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A. R. MacLAGAN ET AL

2,272,718

DIE CASTING MACHINE

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FIG. 1

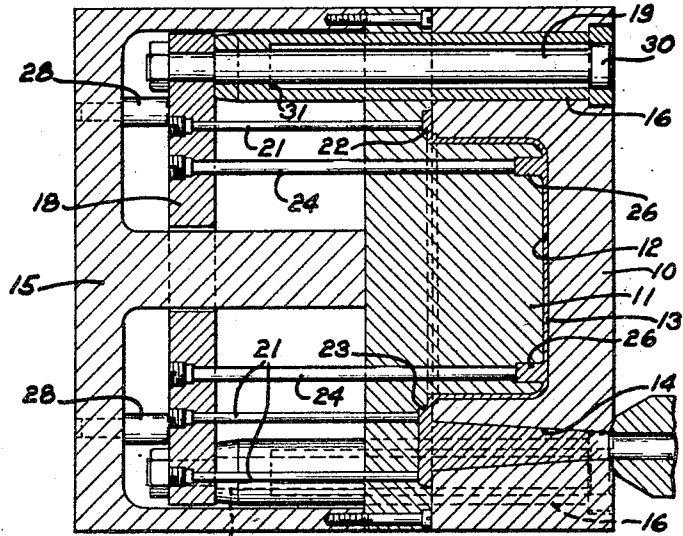


FIG. 2

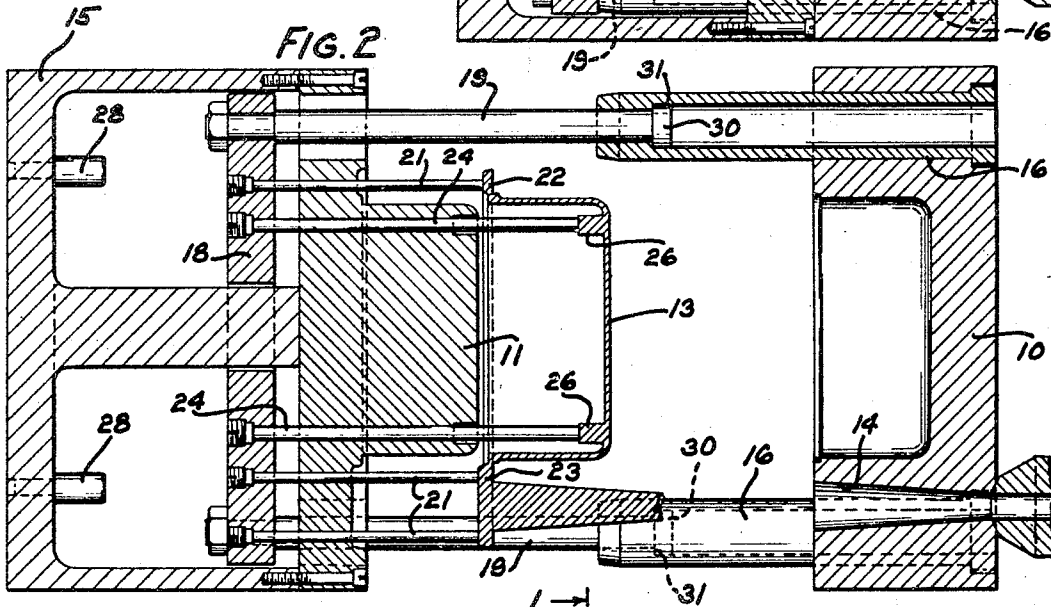
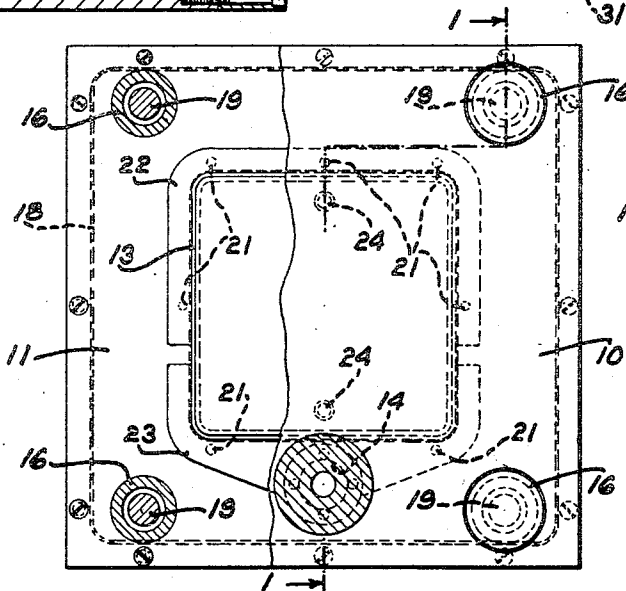


FIG. 3



INVENTORS
A. R. MAC LAGAN
E. C. NEUHAUS
BY *Emery Robinson*
ATTORNEY

UNITED STATES PATENT OFFICE

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DIE CASTING MACHINE

Allan R. MacLagan, Western Springs, and Elmer C. Neuhaus, Chicago, Ill., assignors to Western Electric Company, Incorporated, New York, N. Y., a corporation of New York

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6 Claims. (Cl. 22—94)

This invention relates to die casting machines, and more particularly to improvements in die casting dies and ejector mechanisms.

Objects of the invention are to improve and simplify the construction of die casting dies and ejector mechanisms.

One embodiment of the invention contemplates the provision of a die casting die in which the movable die member is slidable on tubular guide posts attached to the stationary die member and the usual ejector pin supporting plate is attached to rods which are slidable in the tubular posts. The ejector plate supporting rods and the tubular guide posts have portions adapted to cooperate to interrupt the movement of the ejector plate during the final portion of the opening movement of the die, whereby the ejector pins are projected through the movable die member to separate the casting therefrom. The guide posts also serve to reset the ejector pins to their casting position by stopping the movement of the ejector plate during the final portion of the closing movement of the die.

A preferred embodiment of the invention is illustrated in the accompanying drawing, in which

Fig. 1 is a longitudinal sectional view of a die casting die and ejector mechanism embodying the invention, the section being taken on line 1—1 of Fig. 3, with the die shown in its closed position;

Fig. 2 is a similar longitudinal sectional view with the die shown in its open position, and

Fig. 3 is an end view, partly broken away, looking from the right of Fig. 1.

The die casting die illustrated in the drawing comprises a stationary member 10 and a movable member 11 cooperating therewith to provide a die cavity 12 (Fig. 1) for casting a rectangular box 13. The stationary die member is provided with the usual sprue or metal inlet opening 14 communicating with the die cavity, and it will be noted that the die cavity is off-center or eccentric with respect to the sprue.

The movable die member 11 is attached to a reciprocatory die block 15 and is slidably guided by four tubular guide posts 16, 16 secured to and projecting from the stationary die member. The die supporting face of the die block is recessed to accommodate an ejector plate 18 which is attached to the outer ends of four rods 19, 19 slidably mounted in the guide posts 16. Attached to the ejector plate are a plurality of ejector pins 21 which extend through the movable die member and are adapted to engage overflow flanges

22 and 23 of the casting. A pair of additional ejector pins 24—24 are attached to the ejector plate and are adapted to engage internal bosses 26, 26 of the casting.

When the die is closed, as shown in Fig. 1, the ejector plate 18 is held against the ends of the tubular guide posts 16 by studs or bumpers 28, 28 attached to and projecting inwardly from the die block. The ejector pins are thus properly positioned for casting. When opening the die, the casting adheres to and moves with the movable die member, and this movement is transmitted through the ejector pins to the ejector plate so that the ejector plate also moves with the movable die member. This causes the ejector plate supporting rods 19 to slide in the tubular guide posts 16 until enlarged heads or external shoulders 30, 30 on the inner ends of the rods strike internal stop shoulders 31, 31 of the guide posts, thus interrupting the movement of the ejector plate. The stop shoulders are arranged so as to interrupt the movement of the ejector plate before the movable die member reaches the end of its opening movement. Thus, during the final portion of the opening movement of the movable die member, that is, after movement of the ejector plate has been stopped, the ejector pins 21 and 24 are, in effect, projected through the movable die member, thereby separating the casting therefrom, as shown in Fig. 2. The casting is then readily removable from the ejector pins.

When closing the die, the ejector plate again moves with the movable die member, but before the die is completely closed, the ejector plate is stopped by engaging the outer ends of the tubular guide posts. Thus, during the final portion of the closing movement of the movable die member, the ejector pins remain stationary, so that they are, in effect, retracted to their casting position. At the completion of the closing movement of the die, the bumpers 28 again engage the outer surface of the ejector plate to prevent movement thereof during the casting operation.

From the above description, it will be apparent that the tubular guide posts 16 serve not only to maintain the die members in alignment but also to actuate and reset the ejector pins, thus providing a die of simple and inexpensive construction having a self-contained ejector mechanism. It should be understood, of course, that the invention is not limited to the particular embodiments thereof herein illustrated and described, except insofar as is defined by the appended claims.

What is claimed is:

1. A die casting die comprising a pair of relatively movable die members, a tubular guide post attached to one of said members and slidable in the other member, a rod slidable in said guide post, and an ejector pin supporting plate carried by said rod.

2. A die casting die comprising a pair of relatively movable die members, a tubular guide post attached to one of said members and slidable in the other member, a rod slidable in said guide post, and an ejector pin supporting plate carried by said rod, said guide post and said rod having cooperating portions for interrupting the movement of the ejector plate as the die approaches the end of its opening movement.

3. A die casting die comprising a pair of relatively movable members, a tubular guide post attached to one of said members and slidable in the other member, a rod slidable in said guide post, an ejector pin supporting plate carried by said rod, and an ejector pin carried by said plate and adapted to be projected through one of said die members to separate a casting therefrom, said guide post being designed and arranged to interrupt the movement of the ejector plate during the closing movement of the die, whereby the ejector pin is reset to its casting position.

4. A die casting die comprising a fixed die member having a plurality of tubular guide posts attached thereto, a movable die member slidable on said posts, ejector plate supporting rods slidable in said posts, an ejector plate carried by said rods, and ejector pins attached to said plate and slidable in said movable die member, said rods and said guide posts having cooperating shoulder portions for interrupting the movement of the ejector plate during the opening movement of the

movable die member, whereby the ejector pins are projected through the movable die member to separate a casting therefrom, and said guide posts being adapted to interrupt the movement of the ejector plate during the closing movement of the movable die member to retract the ejector pins to their casting positions.

5. A casting die comprising a pair of relatively movable die members cooperating to provide a casting cavity, and a self-contained casting ejecting means comprising an ejector pin supporting plate slidably mounted in one of said die members, a rod attached to said plate, and a tube attached directly to the other die member having a telescopic connection with said rod, said tube having an internal shoulder and said rod having an external shoulder adapted to engage the internal shoulder of said tube for interrupting the movement of said ejector plate upon a predetermined relative movement of said die members.

6. A casting die comprising a fixed die member, a cooperating movable die member, and a self-contained casting ejecting mechanism comprising a tubular post attached directly to the fixed die member, an ejector plate supporting rod slidable in said post, an ejector plate carried by said rod, and an ejector pin attached to said plate and slidable in said movable die member, said guide post having an internal shoulder and said ejector plate supporting rod having an external shoulder adapted to engage the internal shoulder of said tube for interrupting the movement of the ejector plate at a predetermined point during the opening movement of the die.

ALLAN R. MacLAGAN.
ELMER C. NEUHAUS.