Dec. 28, 1926. 1,612,201

C. F. MILLICAN

CHANGEABLE DIE MOLD

Filed March 14, 1925

Fig. 1.

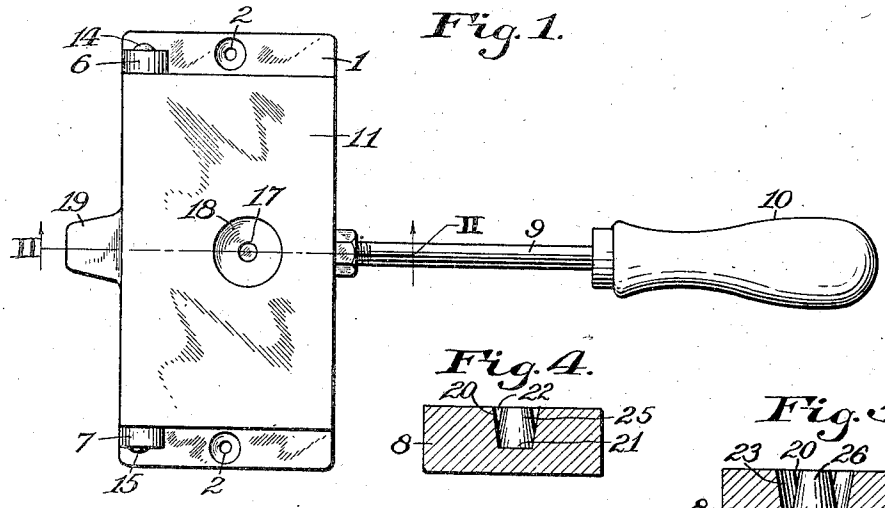


Fig. 4.

Fig. 5.

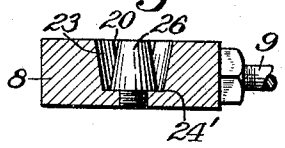


Fig. 2.

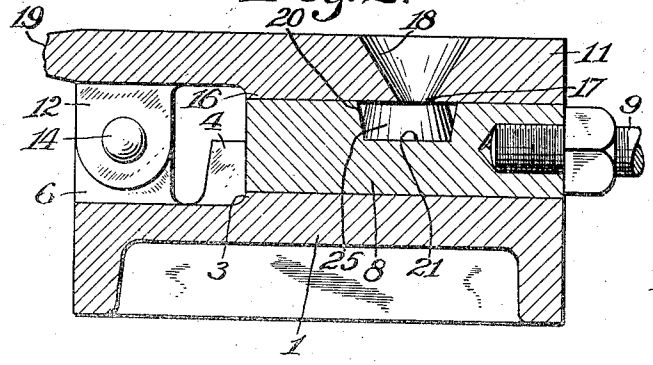


Fig. 3.

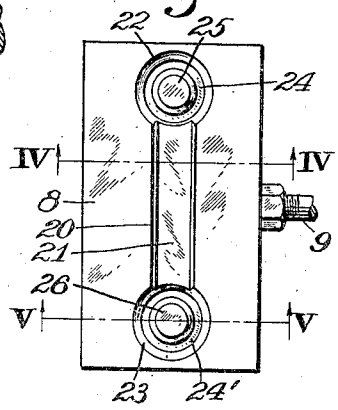


Fig. 6.

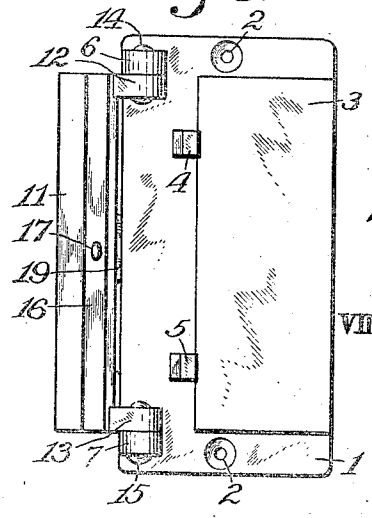


Fig. 7.

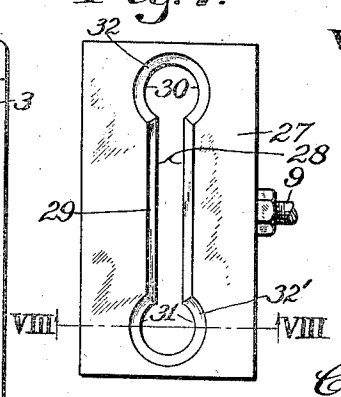
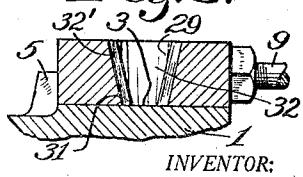


Fig. 8.



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UNITED STATES PATENT OFFICE.

CARL F. MILLICAN, OF INDIANAPOLIS, INDIANA.

CHANGEABLE-DIE MOLD.

Application filed March 14, 1925. Serial No. 15,501.

This invention relates to a metallic mold having changeable dies enabling a workman to cast various articles of metal, especially of such metal as lead, the invention having reference more particularly to a type of mold that may be manipulated and controlled by hand.

An object of the invention is to provide a simple and inexpensive mold of such construction as to be adapted for rapidly producing die castings at small cost for operation of the mold.

Another object is to provide an improved die mold which shall be so constructed as to permit economical operation thereof by those who may not be especially skilled in the art of molding and casting.

A further object is to provide an improved metallic mold which may be manufactured at moderate cost and shall be capable of expeditious operation and hand control, and whereby superior castings may be cheaply produced.

A still further object is to provide an improved mold having changeable dies so that different articles may be produced by die casting, and which shall be durable and economical in use.

With the above-mentioned and other objects in view, the invention consists in a combination metallic mold having improved features including changeable dies of novel construction, the invention consisting also further in the parts and combinations and arrangements of parts as hereinafter particularly described and finally claimed.

Referring to the drawings,—Figure 1 is a top plan of the improved die mold; Fig. 2 is a section on the line II—II in Fig. 1 showing the principal parts on an enlarged scale; Fig. 3 is a top plan of the improved die for making lead links used in electrical storage batteries: Fig. 4 is a section on the line IV—IV in Fig. 3; Fig. 5 is a section on the line V—V in Fig. 3; Fig. 6 is a top plan of the main structure of the mold in open position minus the metallic die: Fig. 7 is a top plan of a modified metallic die for molding a solid link requiring no cores; and Fig. 8 is a section on the line VIII—VIII in Fig. 7.

Similar reference characters in the different figures of the drawings indicate corresponding elements or features of construction herein referred to in detail.

In practically carrying out the objects of invention a bed plate 1 is provided of suitable material, its under side being recessed, the plate having suitable holes 2 to receive screws whereby the plate may be secured to a work bench, and the upper portion of the plate has a smooth top portion 3 adapted to constitute a die seat and also the surface upon which a casting may directly be made. The upper portion of the plate rearward of the portion 3 has two studs or posts 4 and 5 rigid thereon, and the plate has also two hinge ears 6 and 7 upon the rearward portion thereof.

A metallic die body 8 is provided which is normally supported upon the seat 3 against the posts 4 and 5. The die body is provided with a handle 9 which preferably has a hand-piece 10 thereon. The die bodies are of uniform thickness vertically and have flat bottom and top faces.

The mold includes a lid 11 provided with ears 12 and 13 on the under side of its rearward portion, the ears being arranged between the ears 6 and 7 and connected thereto by means of hinge pins 14 and 15. The forward under portion of the lid has a plane portion 16 which normally has contact with the upper face of the die body to constitute the top of a mold cavity. The lid has a small gate hole 17 in its under side which has a funnel-shaped mouth portion 18 through which molten metal may be poured. The rearward portion of the lid has a finger 19 thereon to be carried down to the back of the plate 1 when the lid is swung pivotally upward and slightly past the vertical.

For casting lead links having eyes the die body or plate 8 has a suitable groove in its upper portion comprising inclined sides 20 and a flat bottom 21 at the ends of which are cavities having circular walls 22 and 23 and bottoms 24 and 24′ respectively, tapered core studs 25 and 26 being secured to the bottoms of the cavities respectively, the bottoms of the cavities usually being sunken deeper than the bottom 21.

Another example of die is shown comprising a body or plate 27 that is equal in thickness to the body or plate 8 and it has a longitudinal slot 28 therein which has inclined

sides 29, and also circular openings 30 and 31 at the opposite ends of the slot that have inclined sides 32 and 32′ respectively, permitting the article cast therein to be readily removed. When this die or mold is placed on the seat 3 the metal 8 flows entirely through the die or mold to the seat, so that an article may be cast that will have a thickness equal to that of the body or plate 27. Various other interchangeable die molds may be made according to requirements for various contours or configurations.

In practical use the several parts of the complete die mold are arranged as in Figs. 1 and 2, after which molten metal is poured into the mouth 18 until the metal fills the mold form, more or less surplus metal remaining in the gate 17 and its mouth. The metal quickly sets, the operator or molder promptly moving the handle 9 suddenly to the right or left to shear the casting from the surplus metal in the gate, the die plate being caused to swing pivotally against one of the posts 4 or 5, after which the molder lifts the handle and by means of the die body or plate pushes up the lid with sufficient force to swing it over until stopped by the finger 19 against the back of the plate 1, the sudden stoppage of the lid causing the surplus metal in the gate to be jarred loose and thrown out of the mouth 18. The molder immediately inverts the die body or plate and thrusts it onto the plate 1 or other object to jar the casting loose from the mold form. The casting operations may be repeated expeditiously by one operator alone, and different shapes of castings may be readily made with the interchangeable die molds.

What is claimed as new is:

1. A die mold including a plurality of superimposed plane-faced plates, the upper one being hinged to the lower one of the plates and having a gate therein, an intermediate one being a die plate having a uniform thickness and a mold form therein, the die plate being guided to permit sliding horizontal and pivotal movements to shear the die casting from its gate slug and being provided with an operating handle.

2. A die mold including a bed plate and a lid hinged thereto, the lid having a wide-mouth gate therein, the bed plate being provided on its top with guide posts, and a gate-shearing die plate to be removably seated upon the bed plate and beneath the lid in contact with the posts and having a mold form to register with the gate in the lid, the die plate being provided with a handle.

3. A die mold including a bed plate having two posts spaced apart on its top and at a distance from the front of the plate, a die plate to be removably supported upon the bed plate and guided against the posts and having a mold form therein, the die plate being provided on its front edge with a handle, and a lid hinged to the rearward portion of the bed plate to rest upon the die plate and having a gate therein to conduct molten metal to the mold form, the rearward portion of the lid having a finger to be carried to contact with the bed plate on swinging movement of the lid.

4. A changeable die mold comprising a bed plate having two hinge ears spaced apart on the rearward portion of the top thereof and also two posts spaced apart forwardly of the ears, the bed plate having also a smooth plane seat portion forward of the posts, a plurality of die plates equal in thickness to be interchangeably arranged one at a time upon the plane seat in sliding contact therewith to be guided by the posts, each die plate having a mold form differing from the others and being provided with a handle, and a lid having a smooth plane under face to normally rest upon the die plate and cover the mold form, the lid having a gate therein to provide an opening to the mold form, and being provided with a hinging connection with said ears and having a finger to contact with the bed plate and stop overturning movement of the lid on its hinge connection.

5. In a die mold, the combination, with a bed plate, and a lid hinged to the bed plate and having a gate therein, of a die plate to be removably arranged upon the bed plate and support the lid, the upper portion of the die plate having a groove therein and also cavities at the ends of the groove, each cavity having a central core stud fixed to the bottom thereof, and a handle secured to the front edge of the die plate.

6. In a die mold, in combination, a bed plate and a lid plate hinged upon the bed plate, one of the plates being provided with two guide devices normally projecting towards the other plate, the lid plate having a gate therein, with a die plate to be removably arranged upon the bed plate against the guide devices, the die plate having a molding cavity therein and being provided with a carrying and controlling handle.

7. In a die mold, in combination, a bed plate and a lid plate hinged upon the bed plate, one of the plates being provided with a stop device to co-operate with the other plate to limit the overturning movement of the lid plate on its hinge, the lid plate having a gate therein, with a die plate to be removably arranged upon the bed plate and support the lid plate, the die plate having a molding cavity therein and being provided on its front edge with an operating and carrying handle.

8. In a die mold, the combination of a bed plate having a plane top surface, a lid plate hinged at its rear edge to the rear edge of the bed plate and having a gate therein, the lid plate having a plane under surface, a gate-shearing die plate to be removably ar-

ranged upon the bed plate and support the lid plate and having a molding cavity therein to receive molten metal from said gate, the die plate being uniform in thickness and provided with a carrying and controlling handle, and means having co-operation with the bed plate and the die plate to guide the latter and to enable the handle to pivotally turn the die plate between the bed plate and the lid plate to shear the gate slug.

In testimony whereof, I affix my signature on the 7th day of March, 1925.

CARL F. MILLICAN.