April 8, 1930. J. P. LEARY 1,753,380

CHILLING MOLD

Filed July 6, 1928

FIG. 1.

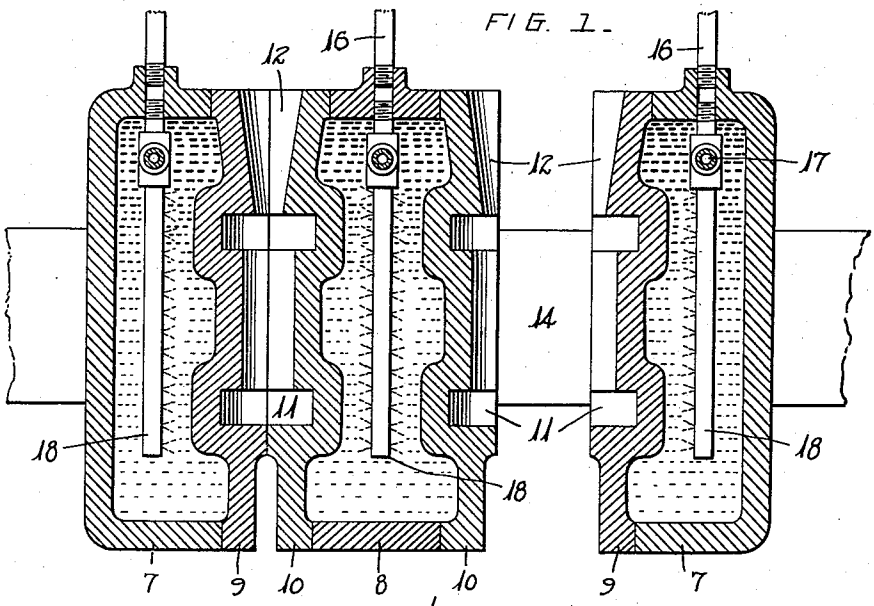
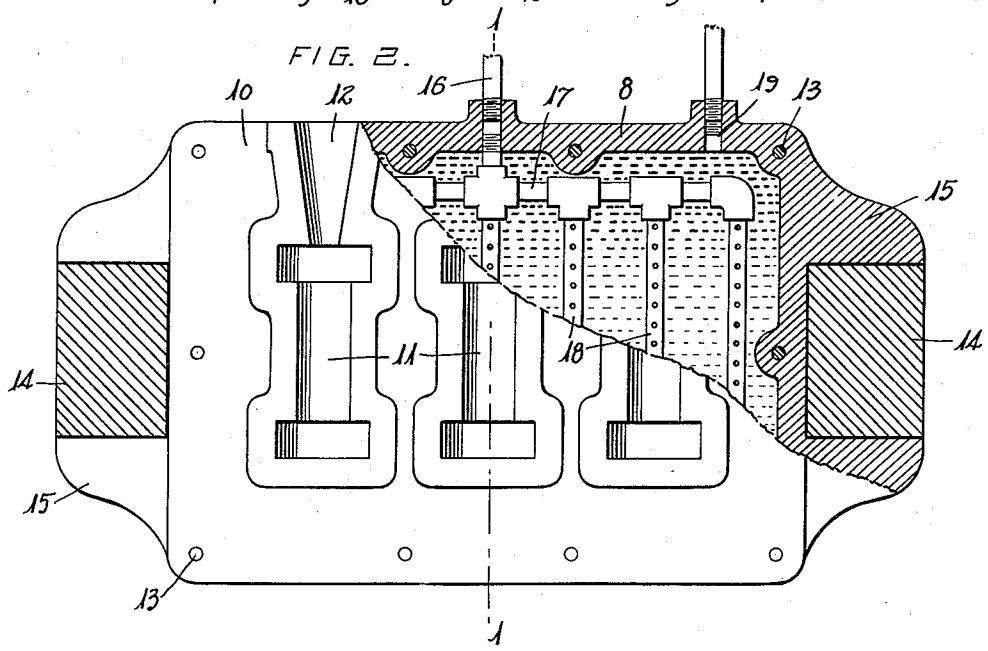


FIG. 2.



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UNITED STATES PATENT OFFICE

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CHILLING MOLD

Application filed July 6, 1928. Serial No. 290,826.

The present invention relates to the art of metal casting, and one object of the invention is to obtain castings of pure or substantially pure copper, or copper alloys composed principally of copper, which are free from holes and other imperfections, such as experienced in producing copper castings by methods heretofore in use.

Another object of the invention is to provide a novel and improved chilling mold wherein the molten metal, when poured therein, will be chilled quickly and efficiently.

The molding device is illustrated in the accompanying drawing, wherein—

Figure 1 is a median vertical section of the molding device, taken on the line 1—1 of Fig. 2.

Fig. 2 is a face view of one of the mold sections, portions being broken away and shown in section.

The molding device, which may be used for various metals and metal alloys, comprises the sections 7 with an intermediate section 8 between them, and said mold sections have the respective chill plates 9 and 10 which are formed with the mold cavities 11 and gates 12. The sections 7 each have a single plate 9, while the intermediate section 8 has a pair of opposite plates 10, and said plates are fastened removably in place by bolts 13 or other suitable securing elements, whereby said plates may be removed and replaced by other chill plates, so that different sets of plates may be used interchangeably for producing various forms of castings.

The intermediate mold section 8 is movable between the mold sections 7 so that the plates 10 are alternately brought against the plates 9. This provides a double mold, whereby one mold is opened while the other is closed, and vice versa. This enables the metal to be poured into one mold while the castings are discharged from the other mold, and production is thereby increased, making the operation practically continuous, with the rapid chilling of the metal, as will hereinafter more fully appear. The mold sections are suitably mounted. As shown, they are supported by rails or frame members 14 on which the intermediate section 8 is slidable, and any suitable means may be employed for moving said intermediate mold section.

The mold sections are hollow and have chambers 15, and a cold water supply pipe 16 extends into each section and has a manifold 17 therein with spray nozzles 18 having series of apertures to direct streams or jets of cold water against the back of the chill plate 9 or 10. The jets of incoming cold water are thus directed against the rear surfaces of the chill plates, to quickly and effectively cool said plates, whereby the metal poured into the mold cavities 11 will be rapidly and effectively chilled. This enables the mold section 8 to be moved almost as rapidly as the pouring of the metal can be accomplished, inasmuch as when the metal is poured into one mold, the section 8 may be moved to open said mold and close the other mold, the castings being sufficiently cooled to be discharged immediately. The nozzles 18 are so aranged as to most effectively direct the jets of cold water against the backs of the chill plates, and the jets of water are distributed throughout the areas of said plates. The chambers 15 are filled with water, to assist in cooling the mold sections and their chill plates, and the jets of inflowing water nevertheless are directed against the backs of said plates. Thus, the chill plates are cooled by the water in the chambers, as well as by the jets of inflowing water directed against said plates. The water outlets 19 of the sections 7 and 8 are at the top, and the supply of cold water may be furnished in any well known manner.

The chilling mold has been found to be especially useful for the production of copper or copper alloy castings.

Having thus described the invention, what is claimed as new is:—

1. A chilling mold having a hollow section with a chill plate having a mold cavity, and means within said section for directing jets of cold fluid against the back of said plate.

2. A chilling mold comprising a hollow section having a chill plate with a mold cavity therein, and a cold fluid supply pipe

entering said section and having spray nozzles therein for directing jets of cold fluid against the back of said plate.

3. A chilling mold comprising a hollow section having a chill plate with a mold cavity therein, and means for delivering cold fluid jets in said section against the back of said plate, said section having an upper fluid outlet so that said section is filled with fluid.

In testimony whereof I hereunto affix my signature.

JAMES P. LEARY.