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L. T. KNOCKE

CENTRIFUGAL CASTING MACHINE

Original Filed March 17, 1923

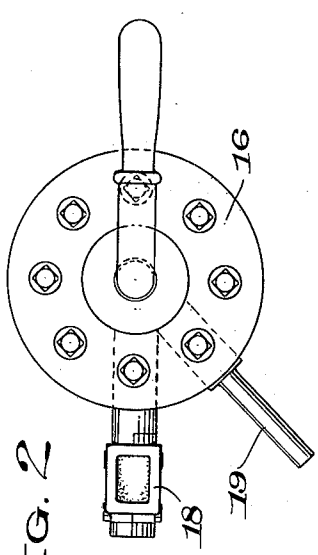


FIG. 2

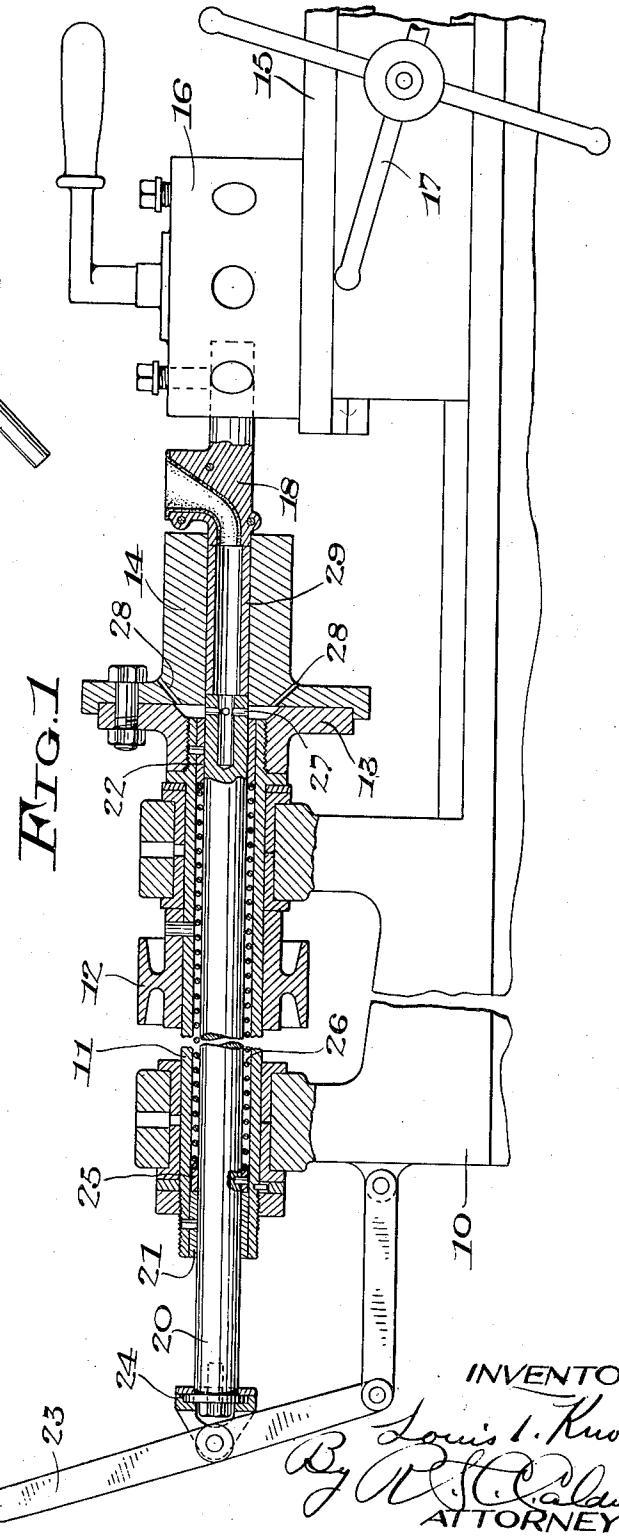


FIG. 1

WITNESSES

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CENTRIFUGAL CASTING MACHINE.

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This invention has for its object to provide simple and inexpensive means for producing centrifugal castings.

Another object of the invention is to provide such a machine in which the mold continues to rotate after the pouring operation and during the ejectment of the casting therefrom so that it is ready to receive another pouring immediately.

Another object of the invention is to provide such a machine with a casting ejecting plunger constituting a part of a mold wall and an advancing and receding funnel member to constitute another part of the mold wall.

Another object of the invention is to adapt such a machine to an ordinary lathe construction.

With the above and other objects in view the invention consists of the centrifugal casting machine as herein claimed and all equivalents.

Referring to the accompanying drawings, in which like characters of reference indicate the same parts in different views,

Fig. 1 is a central elevation of a centrifugal casting machine constructed in accordance with this invention, and

Fig. 2 is a plan view of the turret for the pouring funnel and the casting receiver.

In these drawings, 10 indicates a base or bed such as the bed of an ordinary lathe, and 11 constitutes the tubular spindle thereof driven by a pulley 12 in any suitable manner while journaled in the bearing boxes as usual and carrying a face plate 13. A mold 14 is secured to the face plate as by means of three bolts, one of which is shown. The tail stock 15 carries a turret 16 which is movable toward or away from the face plate as usual by means of a feed wheel 17 and thereby permits of either of several instrumentalities carried by the turret being brought into operative relation with the mold. As shown, a pouring spout 18 forms one of those instrumentalities and is designed to fit within the mold cavity and constitute an end wall therefor while affording a suitably lined funnel-shaped pouring opening through which the molten metal may be admitted to the mold. Another instrumentality on the turret is a casting receiving pin 19, which, when brought into register with the mold cavity, is adapted to receive the casting thereon when the latter is ejected.

For ejecting the casting a plunger 20 fits within bushings 21 and 22 inside the tubular spindle 11 and projects into the mold cavity, as shown, being capable of longitudinal movement to substantially the length of the mold cavity by the operation of an ejecting lever 23 mounted on the lathe head. This plunger has a shoulder 24 freely held within a coupling on the lever 23 so that the plunger is capable of turning with the spindle. Fixed on the plunger is a collar 25 normally held in contact with bushing 21 by a coiled spring 26 in the space between the plunger and spindle and bearing against said collar and bushing 22. This retrieving spring returns the plunger after a casting ejecting operation and the engagement of the collar with the bushing 21 determines the position of the plunger in the mold, where it constitutes an end wall for the mold cavity. The fit of the plunger 20 and of the funnel 18 within the mold cavity is sufficiently close to prevent the formation of fins on the casting notwithstanding the fact that the funnel 18 is relatively stationary.

With the parts in operation, as shown, molten metal, preferably in a measured quantity, is poured through the funnel into the mold cavity where it takes up the rotating motion of the mold and becomes distributed by centrifugal force around the cylindrical walls of the mold cavity and confined between the plunger and the funnel. To vent the internal space through means other than the funnel, neck openings 27 are formed in the end of the plunger, establishing communication between the mold cavity and a cavity in the face plate, which latter is vented through vent openings 28 in the mold. This allows of the discharge of the gases formed by the incoming molten metal without interfering with the flow through the funnel. When the mold has been poured in this manner the turret 16 is backed out of the mold while the mold continues to turn and the turret is moved to bring the receiving pin 19 in register with the mold cavity. Then the lever 23 is swung, forcing the plunger 20 through the mold cavity and ejecting the casting 29 onto said pin. The funnel is then returned and advanced into the mold cavity again, when another casting operation may be performed and this action repeated indefinitely.

By means of this invention it is not nec-

essary to remove the mold from the machine when the casting is poured, but the quickly cooling casting may be ejected from the rotating mold almost at once, resulting in a great saving of time and conserving the heat since the rapid operation may avoid the necessity for pre-heating the mold between operations.

While the invention is described as adapted to an ordinary lathe construction it, of course, is not confined thereto.

What I claim as new and desire to secure by Letters Patent is:

1. In a centrifugal casting machine, a rotary mold, a plunger constituting a casting ejecting means fitting in the end of the mold cavity and constituting an end wall thereof and adapted to be moved longitudinally during the rotation of the mold, and removable means for closing the other end of the mold cavity.

2. In a centrifugal casting machine, a rotary mold, longitudinally movable members for closing the ends of the mold cavity, and means for moving said members during the rotation of the mold for ejecting the casting from the mold cavity.

3. In a centrifugal casting machine, a rotary mold, longitudinally movable members for closing the ends of the mold cavity, and means for moving said members during the rotation of the mold for ejecting the casting from the mold cavity, one of said members constituting a pouring means through which the mold cavity is supplied with molten material.

4. In a centrifugal casting machine, a suitably driven tubular spindle, a face plate carried thereby, a mold clamped to the face plate and provided with a central mold cavity, a spring retracted plunger slidable through the spindle and fitting in the end of the mold cavity to constitute an end wall therefor, means for closing the other end of the mold cavity and for supplying molten material thereto, and means for moving the plunger through the mold cavity for ejecting the casting.

5. In a centrifugal casting machine, a suitably driven tubular spindle, a mold mounted thereon, a plunger slidably mounted within bushings of the spindle and fitting in the mold cavity to constitute an end wall thereof, a collar fixed on the plunger and bearing on one of the spindle bushings, a spring surrounding the plunger and bearing on said collar and the other bushing, a coupling having a loose connection with the end of the spindle, an operating lever carrying said coupling, and means for closing the other end of the mold cavity and for supplying molten material thereto.

6. In a centrifugal casting machine, a rotatable mold, a turret capable of movement with relation thereto, a pouring funnel mounted on the turret and adapted to fit within the end of the mold cavity for supplying molten material thereto, a casting receiving pin also mounted on the turret and adapted to register with the mold cavity, and a plunger for forcing the casting from the mold cavity onto the casting receiving pin.

7. In a centrifugal casting machine, a rotatable mold, a plunger fitting in the mold cavity and constituting an end wall therefor, there being vent openings through the plunger for venting the mold cavity, and a pouring funnel fitting in the other end of the mold cavity and constituting the end wall thereof and adapted to admit molten material to the mold cavity.

8. A centrifugal casting machine comprising a rotary mold, an ejecting plunger constituting one end wall of the mold cavity, a pouring funnel constituting the other end wall of the mold cavity, means for separating the pouring funnel and the mold, and means for causing the plunger to enter the mold cavity to eject the casting.

9. In a centrifugal casting machine, a rotary mold, a plunger constituting a casting ejecting means fitting in the end of the mold cavity and constituting an end wall thereof, means for causing relative movement between the plunger and mold during the rotation of the mold, and means for temporarily closing the other end of the mold cavity.

In testimony whereof, I affix my signature.

LOUIS T. KNOCKE.