March 1, 1949. T. G. BUMBAUGH 2,463,147

CHILL COIL ANCHOR

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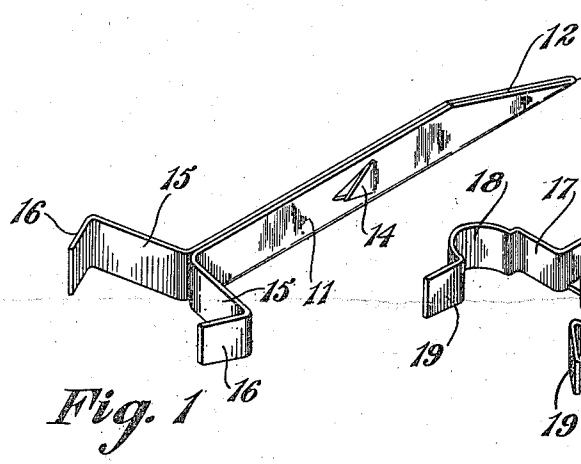


Fig. 1

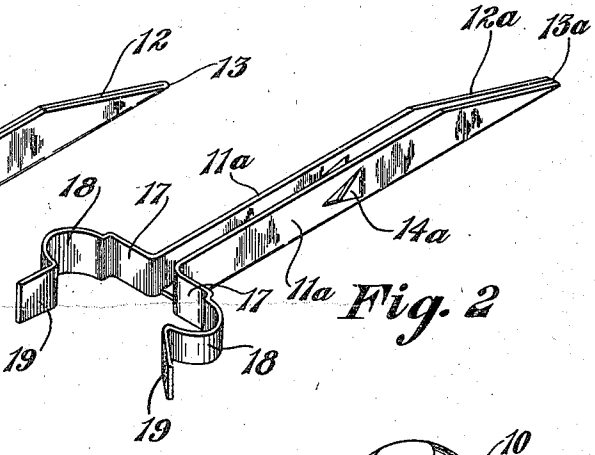


Fig. 2

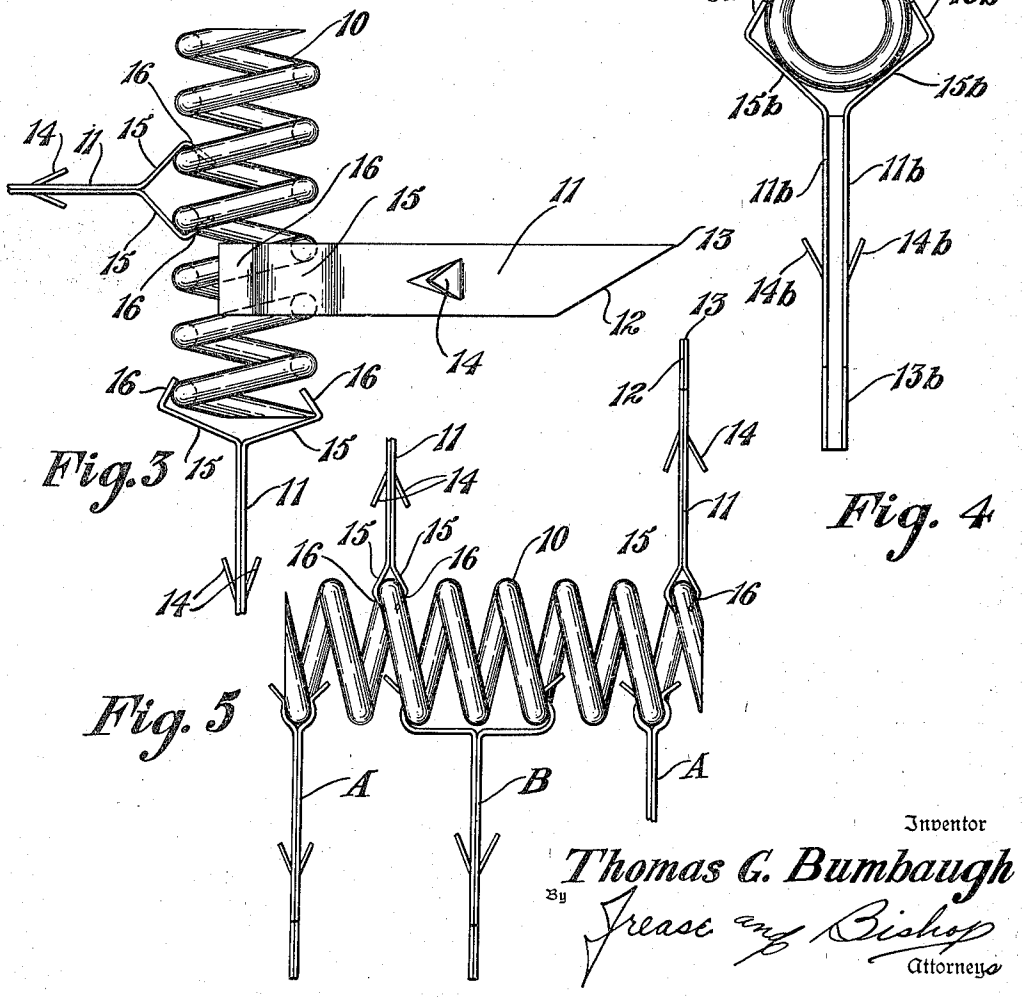


Fig. 3

Fig. 5

Fig. 4

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CHILL COIL ANCHOR

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3 Claims. (Cl. 22—174)

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The invention relates to chills for use in the molding of castings, and more particularly to an anchor for supporting and mounting spirally coiled chills in the sand of foundry molds.

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.

In an attempt to overcome these difficulties the spiral chill coil of Bumbaugh Patent No. 1,819,765 of August 18, 1931, was developed, this chill being in the form of a spiral coil of wire having an integral, axial tail portion for insertion into the sand of the mold.

The spiral coil was found to be a decided improvement over the nails and other devices used as chills in the past, but these chills have not proven entirely satisfactory in use as the axial tail portion had a tendency to work out of the sand, due to its cross sectional shape, especially in cases where the coil was suspended from above or one side. This resulted in the chill coil becoming dislodged and floating around in the mold cavity when the molten metal came into contact therewith during the casting operation, defeating the purpose of the chill.

The present invention contemplates the provision of a chill comprising a spiral coil of wire and a detachable sheet metal anchor having a shank portion for insertion into the sand of the mold so shaped as to prevent the chill from becoming accidentally dislodged from the position in which it is placed.

Another object is to provide a device of this character in which the anchor is formed of a strip of sheet metal folded or bent upon itself, one end thereof being cut off at an angle to form a sharp point for entering the sand, the other end being slit and bent to form a pair of fingers to grip the coil.

A further object is to provide a chill coil anchor of this character having reversely disposed barbs upon the shank thereof to prevent accidental removal from the sand.

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The above objects together with others which will be apparent from the drawing and following description or which may be later referred to, may be attained by constructing the improved chill coil anchor in the manner illustrated in the accompanying drawing, in which:

Figure 1 is a perspective view of one of the improved anchors constructed in accordance with the invention;

Fig. 2 is a similar view of a slightly different form of the anchor;

Fig. 3 is a side elevation of a chill coil showing several of the anchors attached thereto in various positions;

Fig. 4 an end elevation of a chill coil showing the transversely disposed anchor engaged around the coil; and

Fig. 5 a side elevation of a chill coil showing a plurality of the anchors attached thereto in various positions.

The chill may be in the form of a coil 10 of wire of any desired gauge, the coil being of any desired diameter and length as occasion may require.

The improved anchor for the coil, to which the invention pertains, is formed of a strip of sheet metal folded or bent upon itself as indicated at 11 in Fig. 1 to provide a shank portion the end of which may be cut off at an angle as at 12 to provide a sharp point 13 for inserting into the sand of the mold.

Barbs 14 are preferably stamped from the shank portions 11 and bent outwardly therefrom to provide means for preventing accidental removal of the anchor from the sand, these barbs as shown in the drawing being disposed oppositely to the pointed end of the shank. This permits the shank of the anchor to be easily inserted into the sand while preventing accidental withdrawal therefrom.

The opposite end of the folded metal strip is slit longitudinally at the fold line, forming bifurcations 15 which are bent outwardly in opposite directions terminating in the inturned angular ears 16 for detachable engagement with the wire coil 10 in various positions as shown in Figs. 3, 4 and 5.

Instead of folding the two sides of the shank portion tightly upon each other as shown at 11 in Fig. 1, the shank portion may be of substantially U-shape in cross section so that the two sides thereof are spaced slightly apart as shown at 11*a* in Fig. 2 and at 11*b* in Fig. 4, thus provid-

ing a greater area of shank for engagement with the sand of the mold.

Referring further to the modification shown in Fig. 2, one end portion of the shank may be cut off at an incline as shown at 12*a* to provide a point 13*a* for insertion into the sand, and reversely disposed barbs 14*a* may be stamped from the members 11*a* of the shank for the purpose above described.

The opposite end of the anchor may be provided with the bifurcations 17 of different form as shown in Fig. 2, each having the offset half-round portion 18 for engagement over the wire of the coil and terminating in the outwardly flared flanges 19 for guiding the same into engagement with the coil.

Various combinations of these features may be combined to provide different types of anchors as illustrated in Figs. 3, 4 and 5 for engaging the chill coil either circumferentially, transversely or longitudinally, and the size and shape of the bifurcations may be changed to engage one or any desired number of coils of the spiral chill coil as shown in the drawing.

For instance, as shown in Fig. 4, the U-shape cross sectional form of the shank, indicated at 11*b*—11*b*, has the sharpened end 13*b* and reversely disposed barbs 14*b* providing a shank the same as shown in Fig. 2 while the bifurcations 15*b* with terminal flanges 16*b* are the same as shown in Fig. 1, and are so positioned and shaped as to engage the coil 10 circumferentially as shown in Fig. 4.

As shown in Fig. 3, three of the anchors of the same type as illustrated in Fig. 1 are shown attached in three different positions to a single chill coil, the anchor shown at the right side of the figure engaging the coil circumferentially, the anchor at the left side engaging the chill longitudinally across two adjacent coils and the anchor at the lower end of said figure engaging the end of the coil transversely across the same.

As shown in Fig. 5 the two uppermost anchors in this view are of the same construction and arrangement as in Fig. 1 and the bifurcations 15 are of such size as to engage only a single coil of the chill while on the lower side of this figure the endmost anchors indicated generally at A have shank portions as shown in Fig. 1 and bifurcations as shown in Fig. 2 but are of such size as to engage only around a single coil or strand of the wire, while the central, lower anchor, indicated at B, has a shank portion as shown in Fig. 1 and bifurcations as shown in Fig. 2 of a size to engage the chill longitudinally across three coils of the wire as indicated.

Various other modifications may be formed including different combinations of features above described and illustrated, of various proportions and shaped to engage the chill in different positions and locations.

With this construction of anchors the chills may be supported from various points at various locations so as to firmly anchor them in place within the mold and prevent accidental displacement thereof. The sheet metal of which these anchors are made in sufficiently flexible and pliable to permit the anchors being first inserted in the proper locations in the sand after which the chill coil may be attached thereto by flexing or bending the bifurcations of the anchors.

I claim:

1. A chill for casting comprising a metal spiral coil and an anchor for the coil comprising a sheet metal strip folded longitudinally upon itself forming a flat shank portion one end of which is tapered, the opposite end thereof being slit longitudinally at the fold line forming oppositely disposed bifurcations engaging around a portion of the spiral coil whereby the anchor is detachably connected to the coil.

2. A chill for casting comprising a metal spiral coil and an anchor for the coil comprising a sheet metal strip folded longitudinally upon itself forming a flat shank portion one end of which is tapered, backwardly disposed barbs upon said shank portion, the opposite end thereof being slit longitudinally at the fold line forming oppositely disposed bifurcations engaging around a portion of the spiral coil whereby the anchor is detachably connected to the coil.

3. A chill for casting comprising a metal spiral coil and an anchor for the coil comprising a sheet metal strip folded longitudinally upon itself forming a flat shank portion one end of which is tapered, the opposite end thereof being slit longitudinally at the fold line forming oppositely disposed bifurcations having terminal flanges engaging around a portion of the spiral coil whereby the anchor is detachably connected to the coil.

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