tiltable movement, allowing the projecting lug 32 to engage the aperture 38. The outer standards 30 have at their face-plate 33 eccentrics 31 frictionally-engaging at their inner ends the projecting lugs 32 and 32^a.

A suitable inlet and outlet valve 23, arranged about midway with the mold 6, is mounted on the peripheral side of the tubular-casing 1, operatively-connected with the plastic-mold 8 through the conduit 24.

Mounted on the shaft 4 is a crucible 10 in slidable-engagement with aligned sections 11 and comprising a depression 12 in which the metal is to be melted and transferred to the mold 8 by means of the gutter or channel 9. The melting process of the amalgam in the depression 12 of the crucible 10 is generally produced by a common blow-pipe, with a range of movement in any direction the operator may desire.

13 is a clamp or locking-ring on the shaft 4 for the crucible-section 10, and 14 is a balance-weight provided on the extended op-

posite end 14^a of the crucible-sections 11 and adapted to maintain the same in linear alignment. The balance-weight 15, oppositely-disposed to the ingot-mold 6, on the tubular-rim 1, will act, by its predetermined weight, as a component member to the said balance-weight 14 for the relative adjustment of the mold 6 and the crucible 10. On the inner periphery of the tubular-rim 1 is an angularly-diverging orificed boss 16 that is provided with a manually-operated miniature air-pump 17. A balance-weight 18, that is diametrically-opposite to said air-pump 17, on the inner periphery of the said tubular-rim 1, coincides in weight with said air-pump for uniform adjustment. A pendulum-shaped balance-weight 19, Fig. 4, is loosely-attached to the main shaft 4 so that its gravitating, swinging movements will cause a compensating action of the crucible and mold elements for harmonious interengagement with each other. The balance-weights 15 and 18 are preferably constructed of a multiple of detachable plates or washers for conveniently adjusting and harmonizing their opposing weights.

In operating my device, I exhaust all air from the bore or interior 2 of the tubular-casing 1 through the manually-operated pump 17 for expelling all aerial matter in the mold and tubular-rim 1. To rotate the tubular-casing 1 in quick revolutions with its various attachments, a gyroscopic-arrangement in the peripheral groove 25 of the wheel or spool 26 is so arranged, that by pulling the end of the wound cord or rope 27, grouped in several layers in the groove 25, the well-known laws of gyroscopic-movement will cause the shaft 4 and its appended parts to move in quick or instant rotation, diametrically conducting or shooting the heated metal in the crucible 10

through the gutter or channel 9 into the mold 8. The valve 23 is opened simultaneously with the shooting or whirling of the molten or fused metal into the mold, to extract the heated air arising from the metallic-fillings and by combining the force of suction, on one side, and centrifugal force, on the other side, better results of the metallurgic operation are produced. In order to keep the terminal-portion of the slidable-crucible from oscillating against the inner edge of the wheel-spoke 28, a collar 34 is provided to engage the outer periphery of the shaft 4, said collar having a tooth-like dent 35 to receive a circular wire or like binding-element 35^a for fastening purposes. To quickly ascertain the vacuum-contents in the tubular-casing 1, the registering-gauge 36 is fastened between the pair of balance-weights 18, 18, indicating the low or the high-pressure within the air-chamber, and deducting from the series of plates 20 an equal number of said plates to equalize the weight of the gauge in register with the weight of the opposed air-pump 17.

I claim—

In a molding and casting machine, a rotatable tubular rim or casing, a molding-member provided within said casing, spaced supporting standard-members, a main shaft rotatably-mounted in the said standard-members, a valve-chamber mounted on the said casing and provided with inlet and outlet ports that communicate with the said mold casing for exhausting air therefrom, closing means adapted for said ports, and air-exhausting means on the inner-peripheral side of said casing and operatively-connected with the valve-chamber, substantially as shown and described.

MALCOLM M. MAUPIN.