Aug. 18, 1931. G. C. BUMBAUGH 1,819,765

CHILL FOR CASTINGS

Filed May 4, 1928

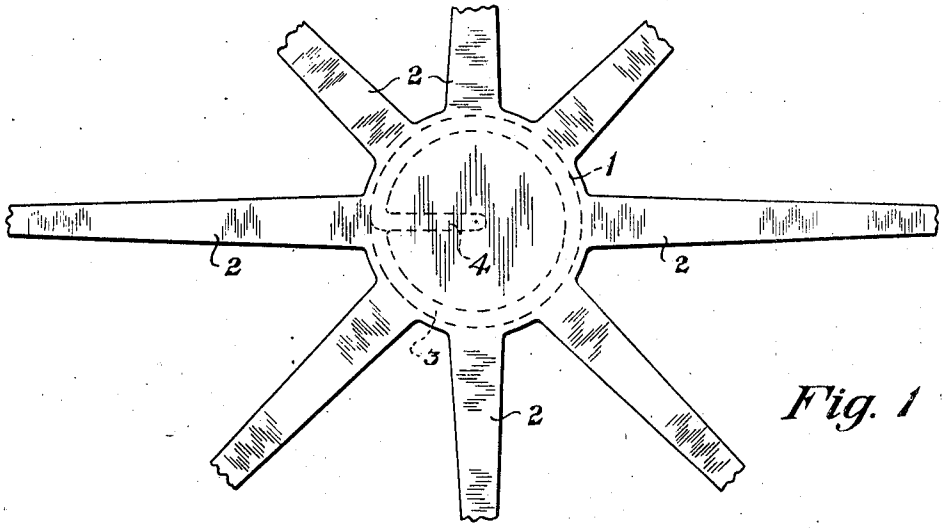


Fig. 1

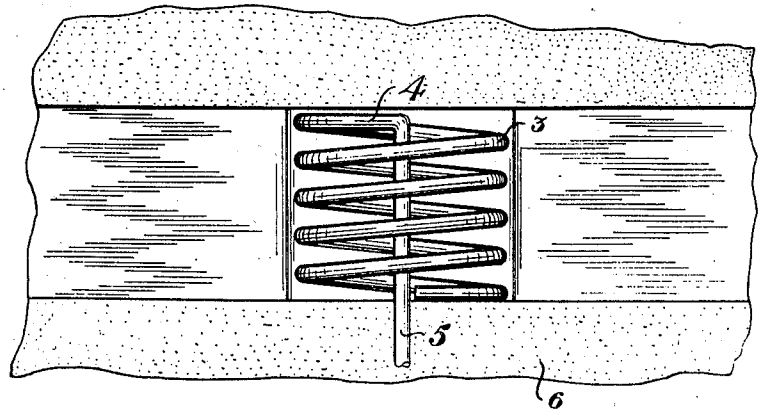


Fig. 2

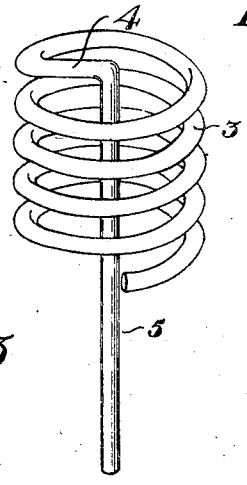


Fig. 3

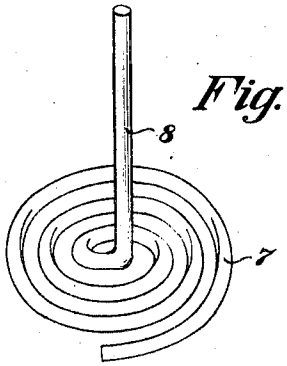


Fig. 4

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UNITED STATES PATENT OFFICE

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CHILL FOR CASTINGS

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This invention relates to foundry practice and more particularly to means adapted to be located in the mold for chilling certain portions of the molten metal to prevent cracks, "pipes" or the like from being formed as the casting cools.

In the casting of articles in which a thin part such as a web or rib is associated with a boss, hub or the like, it is well known that the metal adjacent to the juncture of the rib and boss cools more slowly than the metal forming the rib.

This causes "pipes" or cracks to form in the casting at this point, forming a defect which often causes the loss of the casting.

In order to overcome such defects, it is common practice for the molder to place nails or the like in the sand, protruding into the mold at such points, in order to more rapidly cool the metal at these places and prevent the formation of cracks, "pipes" or the like in the casting.

Such methods are not entirely satisfactory and require considerable work and skill in properly placing the nails or the like in the sand.

The object of the present improvement is to provide a chill formed of wire, of suitable gauge, bent into spiral or helical shape and provided with a straight projection adapted to be inserted into the sand to hold the chill in proper position when the molten metal is poured into the mold.

When the molten metal is poured into the mold this chill will be in contact with the portions of the metal adjacent to the points which ordinarily cool the slowest and will thus speed up the cooling of this portion of the metal, preventing the formation of "pipes" or cracks in the casting.

The wire or rod forming this chill may be of any desired metal, depending upon the nature of the metal being cast and as the same contacts with the molten metal, it will be fused and will form an integral part of the casting. The projection of the chill which extends into the sand may be sheared off after the casting has cooled.

An embodiment of the invention is illustrated in the accompanying drawings, in which

Figure 1 is a fragmentary plan view of a portion of a casting comprising a boss and a plurality of ribs or webs connected thereto, the position of the chill device being indicated in dotted lines;

Fig. 2 a vertical sectional view through a sand mold adapted for casting the article shown in Fig. 1, the chill being shown in position therein;

Fig. 3 a detached perspective view of the form of chill shown in Figs. 1 and 2; and

Fig. 4 a perspective view of a modification of the device.

Similar numerals refer to similar parts throughout the drawings.

For the purpose of illustrating the use of the improved chill, a portion of a casting is illustrated in Fig. 1, comprising a boss or hub 1 to which are connected several ribs or webs 2.

In the casting of such articles, it is well known that the metal in the casting adjacent to the juncture of each rib or web with the hub or boss cools more slowly than the metal forming the ribs or webs and as a result thereof, "pipes" or cracks are formed at the juncture of the rib and boss.

In order to overcome this condition, the present improvement is provided to more rapidly cool the metal at such points and thus prevent this formation of "pipes" or cracks in the casting.

The chill may be in the form of a coil 3 of wire of suitable size and material having one end thereof turned inward toward the center as shown at 4 and then extended axially through and beyond the coil as at 5, forming a tail or stem which may be inserted into the sand 6 of the mold as shown in Fig. 2.

With the chill in this position, it will be seen that the coil extends around the boss or hub, near the periphery thereof, and adjacent to the junctures of the ribs or webs with the hub.

When the molten metal is poured into the mold, the chill will rapidly cool the metal adjacent to these junctures, preventing the

formation of "pipes" or cracks at these points, and thus overcoming the difficulties experienced in casting articles of this kind.

This chill will be fused and form a solid part of the finished casting, and after the same is removed from the sand, the tail or stem 5 may be sheared off.

It should be understood that this is only one application of the device and that many sizes and proportions of the coil may be formed of various thicknesses of wire to adapt the device to different shapes and sizes of castings.

In Fig. 4 is shown one modification of the chill in which the wire is bent into a helical form as at 7 and provided with the axial tail or stem 8 for insertion into the sand of the mold.

Such a device is especially adapted for the casting of flat articles such as valve plates and the like.

From the above, it will be seen that a simple and inexpensive device is provided which may be easily and readily placed in position in the mold to overcome the difficulties in casting above pointed out.

I claim:

1. A chill for casting comprising a metal spiral coil adapted to be placed in a mold and having a tail portion for insertion into the sand of the mold.

2. A chill for casting comprising a metal spiral coil adapted to be placed in a mold and having an axial tail portion for insertion into the sand of the mold.

3. A chill for casting comprising a metal helical spiral coil adapted to be placed in a mold.

4. A chill for casting comprising a metal helical spiral coil adapted to be placed in a mold and having a tail portion for insertion into the sand of the mold.

5. A chill for casting comprising a metal helical spiral coil adapted to be placed in a mold and having an axial tail portion for insertion into the sand of the mold.

In testimony that I claim the above, I have hereunto subscribed my name.

GEORGE C. BUMBAUGH.