July 14, 1942. R. W. PARKER 2,289,928

DIE CASTING MACHINE

Filed Dec. 14, 1940

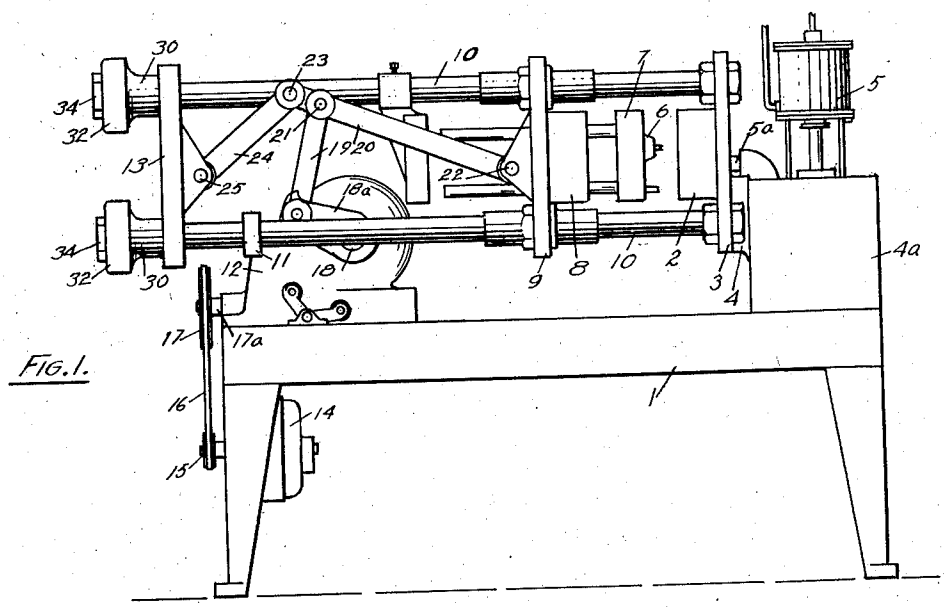


FIG. 1.

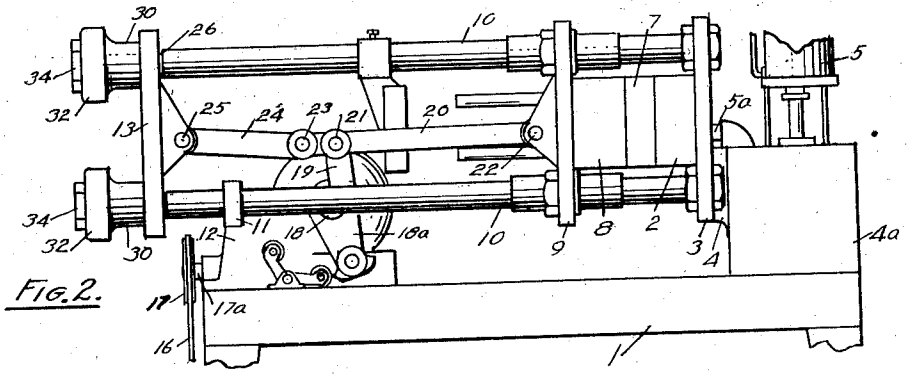


FIG. 2.

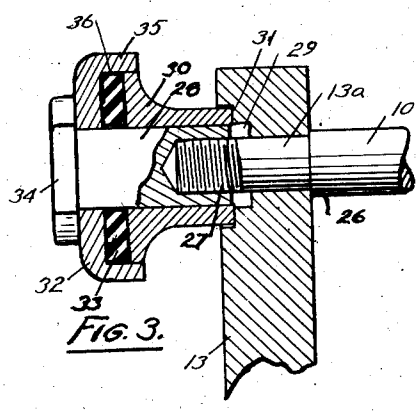


FIG. 3.

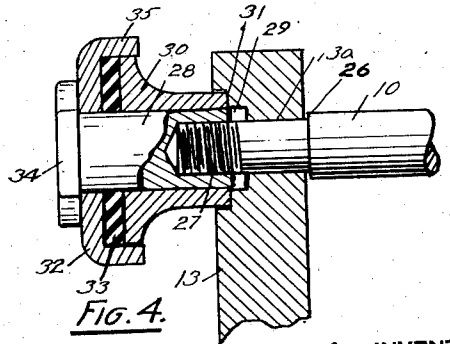


FIG. 4.

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Patented July 14, 1942 2,289,928

UNITED STATES PATENT OFFICE

2,289,928

DIE CASTING MACHINE

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Application December 14, 1940, Serial No. 370,219

3 Claims. (Cl. 22—92)

The present invention is designed to improve the effective closure of the dies in a die casting machine. In such machines as ordinarily formed the die is closed, the movable part of the die being subject to the thrust of a thrust mechanism. Where this is done mechanically it is difficult to hold the tolerances close enough to insure complete closing of the die and at the same time not over-strain the thrust mechanism in effecting the closure. This problem becomes more acute as the material used requires greater pressure in the die.

The present invention forms a yieldable backing of resilient material, such as rubber, by means of which the thrust mechanism can yield sufficiently to permit the closing operation of the thrust mechanism and still exert sufficient pressure at the point of closure to sustain the molding pressure. Features and details of the invention will appear from the specification and claims.

A preferred embodiment of the invention is illustrated in the accompanying drawing as follows:

Fig. 1 shows a side elevation of the machine with the dies in open position.

Fig. 2 a similar view of a portion of the machine with the dies closed.

Fig. 3 a sectional view of the thrust sustaining means with the die in open position.

Fig. 4 a similar view with the die closed.

1 marks the frame of the machine, 2 the stationary die block. This is carried by a back plate 3 and the back plate is mounted on a bracket 4. The bracket 4 is carried by a pump-case 4a and the usual fluid actuating pump 5 forces the metal from the case through the pipe 5a to the die. A movable die 6 is carried on a head 7 and the head 7 is carried in a block 8. The block 8 is secured to a plate 9 which is slidingly mounted on rods 10. The rods 10 extend through the plate 3 and the lower rod through a bracket 11 on a block 12, the block 12 being mounted on the frame. A thrust plate 13 receives the rods 10.

A motor 14 is mounted on the frame. The rotor of the motor drives a pulley 15. A belt 16 extends from the pulley 15 to a pulley 17. The pulley 17 is fixed on a shaft 17a which communicates motion through any suitable gearing to a crank-shaft 18. The crank-shaft carries a crank 18a. Preferably there is a crank at each end of the shaft 18 and pitmans 19 extend from the cranks to a toggle link 20, being pivotally connected to the toggle link by a pin 21. The toggle link 20 is pivotally secured at 22 to the thrust plate 9. The toggle link is pivotally connected at 23 with a companion link 24 and the link 24 is pivotally connected at 25 with the thrust plate 13. These parts so far as described are or may be of common construction.

The rods 10 have shoulders 26 and extend through perforations 13a in the plate 13. The outer ends of the rods are screw-threaded at 27 and are screwed into sleeves 28. A clearance 29 is provided at the inner ends of the sleeve 28 so as to permit some motion of the plate 13 on the rods. A thrust block 30 is slidingly mounted on the sleeve 28. It is seated at 31 on the thrust plate 13. A cap 32 opposes the outer end of the block 30 and a resilient element 33 of material such as rubber is arranged between the block 30 and cap 32. A head 34, arranged on the sleeve, engages the cap 32 and limits its movement away from the block 30. The cap has flanges 35 and with the dies open the cap provides a slight space 36 between the flange 35 and the outer periphery of the rubber and the sleeve. The adjustment, however, by means of the screw 27 is such that when the thrust mechanism involving the toggle is at its closed position the rubber element has closed the space 36 and becomes, in effect, solid, so that while there is a very definite yielding under compression this yielding may be controlled so as to give just the pressure desired and becomes substantially unyielding at the end of the movement to effect definite closing without over-straining the thrust mechanism.

What I claim as new is:

1. In a die casting machine having die blocks and a mechanically actuated thrust mechanism, said mechanism traveling to a definite closing position, the combination with such mechanism of a thrust sustaining element of rubber or the like sustaining the thrust of the mechanism communicated to the die blocks yielding under the thrust through compression in one direction and expansion in another.

2. In a die casting machine having die blocks and a mechanically actuated thrust mechanism, said mechanism traveling to a definite closing position, the combination with such mechanism of a thrust sustaining element of rubber or the like sustaining the thrust of the mechanism communicated to the die blocks yielding under the thrust through compression in one direction and expansion in another, and means limiting the expansion controlling the yielding of the element, said means comprising a wall having initial clearance therebetween and the element and

limiting the element at the limit of the compression.

3. In a die casting machine having dies, a thrust mechanism comprising cranks, a toggle moved by the cranks into approximate alignment for closing the dies, a thrust plate for the toggle mechanism, rods on which the plate is mounted and on which one of the dies is fixed and the other of the dies is slidingly mounted, a backing for the thrust plate receiving the thrust of the plate and comprising a yielding element of rubber or the like yielding under the thrust through compression in one direction and expansion in another, and means limiting the expansion to limit the yielding of the element.

ROBERT W. PARKER.