Jan. 26, 1926. 1,570,669

C. A. HEINZELMAN

DIE FOR DIE CASTING

Filed August 13, 1925

Fig. 1.

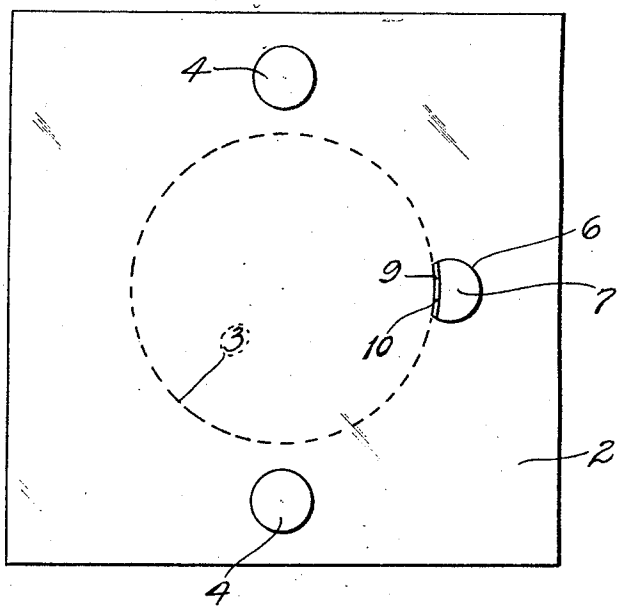


Fig. 2.

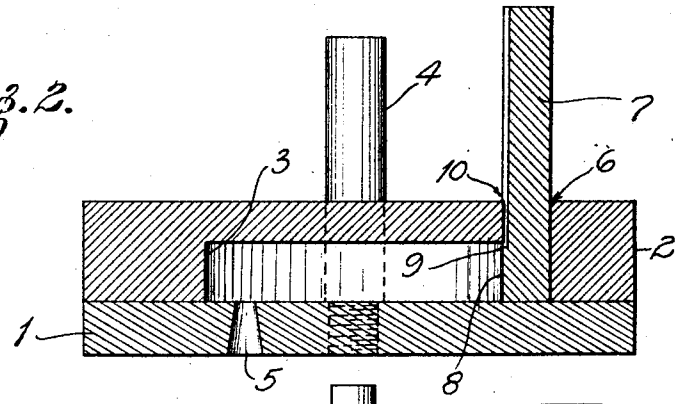
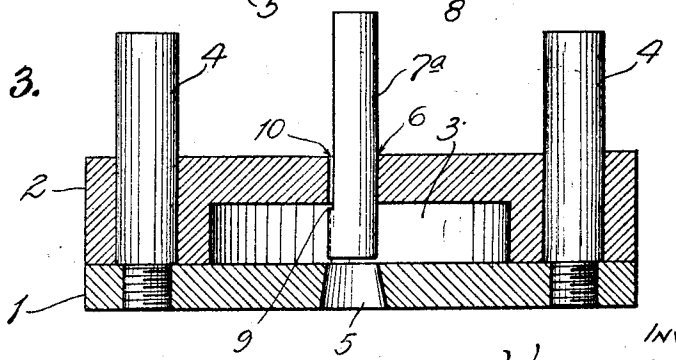


Fig. 3.



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UNITED STATES PATENT OFFICE.

CHESTER ARTHUR HEINZELMAN, OF BELLEVILLE, ILLINOIS.

DIE FOR DIE CASTING.

Application filed August 13, 1925. Serial No. 49,930.

To all whom it may concern:

Be it known that I, CHESTER A. HEINZELMAN, a citizen of the United States, and a resident of the city of Belleville, in the county of St. Clair and State of Illinois, have invented a new and useful Improvement in Dies for Die Casting, of which the following is a specification.

My invention relates to dies for die casting and has for its principal object a die which permits the escape of gases from the molten metal, thus preventing the formation of blow holes, and which eliminates the fins resulting from the use of dies provided with vent holes and the like. The invention consists in providing the die with an opening through which extends a plunger shaped to fit the opening, but having a portion cut away, whereby escape of gases is permitted, and the fin or flashing formed by metal flowing into the space left by the cut away portion of the plunger is automatically removed by the withdrawal of the plunger, thus leaving a casting free from fins and flashings. The invention further consists in the die and in the parts and combinations of parts hereinafter described and claimed.

In the accompanying drawing, which forms part of this specification and wherein like reference characters indicate like parts wherever they occur,

Fig. 1 is a plan view of a die embodying my invention,

Fig. 2 is a vertical sectional view, and

Fig. 3 is a vertical sectional view of a slightly different form of die.

In die casting metals, it is desirable to permit the escape of air and gases from the molten metal in the die in order to produce a casting that is free from blow holes. It is common practice to provide vent holes for the escape of gases or to provide recesses or cut away portions between the two parts of the die. Such expedients result in the formation of fins and flashings on the casting and the vent holes fill up with metal and it is very difficult to clean out the holes after the casting has hardened. The present invention obviates these difficulties.

According to the present invention, a two part die is used comprising a lower die member 1 and an upper die member 2 resting thereon, said upper die member having a recess 3 therein of the shape desired for the finished casting, in the present case, cylindrical. The upper die member 2 is movable toward and away from the lower member 1 and is positioned by means of rods 4 that extend through holes in said upper member and have their lower ends threaded into the lower die member. The lower die member 1 is provided with an opening 5 therethrough permitting the entrance of molten metal into the space formed between the two die members.

Extending through a hole 6 in the upper die member 2 alongside of the casting recess 3 is a plunger 7 that is shaped to fit the hole, one face 8 of said plunger being shaped to conform to the shape of the casting recess 3 and constituting a continuation of the wall of said casting recess. A portion of the plunger is cut away, forming a ledge 9 near the top of the casting recess and forming a passageway 10. Gases can escape through this opening, and a certain amount of molten metal will flow into said opening and will harden as the metal hardens in the die.

After the metal in the die has hardened, the plunger 7 is withdrawn. As the plunger is shaped to fit the opening through the upper die member, the metal in the space formed by the cut away portion of said plunger is sheared off by the action of the ledge 9 and the upper die member 2, thus leaving the casting free from fins and flashings and of the desired shape.

The die may be made of any desired shape and the plunger may be positioned at any suitable place to conform to the requirements of the finished casting. In Fig. 3 is shown a die for casting annular members. The plunger 7^a is located at the middle of the casting recess, thus forming a hole through the center of the casting. The withdrawal of the plunger cuts away the fin resulting from the flowing of metal into the cut away portion of the plunger and leaves a casting with a true circular hole therethrough.

The above described die has great advantages; since by its use, the escape of air and gases from the molten metal in the die is permitted and the finished casting is of accurate shape and free from fins and flashings.

Obviously, numerous changes may be made without departing from the invention and I do not wish to be limited to the precise construction shown.

What I claim is:

1. A die for die casting provided with an opening therethrough and a plunger shaped

to fit said opening, said plunger having a cut away portion.

2. A die for die casting provided with an opening therethrough and a plunger shaped to fit said opening, said plunger having a cut away portion forming a ledge near the top of said recess and an opening into said recess.

3. A die for die casting provided with an opening therethrough and a plunger shaped to fit said opening extending into the casting recess, said plunger having a cut away portion forming an opening into said recess.

4. A die for die casting comprising upper and lower die members, said upper member having a casting recess and being provided with an opening alongside of said recess, and a plunger shaped to fit said opening and extending therethrough, said plunger having a face shaped to form a continuation of the wall of the casting recess and said plunger having a cut away portion.

5. A die for die casting comprising upper and lower die members, said upper member having a casting recess and being provided with an opening, and a plunger shaped to fit said opening and extending therethrough, said plunger having a cut away portion forming a ledge on said plunger adjacent to the top of said casting recess, whereby an opening is formed for said recess and metal flowing into said opening is sheared off upon the withdrawal of said plunger.

CHESTER ARTHUR HEINZELMAN.