Jan. 14, 1930. H. PERRY 1,743,567

CASTING AND METHOD OF MAKING THE SAME

Filed July 24, 1926

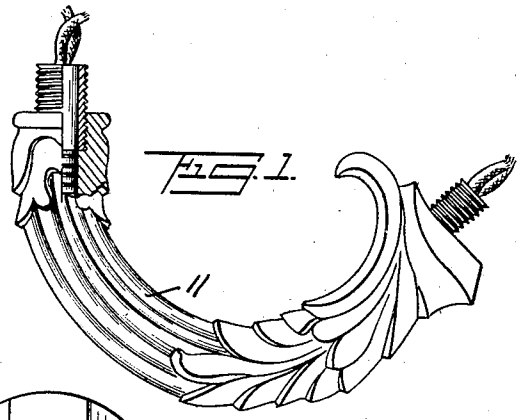


FIG. 1.

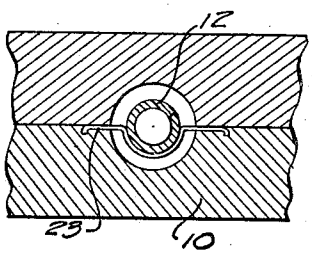


FIG. 3.

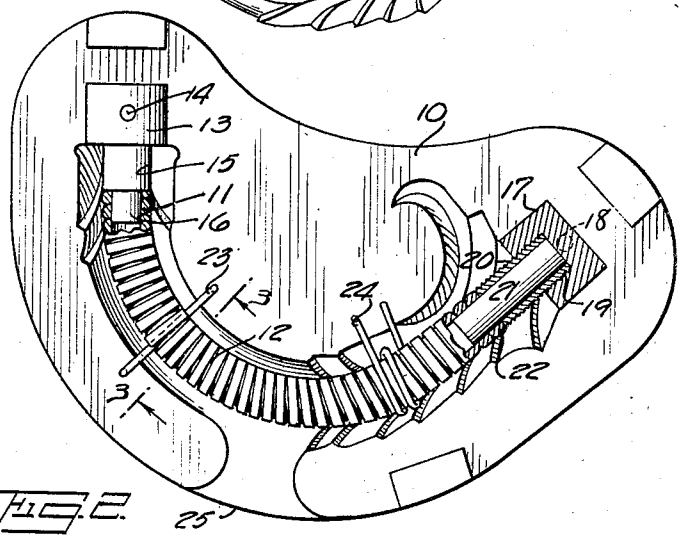


FIG. 2.

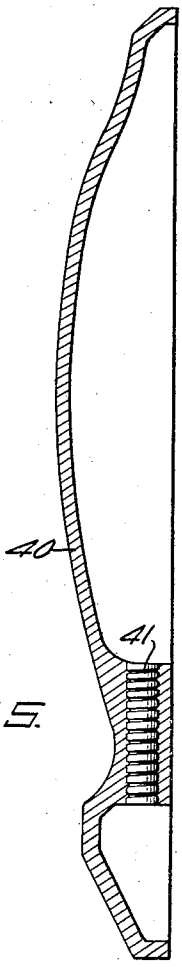


FIG. 5.

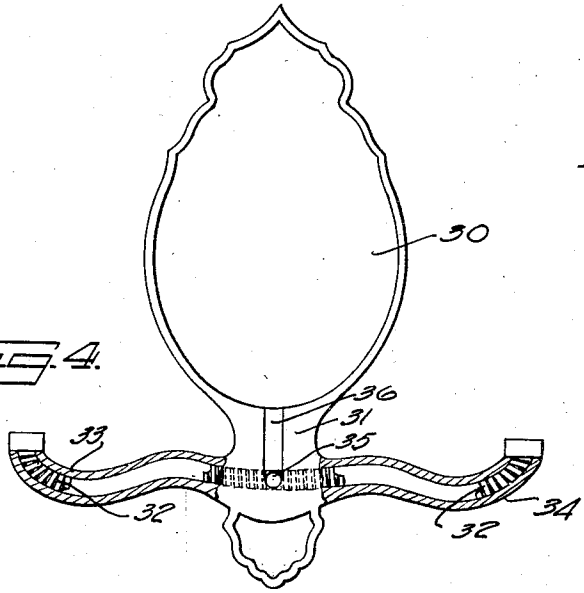


FIG. 4.

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CASTING AND METHOD OF MAKING THE SAME

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The present invention relates to castings and methods of making the same, and is more particularly directed toward the manufacture of castings having straight or curved cored holes in the same. The invention will be described more in detail with respect to lighting fixture parts, although it is applicable to many other arts.

Lighting fixtures and many other forms of electrical apparatus require smooth holes for the passage of wires. Where the parts are of small diameter, are curved, or have considerable length, it is very difficult and sometimes impossible to make castings in the ordinary manner and provide the cored hole. The longer braces and arms are frequently made of tubing bent to shape, while the shorter parts may be cast to have a wire receiving groove which may be covered in some manner to hide the wires, or hollow parts may be made by slush casting.

The present invention contemplates the manufacture of castings suitable for these or analogous uses wherein a smooth, curved, or straight hole is provided. Accordingly, a suitable length of flexible steel tubing of the proper diameter is placed in the molds before the molten metal is poured. The metal used has a melting point below that of the steel in the tubing, and after the metal has cooled around the flexible tubing, the casting with the tubing included on it is removed from the mold. The tubing remains in the casting and provides the hole desired, as well as greatly stiffening the casting and rendering it less liable to breakage from shock.

A further object of the present invention is to provide an improved process of making castings of this sort wherein the molten metal is effectively kept from entering the hollow tubing, and wherein the castings may be provided with any desired surface ornamentation and may be readily made with intricate curves.

A further object of the invention is to provide a method of making hollow castings out of white metal in forms and shapes which cannot ordinarily be made in hollow form from this material, but which have heretofore been made of brass, bronze or more expensive alloys.

A further object of the invention is to provide castings of the nature above referred to wherein smooth uniform holes of the desired diameter are provided for wiring, oil circulation or the like.

The accompanying drawings show, for purposes of illustration, a casting made according to the present invention as well as an arrangement of molds for making such castings, it being understood that the drawings are illustrative of the invention rather than limiting the same.

In these drawings:

Figure 1 is a side elevational view, with parts in section, showing a casting, such as a lighting fixture arm, made according to the present method;

Figure 2 is a view showing one half of a two part mould with the core and holding devices for the core in position;

Figure 3 is a sectional view through the mould, casting and core and showing one construction for supporting the core in position;

Figure 4 is a rear view with parts in section, showing a method of utilizing the flexible core in a two-arm wall bracket; and

Figure 5 is a vertical sectional view through a different form of lighting fixture backplate showing a further use of the flexible core.

Figures 1 and 2 illustrate the manufacture of a short curved casting, such as a lighting fixture arm, according to the present method. While the drawing shows a simple curved arm, it is of course understood that this is merely for illustration as arms may have various curves. Instead of making a casting which curves in one plane only, it is of course obvious that the casting could be curved in various planes.

One half of a bronze mould for making such a casting is indicated at 10 in Figure 2. This mould, together with the companion mould, will be made up according to the conventional manner for the design of the article to be produced. The flexible core will be supported in one half of the mould and the other half placed in position and clamped,

whereupon the molten metal will be poured in the usual manner. As here shown, one end 11 of the core 12, consisting of a length of flexible steel tubing, is supported from the mould by means of a plug or end member 13 removably mounted in the mould and held in place by pins 14. As illustrated in the drawing, this plug member has a reduced portion 15, while a further reduced end portion 16 fits inside the flexible tubing. At the other end of the mould, a removable plug or end member. 17 is suitably anchored in the mould by means of pins 18. As here shown, this plug member is threaded as indicated at 19 to receive a threaded nipple 20. The plug member 17 also has a shaft portion 21 adapted to pass through the inside of the nipple 20 and extend beyond the end of the nipple so as to support the other end 22 of the flexible steel core 12.

In some cases, the arms will be so long that the flexible core will tend to fall away from the center of the mould. In such cases, the core may be held in place by a bent wire saddle such as is indicated at 23 in Figures 2 and 3. This saddle will be anchored in one of the moulds and will be shaped to hold the core in place. In other instances, the core may tend to come to one side of the center of the mould and to overcome this, one may use a coiled wire support 24 which is wound around the core and anchored in the mould, as indicated.

Assuming that the core, end members and core-supports have been inserted in the mould as above described, and that the mould has been closed and clamped, one then brings the mould to the proper position to pour the molten metal into the gate, indicated at 25. The metal will then fill the mould in the usual fashion solidifying about the core. The clamps are then unclamped and the mould separated from the casting which is removed as is customary. In taking out the casting, the end members 13 and 17 will be removed from the mould. These plug or end members 13 may be separated from the casting in the usual manner and the end member 17 will be unthreaded from the nipple. These end members will have prevented the flow of metal into the inside of the core and one therefore obtains a casting with a smooth core made out of a length of tubing. The nipple 20 will have been anchored properly in the casting. The hole left in the casting by the portion 15 may be tapped and a nipple inserted, if desired. The supports 23 and 24 if used, may be snipped and the casting finished in the usual manner.

Figure 4 illustrates one form of lighting fixture bracket utilizing the flexible core in the arms. Here the main part or backplate, indicated at 30, is recessed by the mould used in making this part of the casting or it may be produced in a slush mould. The lower or narrow part of the backplate 31 is preferably cast in a two part mould, a length of flexible tubing 32 extending across the mould and being suitably anchored. The parts are so arranged that the tubing is placed in the center of the arms 33 and 34. It extends through the solid center of the bracket. After the bracket has been cast, one may drill a hole 35 into the flexible steel tubing. It is also possible to make the moulds so that the casting has a channel 36 leading down from the hollow part of the backplate to the drilled hole 35 so that lead wires may lie in the channel and pass through the hole into the tubing and thence to the ends of the arms and the sockets to be mounted thereon.

Lighting fixture backplates and wall brackets are also made with narrow or neck portions which are immediately above the arms. Such a bracket is illustrated in Design Patent No. 64,078, granted February 26, 1924. This narrow portion is further weakened because it has been customary to cut it away in the back to allow the wires to pass down to the arms to supply current to the lamps. Figure 5 illustrates a reinforcement of such a backplate 40 by means of a length of tubing 41 which is placed in the casting so as to permit the wires to be carried through it and down past the narrow neck of the backplate. This length of steel tubing materially reinforces the backplate and makes this part of the casting so strong that breakage is very unlikely.

From the foregoing, it will be apparent that by the use of lengths of flexible tubing as a core for white metal castings, one can construct such castings so as to be exceedingly strong and rugged. The flexible steel core can be bent into shapes which are very difficult and almost impossible to obtain with sand cores. The castings will be strong and uniform and one can provide wire passages without relying on slush casting processes.

It is obvious that the invention may be embodied in many forms and constructions, and the method can be carried out in various manners, and I wish it to be understood that the particular forms shown and steps set forth are illustrative of the many possible ones. Various modifications and changes being possible, I do not limit myself in any way with respect thereto. The method may be employed in making iron castings where one desires curved holes, such as oil passages.

I claim:

1. A casting having a hollow core in the form of a length of flexible steel tubing and an outer layer of metal of lower melting point intimately united with the steel tubing, and a tubular threaded coupling member about which the end of the casting is formed, the inner end of the coupling member being adjacent the end of the tubing, the coupling

member and tubing forming a continuous wire receiving passage.

2. A white metal casting having inclosed therein a length of flexible steel tubing for the purpose of reinforcing the casting and providing a passageway through the casting, and a tubular threaded coupling member having one end inclosed in the casting, the coupling member and tubing forming a continuous passageway.

3. The method of making castings with curved cores, which comprises forming a suitable length of readily flexible wound steel tubing to the desired shape, placing the tubing in a mould with the ends of the tubing plugged to prevent molten metal flowing into the tube, and pouring molten metal into the mould.

4. The method of making castings with curved cores, which comprises inserting plugs into the ends of a length of readily flexible wound steel tubing preformed to the desired shape, placing the tubing and plugs in a mould so that the tubing is positioned where the core is desired, closing the mould, pouring the molten metal into the mould, removing the casting with the tubing encased therein and then removing the plugs.

5. In the making of a casting, having a curved cored passage, the process which comprises suitably placing in prepared moulds a length of readily flexible wound steel tubing preformed to have the configuration of the desired passage, providing means for preventing molten metal from entering the tubing, and pouring the molten metal into the mould.

6. The method of making cast lighting fixture arms or the like having curved cores, which comprises the placing in one part of a metal mould of a length of readily flexible wound steel tubing preformed to the desired shape and having a removable plug placed in the end thereof, the plug cooperating with the mould, when closed, to hold the end of the tubing in place and to prevent the entrance of molten metal into the tube, and pouring the molten metal into the mould.

7. The method of making cast lighting fixture arms or the like, which comprises the placing in one part of a metal mould of a length of flexible steel tubing in the end of which is placed a removable plug, passing a rod through a tubular threaded coupling member and into the other end of the tubing, the coupling member cooperating with the mould when closed to hold the tubing in place and to prevent the entrance of molten metal into the tube, and pouring the molten metal into the mould.

8. The method of making cast lighting fixture arms or the like, which comprises the placing in one part of a metal mould of a length of flexible steel tubing in the end of which is placed a removable plug, passing a rod through a tubular threaded coupling member and into one end of the tubing, the plug and coupling member cooperating with the mould when closed to hold the end of the tubing in place and to prevent the entrance of molten metal into the tube, and pouring the molten metal into the mould.

HARRY PERRY.