

[54] DIE CASTING PLUNGERS

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[22] Filed: March 30, 1971

[21] Appl. No.: 129,479

[52] U.S. Cl. 164/312, 18/12 P, 18/DIG. 35

[51] Int. Cl. B22d 17/04

[58] Field of Search 164/113, 120, 257, 284, 303, 164/306, 312, 313, 314, 315, 62, 136, 316, 317, 320, 340; 249/80; 18/5 BE, 5 BJ, 12 P, 30 FN, 30 FP, 30 QM, 30 QC, 30 QH, 30 QF, 30 QP, DIG. 35

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[57] ABSTRACT

A dummy block is provided for a plunger of a die casting machine having a container with a cylindrical plunger chamber in which the dummy block moves a molten mass of metal fed to said chamber from said chamber to a die by a forward plunger stroke and is returned to its starting position by a rearward plunger stroke, said dummy block comprising an inner shell nut member having spaced wrench receiving flats at one end of its periphery and peripheral threads at the other end and a hollow central bore threaded to engage a threaded male end on said plunger and an outer cylindrical shell closed at one end and threaded at the other to engage the peripheral threads of the shell nut and radial stop means in the hollow interior of the shell engaging the end of the shell nut in axial bearing whereby thrust from the plunger is transmitted to the shell through said stop means and threads.

5 Claims, 3 Drawing Figures

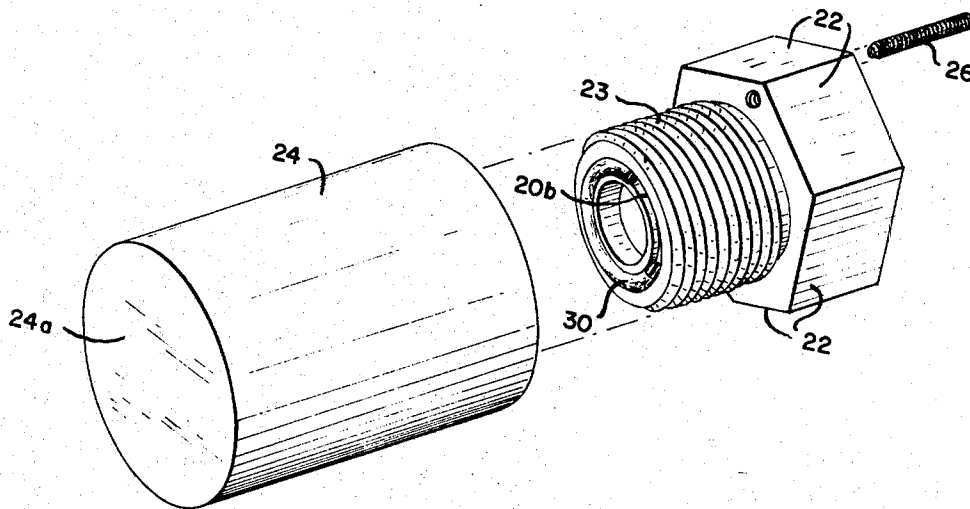


Fig. 1.

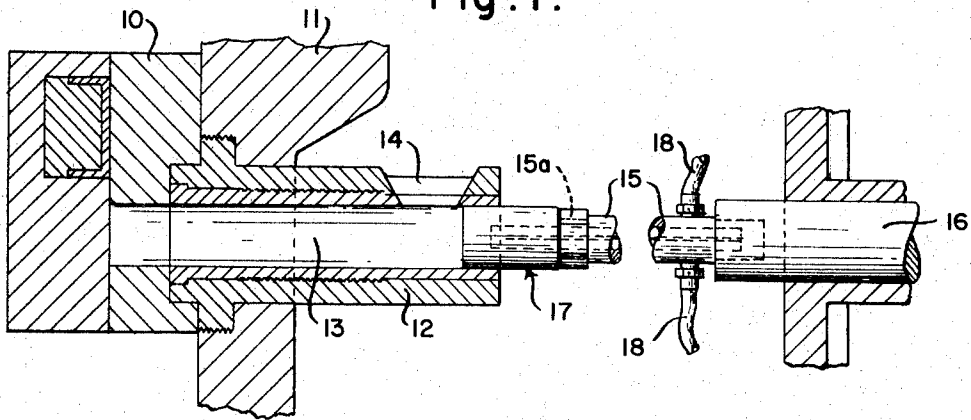


Fig. 2.

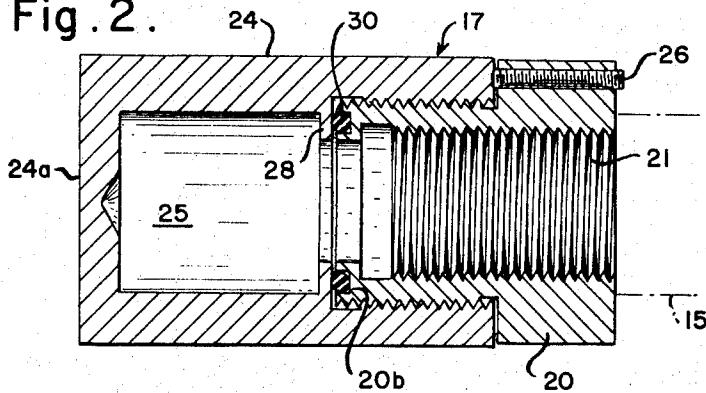
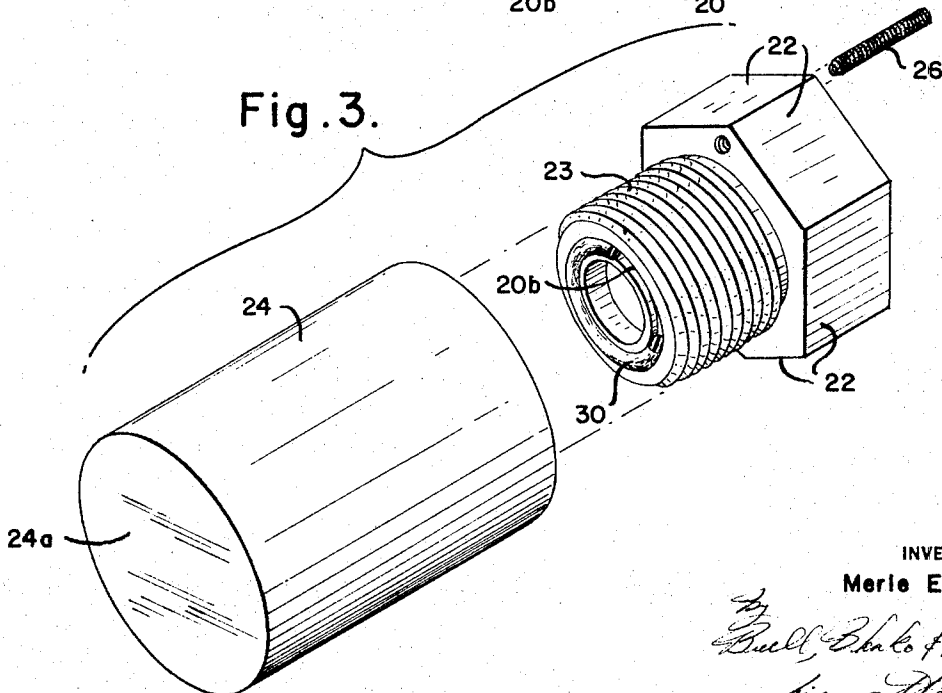


Fig. 3.



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DIE CASTING PLUNGERS

This invention relates to die casting plungers or rams and particularly to a dummy block and ram structure which markedly reduces the cost and extends the life of such plungers.

In the operation of a die casting machine, it is common to pour or run molten metal into a plunger chamber in front of a plunger and these move the plunger through the chamber to force the metal into the die, thus completing the die casting operation. The end of the plunger is usually provided with a dummy block or tip threaded onto the end of the plunger. The plunger is usually water cooled. This dummy block or tip is usually of some alloy which will resist the temperature and erosion of the molten metal which it forces into the die. Such blocks are expensive and have a relatively short life. They are generally a solid cylinder having only a threaded end opening adapted to be threaded onto the male thread end of the plunger. When the face surfaces become worn or eroded the whole block is discarded. This is a substantial loss of expensive alloy material which becomes scrap.

I have invented a dummy block or tip for die casting plungers which eliminates this problem. In my invention I provide a dummy block in two parts, only one of which is discarded when worn and which can be more effectively cooled and therefore has a considerably longer life than dummy blocks of the past.

Preferably, I provide a two piece dummy block comprising an inner shell nut member having spaced flats on one end of its periphery and peripheral threads on its other end and a hollow central bore threaded to engage the threaded male end of the plunger and an outer cylindrical shell closed at one end and internally threaded at the other to engage the peripheral threads on the shell nut and radial stop means in the hollow interior of the cylindrical shell engaging the end of the shell nut in axial bearing whereby thrust from the plunger is transmitted to the shell by the shell nut acting on the stop means. Preferably the stop means is an annular radial shoulder extending into the hollow central bore of the shell. A locking means is preferably provided in the shell nut engaging the shell when the two are in tight engagement to prevent relative rotation therebetween.

In the foregoing general statement I have set out certain objects, purposes and advantages of my invention. Other objects, purposes and advantages will be apparent from a consideration of the following description and the accompanying drawings in which:

FIG. 1 is a cross section of a die casting machine embodying my invention;

FIG. 2 is a vertical section through the dummy block of my invention; and

FIG. 3 is an exploded isometric view of the dummy block of FIG. 2.

Referring to the drawings I have illustrated a die casting apparatus made up of a die 10, a die plate 11, a chamber housing 12 having plunger chamber 13 and pouring or feed slot 14, a hollow plunger or ram 15 connected at one end to a piston rod

16 and at the other end carrying a dummy block 17. Water cooling connections 18 are provided on the plunger 15. The dummy block 17 is made up of an inner shell nut 20 having an axial bore 21 threaded to receive the threaded male end 15a of the plunger 15. The nut 20 is provided with flats 22 at one end of its outer periphery to receive a wrench and with threads 23. An outer cylindrical hollow shell 24 is threaded internally at one end to receive the threads 23 of the nut 20. The other end is closed by end wall 24a. A radially inwardly extending flange or stop is provided intermediate the inner wall 25 of the shell against which the end 20a of nut 20 abuts. The end 20a of nut 20 is provided with a groove 20b carrying an elastomer O-ring 30 which seals the two parts to prevent escape of cooling water. A lock screw 26 is threaded through the end wall of nut 20 to engage against the shell 24 to prevent relative rotation of the shell and nut. It is obvious from the structure that the cooling fluid in the plunger will pass through nut 20 into the interior of shell 24 and contact end wall 24a to cool and protect the whole dummy block structure. When the shell 24 is worn it is replaced on nut 20 rather than discarding the whole block assembly as has been the practice in the past.

In the foregoing specification I have set out certain preferred embodiments of my invention; however, it will be understood that this invention may be otherwise embodied, within the scope of the following claims.

I claim:

1. A dummy block movable within a container of a die casting machine, said container having a plunger chamber with generally cylindrical inner surface, said dummy block being used in moving a molten mass of metal from said plunger chamber into a die by the forward stroke of a plunger into said chamber and being returned to its starting position by a rearward stroke of said plunger, said dummy block comprising an inner shell nut member having spaced wrench receiving flats at one end of its outer periphery and peripheral threads at the other end of its outer periphery and a hollow central bore threaded to engage a threaded male end on said plunger, and an outer cylindrical shell closed at one end and threaded at the other to engage the peripheral threads of the shell nut and radial stop means in the hollow interior of the shell engaging the threaded end of the shell nut in axial bearing whereby thrust from the plunger is transmitted to the shell through said stop means and threads by the shell nut acting thereon.

2. A dummy block as claimed in claim 1 wherein the stop means is a radially inwardly extending flange.

3. A dummy block as claimed in claim 2 wherein the end of the shell nut abutting the stop means is provided with a groove and elastomer O-ring seal therein which bears on said flange.

4. A dummy block as claimed in claim 1 wherein the shell nut is provided with locking means engageable with the shell when the shell and shell nut are in tight engagement to prevent relative rotation of the two.

5. A dummy block as claimed in claim 1 wherein the dummy block is internally cooled by a flow of cooling fluid axially through the plunger.

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