April 15, 1947. H. ROTHSTEIN 2,418,852

ADJUSTABLE MOLD HOLDER

Filed July 28, 1944 2 Sheets-Sheet 1

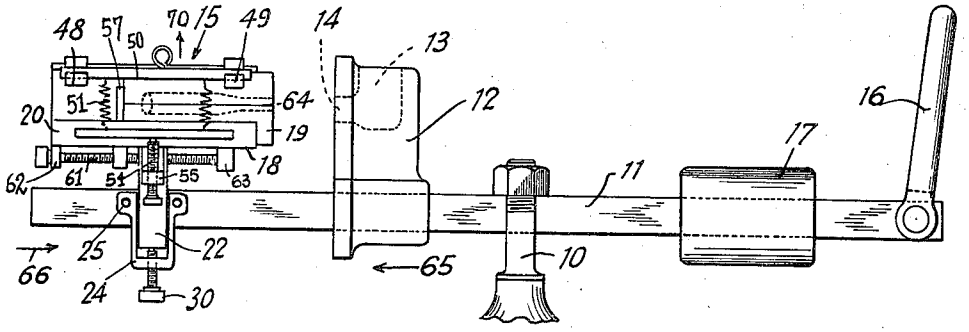


Fig. 1

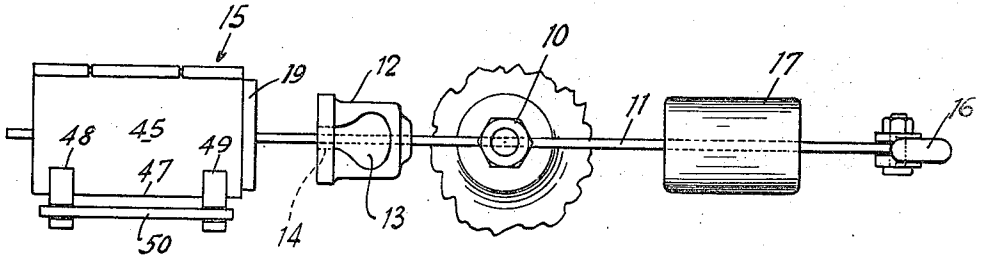


Fig. 2

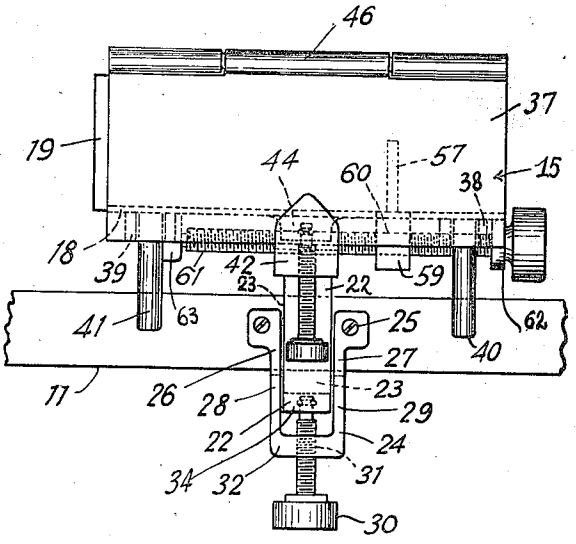


Fig. 5

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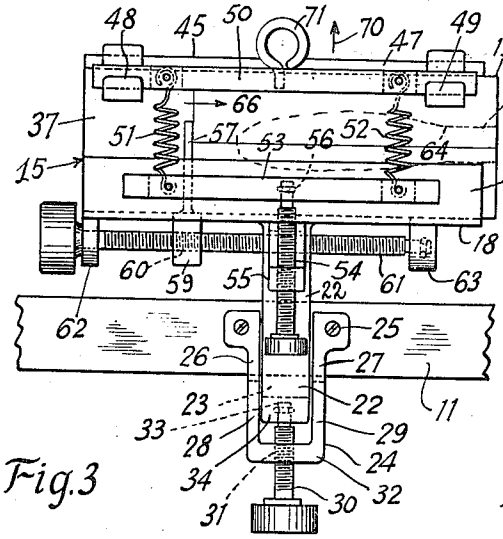


Fig. 3

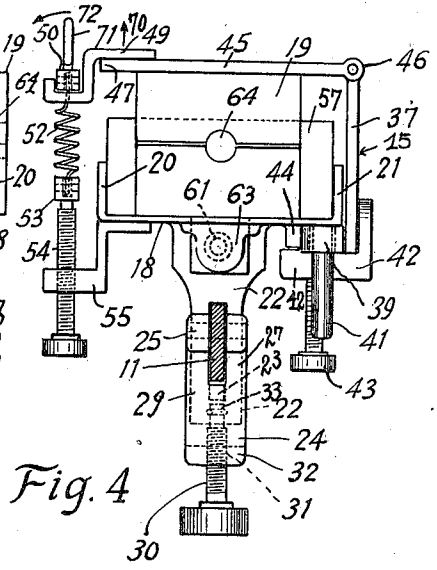


Fig. 4

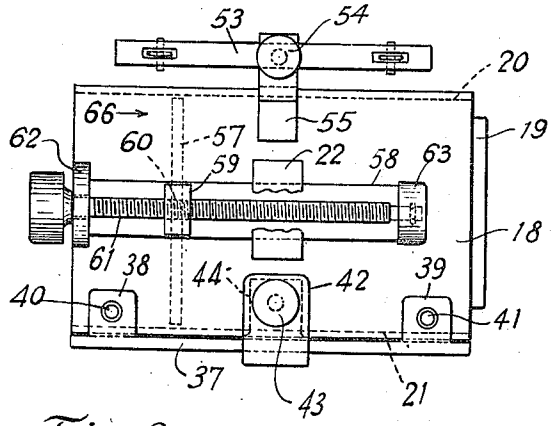


Fig. 6

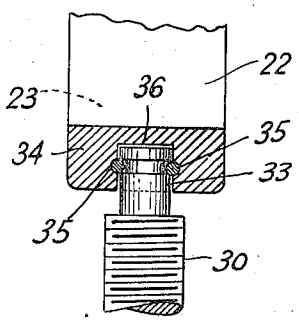


Fig. 7

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ADJUSTABLE MOLD HOLDER

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9 Claims. (Cl. 18—5.7)

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This invention relates to casting machines operating by centrifugal action, particularly such machines as used in the jewelry trade.

At present wax castings used in the jewelry trade are made on such centrifugal machines which have a vertical shaft, a transverse rod on the top of it, a wax container slidable on said rod, a base at one end of said rod on which the mold for the casting may be secured, and a counter-weight at the other end. A spring is employed around the vertical shaft and when the shaft is rotated, the reaction of the spring will cause it to rotate in the other direction, and the centrifugal force will throw the molten wax into the mold.

The molds used, usually are made of rubber and are of two parts separated horizontally in the center, half of the casting being in one-half of the mold and the other half in the other, and a casting opening and channel being provided from the end of the mold in register with the outflow opening of the wax container.

To secure such two part rubber molds on the end of the rotating rod is a very slow, cumbersome operation, and very often the casting is ruined by a faulty securing, position, registering, or pressure of the mold.

The main object of my invention is to provide a holder for molds, in cases as described, and similar to it, wherein the mold may be secured easily and quickly, placed in the right position, a most favorable pressure employed thereon, and may be removed and taken apart just as easily and quickly after the casting is finished.

Other objects of my invention will be apparent as the specification of the same proceeds.

In the drawings forming a part of this specification and accompanying the same:

Fig. 1 is a diagrammatic, fragmentary, elevational view of the top of the rotating part of a centrifugal casting machine showing my invention applied thereon, and,

Fig. 2 is a similar plan view thereof;

Fig. 3 is a front elevational view of my invention as applied on said centrifugal machine;

Fig. 4 is a right side elevational view thereof with reference to the position of Fig. 3;

Fig. 5 is a rear elevational view;

Fig. 6 is a bottom view, portions of the same being broken away;

Fig. 7 is a fragmentary detail.

Referring now to the drawings more in detail, by characters of reference, the numeral 10, indicates the vertical shaft of a centrifugal casting machine, on which is secured a horizontal mold

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carrying arm, rod, or bar 11. 12 is the molten wax container having the recess 13 for the wax and the outflow 14 for it.

My novel mold holder or carrier with a mold shown therein is generally indicated by the numeral 15 and it is opposite the outflow side of the wax container.

An arm 16 is at the other end of rod 11 for rotating the same and at 17 a slidable counterweight is shown.

Except for my novel mold receiver 15, the arrangement is the usual one, as now employed in jewelry casting shops.

Shaft 10 in this arrangement is driven in a quick rotation by the action of a spring (not shown) around the lower part of shaft 10 put under tension manually by the rotation of the shaft 10 through the use of handle or grip 16 on rod 11, as will be obvious and as is well known in this art, for which reason further details of the mechanism are not shown.

It is understood that mechanical, motor means may be used for rotating the shaft 10, as in the case with a new type of such casting machine, and it will be seen that my novel mold receiver, holder and regulator device may be used on such machine in an exactly similar manner as on manually operated casting machines.

As has been indicated herein before, at present, in either type of such centrifugal casting machines, a mold holder or receiver plate is secured on rod 11 at the place where my invention 15 is indicated in Figs. 1 and 2. The two part rubber mold is placed on said plate and then the parts tied to one another and to the base plate by rubber bands.

The molten wax container 12 is slidable on rod 11 and will be moved on it so that its outflow 14 should register, as much as possible with the intake of the mold, for which the mold will be moved on its plate in an appropriate manner, and different plates, parts, etc., used for molds of different thicknesses, and the pressure holding the upper half of the mold on the lower half thereof will be adjusted manually by tightening or loosening the rubber bands around them as well as possible.

This is a slow, time consuming, cumbersome, awkward and unreliable method, resulting in many faulty castings. If the registering is wrong, or the pressure is too high, or too low, etc., the cast will be deficient, or entirely unusable. For every new casting a good portion of these operations have to be repeated. The operator must be a highly experienced expert and even then the

result is doubtful and the rate of production very slow.

With my invention all the necessary operations may be done quickly, absolutely reliably, for any molds, small or large, and repeated castings may be produced easily and expeditiously.

My novel device also employs a base plate, indicated at 18, on which the two part rubber mold, designated by 19, may be placed.

Base plate 18 may have a front upstanding longitudinal flange 20, and a rear such flange 21, and in the bottom center thereof, a downwardly projecting post member 22 with a slot 23 through which the rod 11 passes.

A lyre shaped casting 24 is secured on the rod 11, as at 25, having left side and right side pairs of prongs 26 and 27, respectively, at the tops of its left and right branches 28 and 29, the downward projection 22 of the base plate 18 being slidably received between said branches and the roll 11 being placed between said prongs.

A regulating screw 30 passes through a screw threaded opening 31 in the bottom 32 of the lyre 24. The upper end 33 of the screw 30 is swiveled in the bottom 34 of the downward projecting member 22 (Fig. 7). This swivel is preferably formed by pins 35 passing through the part 34 and engaging a circular groove 36 in the upper part 33 of the screw, as it is well known in this art.

Upon turning the screw 30 in one or in the other direction, it will move upwardly or downwardly through the part 32, rotating in the part 34, and will push or pull the slotted member 22 upwardly or downwardly and with it the base plate 18, and my whole device with the mold 19 therein. In this manner the vertical position of the mold may be adjusted, with reference to the rotating arm or rod 11 within the limit given by the difference between the heights of slot 23 in said projection 22 and of the rod 11.

An upwardly and downwardly slidable vertical rear plate 37 is secured on the base plate 18 in the following manner: Two inward lugs 38 and 39 are provided at the bottom edge of the rear plate 37, having apertures therein through which the respective pins 40 and 41, extending downwardly from the base plate 18, may slide.

A third inward lug 42 is also provided at the bottom center of the side plate 37 having a screw threaded opening through which passes the regulating screw 43, and at the bottom of the base plate 18 a corresponding lug 44 is provided in which the upper end of the screw 43 is secured, rotatably but axially not movably, in a similar manner as illustrated in Fig. 7 for the slotted projection 22.

It will be seen that upon the turning of the screw 43 in one or in the other direction, the rear plate 37 will move upwardly or downwardly, sliding by its lugs 38 and 39 on the pins 40 and 41.

A clamping top plate 45 is hingedly secured on the rear plate 37, as at 46.

On the free, front edge 47 of the top 45 are secured two upwardly open channel brackets 48 and 49, in which normally rests a longitudinal bar 50, connected by two coiled springs 51 and 52 to a lower bar 53. A screw 54 passes through bracket 55 projecting from the base plate 18 its upper end 56 rotatably but axially not movably secured, or swiveled, in bar 53.

When the screw 54 is rotated in one or in the other direction, it will pull bar 53 downwardly, or push it upwardly, thereby either increasing

the tension of springs 51 and 52, or decreasing the same, and in this manner the top 45 will exert on the mold 19 an increased or decreased pressure.

At the left side of the base plate 18 a transverse pusher plate or bar 57 is slidably arranged thereon. A longitudinal center slot 58 is provided in the base 18 and a downward lug 59 of the pusher bar 57 is slidable in said slot. A screw threaded hole 60 is provided in the lower part of lug 59 and a regulating screw 61 passes through it. A screw threaded left end lug or bearing 62 is depending from the base plate 18 for the screw 61, and the right hand end of it is rotatably but axially not movably secured, or swiveled, in another depending lug 63, similarly as shown in Fig. 7. Upon rotating screw 61, lug 59, and pusher bar 57 therewith, will move in a right hand or left hand direction towards or away from the mold 19.

The use and operation of my device will be obvious from the herein description thereof but I desire to offer the following further explanations.

In using my invention, the mold 19 will be placed on the base plate 18, its centerline, normally containing the intake or sprue opening 64, normally being placed in the centerline of the plate 18, generally defined by the screw 61. The outflow opening 14 of the wax container 12 normally also is in said centerline.

Now the wax container 12 will be moved up to close on the mold 19, as indicated by arrow 65, it being slidable on bar 11 and having means (not shown) to release it and permit its sliding or to lock it to said bar, as it is well known in this art.

The base plate 18 with the mold thereon will now be raised or lowered until the outflow opening 14 registers with the intake opening 64. This adjusting is executed by the screw 30 as will be understood and thereafter the pusher plate 57 will be moved in a right handed direction (arrow 66) by the use of screw 61 until it presses against the left side of the mold 19, and will press it tightly against the wax container 12.

It will be understood that the top 45 of my device has been released and thrown open around the hinge 46. For this purpose the upper bar 50 of the spring closure and pressure device will be lifted upwardly, as indicated by the arrow 70, and through the grip 71, out of the channel brackets 48 and 49, then turned outwardly, as indicated by the arrow 72, and the bar 50 and its springs 51 and 52 permitted to hang loosely on the lower bar 53.

After the mold has been arranged in the right position and pressed against the wax container 12, the top plate 45 will be closed upon it, turned inwardly on its pivot 46, into the position shown in the various figures, and particularly in Figs. 3 and 4, whereupon the bar 50 will be caught by the grip 71, pulled upwardly, stretching the springs 51 and 52, moved over the channel brackets 48 and 49, and dropped into them, into the closure position of said Figs. 3 and 4.

The pressure of the plate 45 on the mold 19 will now be adjusted by the screw 54, as has been described hereinbefore, loosening the springs 51 and 52, or tightening them, according to the judgment of the operator.

The device is now ready for the casting, and molten wax will be poured into the recess 13 of the container 12, shaft 10 turned through the use of the handle 16 on bar 11, and its spring will cause it to rotate in an opposite direction with great

speed and the centrifugal force will throw the molten wax into the mold 19.

When the molding operation is finished, bar 50, again, may be lifted out of the channel brackets 48 and 49, the springs 51 and 52 permitted to drop with it, outwardly and loosely, the top 45 opened, the mold removed, opened up, and the ready wax casting taken out, the mold replaced in the same position as before, and again locked by the top plate 45, and the device is ready for another casting.

It will be seen that in this manner, with my device, a great number of castings may be made without any new adjustment, easily and extremely quickly, as against the cumbersome, difficult, and slow operation, used at present with such machines.

To adjust the mold holder or carrier 15 to receive molds of different dimensions, the screw 54 is turned thereby raising or lowering the top plate 37 to space the same from the base plate 18 so as to substantially correspond to the height of the mold. The screw 61 is adjusted to move the pusher plate 57 against one end of the mold projecting the other end slightly beyond the base and top plates. The wax holder 12 is then moved adjacent to the mold and the screw 30 is adjusted to raise or lower the carrier 15 so as to bring the sprue opening in the mold in registration to the outlet opening in the wax holder. The screw 54 may then be adjusted to place the desired resilient pressure upon the top plate. The device so adjusted may be used for forming successive castings as long as the same molds are employed.

What I claim as new and want to protect by Letters Patent of the United States is:

1. In a centrifugal casting machine, the combination with a rotatable arm; of a mold carrier mounted on said arm comprising top and base mold clamping plates, a side plate hinged at its upper end to said top clamping plate and at its lower end overlapping said base plate, pins depending from said base plate, bearings on said side plate slidably engaging said pins, an adjusting screw for moving said side plate with respect to said base plate to vary the spacing between said top and base plates and resilient means for detachably connecting said top and base plates on the side opposite said side plate.

2. In a centrifugal casting machine, the combination with a rotatable arm; of a mold carrier mounted on said arm comprising top and base mold clamping plates, a side plate hinged at its upper end to said top clamping plate and at its lower end overlapping said base plate, pins depending from said base plate, bearings on said side plate slidably engaging said pins, an adjusting screw for moving said side plate with respect to said base plate to vary the spacing between said top and base plates, resilient means for detachably connecting said top and base plates on the side opposite said side plate and means for adjusting said resilient means to change the clamping pressure.

3. In a centrifugal casting machine, a mold carrier comprising a base plate having depending pins adjacent one side thereof, a side plate overlapping said base plate and having bearings slidably engaging said pins, an adjustment screw connecting said base plate and side plate with a swivel engagement with the one and a threaded engagement with the other, a top plate hingedly connected to the upper end of said side plate, a pair of channel bearings secured to and projecting beyond the free edge of said top plate, a pair of parallel bars, a plurality of tension springs connecting said bars, the upper of said bars being detachably engageable with said channel bearings, a screw having a swivel engagement with the lower bar and a threaded bearing on said base member with which said screw is engaged, whereby the resilient pressure upon said top plate may be adjusted by the last mentioned screw.

4. In a centrifugal casting machine, the combination with a swinging arm, of a post member slotted for the passage of said arm therethrough, a U-shaped member embracing said post member bifurcated to embrace said arm and fixedly attached thereto, a screw connecting said post and U-shaped member having a swivel engagement with the one and a threaded engagement with the other to form a means for transversely adjusting said post with respect to said arm and a mold carrier mounted on said post comprising base and top clamping plates, said base plate being attached to the upper end of said post, a side member transversely adjustably connected to said base plate and hingedly connected to said top plate, an end plate longitudinally adjustably secured to said base plate and a resilient link detachably engageable with the free edge portion of said top plate and vertically adjustably connected to said base plate.

5. In a centrifugal casting machine, the combination with a swingable element and a molding material container radially adjustable on said element, of a mold carrier, comprising a base, a depending post on said base secured in a radially fixed, but transversely slidable, manner on said swingable element, a rear plate secured on said base vertically slidably relative thereto, means to cause said rear plate to slide upwardly or downwardly on said base, a top plate hingedly carried by said rear plate, and a releasable resilient connection between said base and said top plate.

6. In a centrifugal casting machine, the combination with a swingable element and a molding material container radially adjustable on said element, of a mold carrier, comprising a base, a depending post on said base secured in a radially fixed, but transversely slidable, manner on said swingable element, a rear plate secured on said base vertically slidably relative thereto, means to cause said rear plate to slide upwardly or downwardly on said base, a top plate hingedly carried by said rear plate, a forward projection on said top plate, a forward projection on said base carrying an upwardly and downwardly adjustable anchoring member, and a resilient member having its lower end secured to said anchoring member and its upper end being adapted to be releasably secured to said forward projection on the top plate.

7. In a centrifugal casting machine, the combination with a swingable element and a molding material container radially adjustable on said element, of a mold carrier, comprising a base, a depending post on said base secured in a radially fixed, but transversely slidable, manner on said swingable element, a rear plate secured on said base vertically slidably relative thereto, means to cause said rear plate to slide upwardly or downwardly on said base, a top plate hingedly carried by said rear plate, a forward projection on said base, an adjustable screw in said projection, an anchoring bar over said projection in front of said base, the upper end of said screw being swiveled in said bar, whereby the same may be moved upwardly or downwardly by said screw,

upwardly open channel shaped forward projections on said top plate, a bar removably placed into said channels, and spring connecting means between said two bars, whereby the mold carrier may be adjusted to molds of various heights and an adjustable resilient pressure may be exerted on the molds.

8. In a centrifugal casting machine, the combination with a swingable element and a molding material container radially adjustable on said element, of a mold carrier, comprising a base, a depending post on said base secured in a radially fixed, but transversely slidable, manner on said swingable element, a rear plate secured on said base vertically slidably relative thereto, means to cause said rear plate to slide upwardly or downwardly on said base, a top plate hingedly carried by said rear plate, a releasable resilient connection between said base and said top plate, and a radially adjustable slidable abutment member on said base, whereby the carrier may be adjusted to molds of different sizes, resilient pressure may be exerted thereon and the position of said molds may be adjusted both axially and transversely on said swingable element.

9. In a centrifugal casting machine, the combination with a swingable element and a molding material container radially adjustable on said element, of a mold carrier, comprising a base, a depending post on said base secured in a radially fixed, but transversely slidable, manner on said swingable element, a rear plate secured on said base vertically slidably relative thereto, means to cause said rear plate to slide upwardly or downwardly on said base, a top plate hingedly carried by said rear plate, a releasable resilient connection between said base and said top plate, a slidable transverse abutment member on said base, said base being provided with a longitudinal slot from one side thereof to the other to a portion of its length in about its center line, a projection in said base on the inner end of said slot, a projection on said abutment member slidable in said slot, and an adjusting screw passed through said projection in the abutment member and swiveled in the projection on the base, whereby the carrier may be adjusted to molds of different sizes, resilient pressure may be exerted thereon and the position of said molds may be adjusted both axially and transversely, on said swingable element.

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