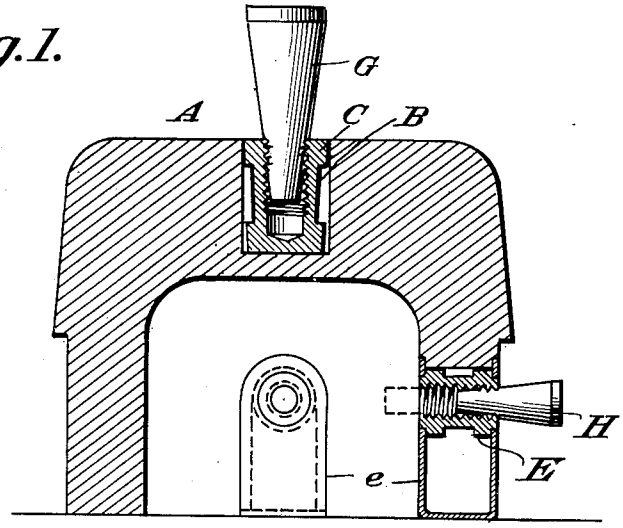
Dec. 20, 1932. R. V. BURDICK ET AL 1,891,867

METHOD OF PRODUCING CASTINGS WITH TAPPED HOLES THEREIN

Filed June 24, 1929

Fig. 1.



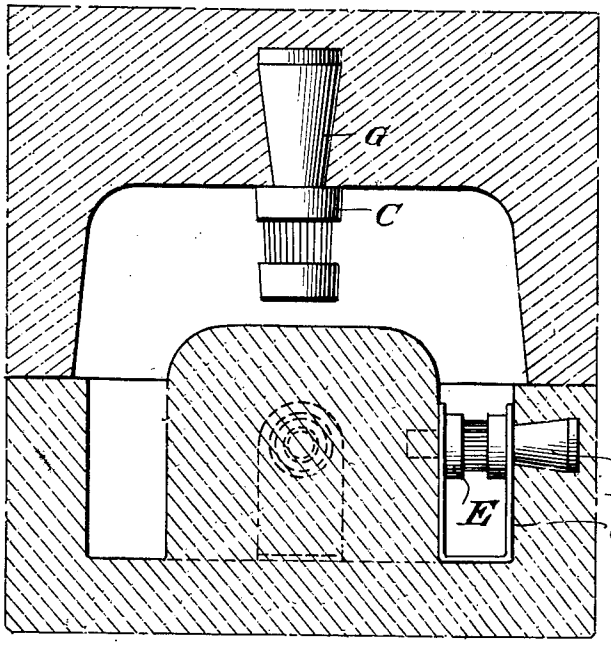
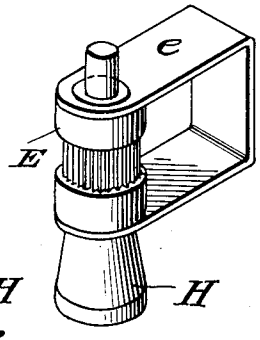


Fig. 2.

Fig. 3.



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UNITED STATES PATENT OFFICE

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METHOD OF PRODUCING CASTINGS WITH TAPPED HOLES THEREIN

Application filed June 24, 1929. Serial No. 373,375.

This invention relates to a method for producing metal castings with accurately placed, finished, threaded openings therein.

In the production of threaded holes in castings, it is the present practice to drill a hole of the required size, then tap same, after the casting has been made. The method requires a drilling and tapping operation which can be dispensed with.

It is therefore one of the chief characteristics of the present invention to provide a process for producing metal castings with tapped holes therein.

In carrying out the invention we employ inserts made of metal in which the desired threaded openings are formed, and roughen the outside of the insert in some suitable manner, to provide a sure anchorage in the casting. In contradistinction to filling the openings of the inserts with a sand core, we prefer to close them with a plug of some suitable material, preferably wood, and which plug is utilized to suspend the insert within the mold, so that the metal poured into the latter will unite with the suspended insert.

More specifically stated, the invention comprehends a method for accomplishing the desired results, wherein use is made of a plug, preferably constructed of wood, and wherein the plug is partly received by the threaded opening in the insert, with the remaining portion projecting from the latter to support the insert in proper position within the mold, so that when the metal is poured into the latter, it will unite with the suspended insert, the plug being constructed of fibrous material which will char at about the same temperature as does wood, which effect will result from the pouring of the metal into the mold, as the heat is transmitted through said insert from the molten metal, thereby causing the plug to readily separate itself from the inserts, so that it can be removed and leave a clean opening or hole without any special cleaning operation.

The nature and advantages of the invention will be better understood when the following detail description is read in connection with the accompanying drawing, like numerals of reference indicating similar parts in the several views.

Figure 1 is a sectional view through a pattern with which the inserts are initially associated.

Figure 2 is a sectional view through a mold with the pattern removed, and also illustrating how the inserts are supported.

Figure 3 is a perspective view of one type of threaded insert, and also illustrating one embodiment of the invention with reference to the support for the insert.

Referring to the drawing in detail A indicates generally a pattern which may vary in design, but with which the metallic inserts are initially associated, thereby assuring proper location of the inserts within the mold. As illustrated in Figure 1 the metallic insert C is arranged in a suitable opening in the pattern, the insert being formed with a threaded opening, while the exterior surface is roughened in any suitable manner for the purpose above stated. The insert, however, is preferably formed with spaced ridges indicated at B. It will also be observed that while the opening in the pattern is of uniform diameter, the metallic insert is preferably tapered, so as to free itself from the pattern, immediately at the start of the drawing of the pattern or the lifting of the cope. A wooden plug is indicated at G, and as clearly illustrated in Figure 1, this plug is tapered, so that it can be driven into the opening in the metallic insert. A portion of the plug projects from the insert and above the pattern, and it is this portion that is utilized to support the insert in proper position within the mold as clearly illustrated in Figure 2.

In addition to providing the pattern A with an opening to accommodate the metallic insert, it may be desirable to use a chaplet of some suitable form and size to support the metallic insert at desirable points about the pattern. I have illustrated in Figure 3 a substantially U-shaped member indicated at *e*, and these members are adapted to straddle the walls of the pattern as illustrated in Figure 1. Arranged between the parallel limbs of this U-shaped member is the metallic in-

sert E, while passed through the insert and also through the limbs of the U-shaped member is a plug H which is preferably constructed of wood. The plug is tapered and is of course driven within the threaded opening formed in the metallic insert E.

In accordance with the method forming the subject matter of the present invention, the inserts are initially associated with the pattern A, and each insert has associated therewith a plug as illustrated. The projecting portions of these plugs will obviously be anchored in the mold when it is rammed, and the inserts will thereby be supported in proper place when the pattern is withdrawn and the mold poured as illustrated in Figure 2. When the mold is poured, the heat from the molten metal transmitted by the metal inserts with which it is in contact, will cause a charring of the wood plug, so that when the mold is shaken out, and the castings tumbled, the charred plugs will readily fall out of the inserts and will leave a clean hole without any special clearing operation.

While it is believed that from the foregoing description the nature and advantages of the invention will be readily apparent, we desire to have it understood that we do not limit ourselves to what is herein illustrated and described, and that such changes may be resorted to as fall within the scope of what is claimed.

What is claimed is:

A method of producing castings with tapped holes therein, comprising the use of a pattern having an opening therein, and a mold surrounding the pattern, placing a metallic internally threaded insert in the opening of the pattern, partly driving a tapered wooden plug in the insert and utilizing the same to support the insert from the mold when the pattern is withdrawn, and finally pouring the mold, whereby heat from the molten metal is transmitted through the metallic insert to said plug, causing the latter to char and separate itself from the insert.

In testimony whereof we affix our signatures.

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