

March 13, 1934.

J. W. FITZ GERALD
METHOD OF MAKING DIES

1,950,604

Filed June 8, 1931

Fig. 1

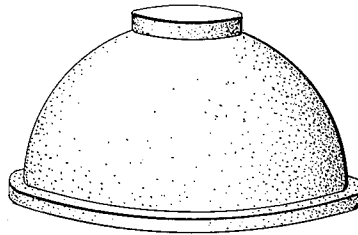


Fig. 2

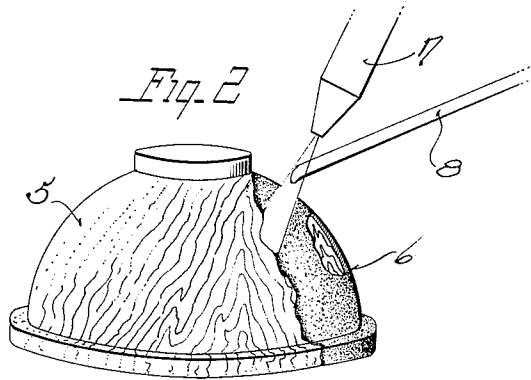
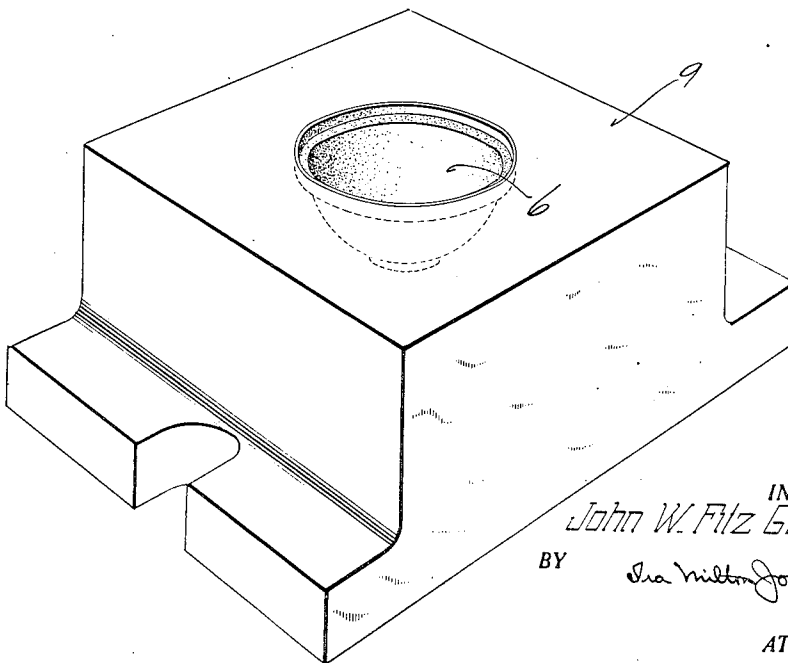


Fig. 3



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1,950,604

METHOD OF MAKING DIES

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Application June 8, 1931, Serial No. 542,824

2 Claims. (Cl. 76—107)

This invention relates to certain new and useful improvements in method of making dies and has as a general object to eliminate, to a large degree, the tedious and costly hand work necessary in existing methods of making dies.

Heretofore, dies of all types have been made by hand and in view of the extreme accuracy necessary only highly skilled mechanics may be employed for this work and as the making of a single die often requires a considerable time, die making has been an expensive operation.

This invention therefore contemplates a method of forming dies of all types wherein the die is built up over a core or pattern cut from wood or other readily workable material and conforming in size and shape to the finished article to be made by the die, rather than cutting the die from a solid block of steel.

As is well known dies have a wide variety of uses, and in some instances it is desirable to retain the heat of the material being molded and in others it is essential that the heat be carried off as quickly as possible.

It is therefore a further object of this invention to provide a novel method of making dies by which the body of the die may be made of different metals to suit the thermal requirements of different molding materials.

As an illustration, a die having a thin inner shell of hard wearing material backed up by copper would be very well suited to conditions requiring a rapid dissipation of heat, whereas the same shell backed up with steel would provide a die which would retain the heat of the molded material.

With the above and other objects in view which will appear as the description proceeds, this invention resides in the novel construction and arrangement of parts substantially as hereinafter described and more particularly defined by the appended claims, it being understood that such changes in the precise embodiment of the here-indisclosed invention may be made as come within the scope of the claims.

In the accompanying drawing one complete example of the physical embodiment of this invention is illustrated, constructed according to the best mode so far devised for the practical application of the principles thereof, and in which:

Figure 1 is a perspective view of an article to be formed in a die constructed in accordance with this invention;

Figure 2 is a perspective view of a wood core of the same size and configuration as the external dimensions of the article to be formed and illus-

trating one manner of coating the core with metal; and

Figure 3 is a perspective view of the finished die.

Referring now more particularly to the accompanying drawing, in which like numerals designate like parts, the numeral 5 represents a core formed either of wood, lead, or any other relatively soft and readily workable material, which conforms to the size and shape of the external dimensions of the article to be formed and illustrated in Figure 1. The core 5 may be made in any suitable manner and being of readily workable material is easily produced.

A shell 6 of chrome nickel steel or other metal is then formed on the core.

In Figure 2 one manner of forming the layer or shell of chrome nickel steel on the wooden core is illustrated. In this case an acetylene oxygen torch 7 supplied with air under pressure melts the end of a rod or wire 8 of chrome nickel steel and sprays the molten steel onto the core in a manner similar to the spraying of enamel or paint by means of an air gun.

Where the material of which the finished article is formed is molded and the heat during molding is not very great, the shell may be formed of copper or such other metal which may be applied to the core by an electroplating action. To this end the core may be covered with an electrical conducting material and placed in a plating bath until a shell of copper or whatever plating is used is formed around the core to the desired thickness.

With the core 5 coated with a shell of metal 6, it is placed in a suitable form and molten brass, copper, or other suitable metal is poured over the same to provide a backing 9 which is shaped to form the finished die block. The heat of the molten metal poured over the covered core burns the core sufficiently to permit its ready removal from the finished die in the event the core is formed of wood, and melts the same, when formed of lead or the like.

As hereinbefore pointed out, this feature of the invention enables the die to be given either a high or a low co-efficient of heat dissipation.

After the core has been cleaned out of the interior of the shell 6, its surface may be polished or dressed up if necessary, and being formed of a hard wearing metal has the same advantages of a die cut out of a solid block of steel.

From the foregoing description taken in connection with the accompanying drawing, it will be readily apparent to those skilled in the art

to which an invention of the character described appertains, that I provide a method of forming dies for use in die casting machines or punch presses of all types, in which the time required for producing the die is considerably reduced and in which practically all of the tedious hand work heretofore necessary is entirely eliminated so that the cost of making the die is materially lessened; and further that it enables a die to be made of different metals to adapt it to any thermal requirements during use.

The finished die is thus formed of two metals and it is understood that the selection of the metal used as a backing for the shell depends upon the use to which the die is to be put, and the thermal requirements thereof.

What I claim as my invention is:

1. The hereindescribed method of forming a die, which consists in making a core of readily workable and destructible material of a size and shape corresponding to that of the finished arti-

cle to be formed by the die, spraying a coating of hard metal on the surface of the core to build up a solid hard metal shell thereabout, and in pouring molten metal having thermal properties different than the shell about the shell to simultaneously form a supporting backing for the shell and loosen the core for ready removal from the shell.

2. The hereindescribed method of making a die which consists in making a core of combustible readily workable material of a size and shape corresponding to that of the finished article to be formed by the die, spraying a coating of hard metal on the surface of the combustible core to build up a solid hard metal shell thereon, and pouring molten metal having thermal properties different than the shell about the shell to simultaneously form a supporting backing for the shell and to loosen the core for ready removal from the shell by burning the same.

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