Jan. 8, 1935. R. O. BRUNST 1,987,048

CHAPLET

Filed Jan. 11, 1934

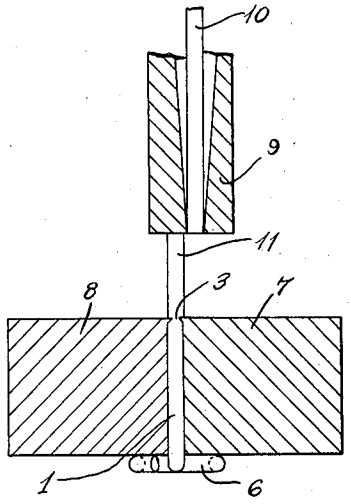


Fig. 8

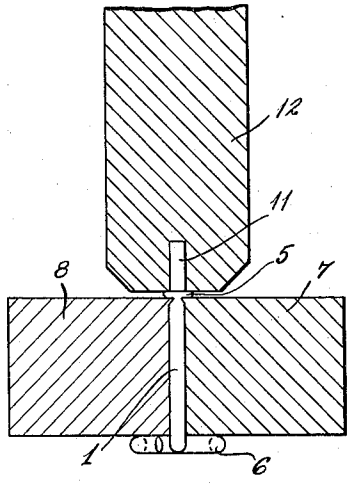


Fig. 9

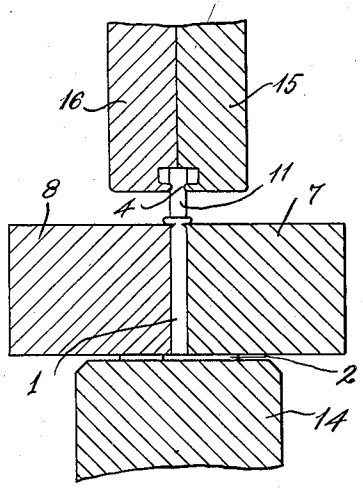


Fig. 10

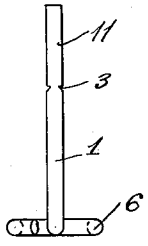


Fig. 2

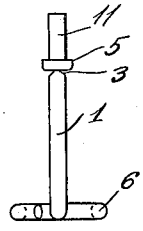


Fig. 3

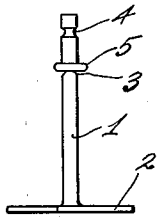


Fig. 4

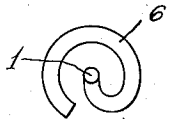


Fig. 5

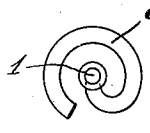


Fig. 6

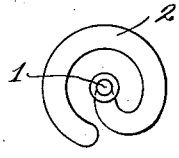


Fig. 7

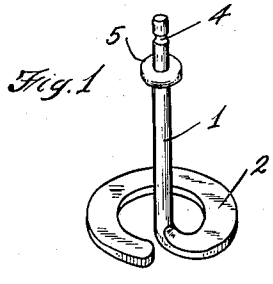


Fig. 1

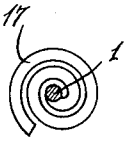


Fig. 11

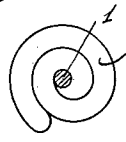


Fig. 12

INVENTOR.

Rudolph O. Brunst

BY

Rapp O-berlin & Rapp

ATTORNEYS.

Patented Jan. 8, 1935 1,987,048

UNITED STATES PATENT OFFICE

1,987,048

CHAPLET

Rudolph O. Brunst, Rocky River, Ohio, assignor to The F. Hohlfelder Company, Cleveland, Ohio, a corporation of Ohio

Application January 11, 1934, Serial No. 706,244

4 Claims. (Cl. 22—184)

This invention relates as indicated to chaplets, and to a method by which the particular chaplet formed in accordance with the principles of this invention may be made.

More specifically, my invention relates to a chaplet in which the head and stem portions thereof are unitary. It has become a practice in the prior art in the manufacture of chaplets to provide two parts which when joined in a particular manner constitute the finished article. The prior art chaplets, at least those which have been commercially successful, have been made from a flat sheet metal blank constituting the head of the chaplet and a short section of wire or rod joined to the head in various ways and constituting the stem of the chaplet. There are several principal objections to this prior art form of construction. In the first instance, the fabrication of separate parts constituting the finished product is an expensive and time-consuming operation. More or less difficulty from various sources is also usually experienced with any construction in which the head and the stem portions are formed from two pieces.

I am fully aware that it has been suggested in the prior art to form a chaplet from a single length of round wire or rod. The prior art has suggested that a chaplet might be formed by coiling a portion of the round wire, rod or blank in a plane normal to the axis of the stem. This particular construction has however, never gone into commercial usage for the reason that the rounded faces found in the head of the chaplet permit the chaplet to shift in the mold for a sufficient extent so that the core supported by the chaplets is no longer held in the proper position within the mold.

It is among the objects of my invention to provide a chaplet of a unitary structure having all of the advantages of a unitary structure and none of the above enumerated disadvantages. It is a further object of my invention to provide a method whereby the chaplet of this invention may be economically manufactured. Other objects and advantages of my invention will appear as the description proceeds.

To the accomplishment of the foregoing and related ends, the invention, then, comprises the features hereinafter fully described, and particularly pointed out in the claims, the following description and the annexed drawing setting forth in detail certain illustrative embodiments of the invention, these being indicative however, of but a few of the various ways in which the principle of the invention may be employed.

In said annexed drawing:—

Fig. 1 is a perspective view of a chaplet formed in accordance with the principles of this invention; Figs. 2, 3 and 4 illustrate the chaplet of Fig. 1 at various stages in its manufacture; Figs. 5, 6 and 7 are respectively elevational views of the blanks illustrated in Figs. 2, 3 and 4; Figs. 8, 9 and 10 respectively illustrate in diagrammatic form the steps employed for the purpose of producing the blanks illustrated in Figs. 2, 3 and 4; Fig. 11 is an elevational view of a chaplet formed in a slightly different fashion than that illustrated in the previous figures; and Fig. 12 is an elevational view of the finished form of the chaplet blank illustrated in Fig. 11.

Referring now more specifically to the drawing, and more especially to Fig. 1, a chaplet formed in accordance with the principles of my invention consists generally of a stem portion 1 and a head portion 2. The stem and head portions are formed from a single unitary blank which may be round wire or rod of any suitable metal usually employed in the manufacture of articles of this character. The head 2 consists of a coiled section of the blank arranged in a plane normal to the axis of the stem 1 and flattened to a considerable degree for the purpose hereinafter more fully explained.

The stem 1 is in the main a straight cylindrical shank which is however, provided with axially spaced notches 3 and 4 and a radially extending circumferential flange 5. When the chaplet is placed in service the flange or collar 5 is employed to determine the extent to which the chaplet is embedded in the mold, so that when a plurality of chaplets are employed in a single mold all of such chaplets will extend out of the mold for the same distance. The notch 3 is provided in the stem immediately adjacent the collar 5 so as to facilitate the breaking off of the chaplet from the casting after the casting has been removed from the mold. The reduced diameter of the stem 1 in the area of the groove 4 insures proper bond between the casting and the chaplet, so that the chaplet will not pull out of the finished casting.

As previously indicated, the above-described form of chaplet construction is made from a single unitary blank which is preferably a round wire or rod. The steps by which the chaplet is made are variously illustrated in Figs. 2 to 4, and 8 to 10. As most clearly illustrated in Fig. 8, the first step is to provide a suitable blank which is sheared into the desired length and one end thereof coiled as at 6. The form of this coil is most clearly illustrated in Fig. 5. After the

head portion has been coiled, opposing dies 7 and 8 engage the stem and form the groove 3. During the course of this operation the chaplet may be held in proper relation to the dies by suitable rests and like cooperating structure generally illustrated at 9 through which the blank 10 from which the chaplet is formed may be fed.

In Fig. 8, as well as the remaining figures in the drawing, only so much of the apparatus as is immediately contiguous to the chaplet is illustrated. The apparatus for the actuation of the several dies and similar parts illustrated herein is more clearly illustrated and described in a separate application.

After the blank has been sheared to length and notched as illustrated in Figs. 2, 5 and 8, and while gripped by the dies 7 and 8, the terminal portion 11 thereof is engaged by a third die 12, which while moving relatively to the holding dies 7 and 8 upsets the collar 5 on the stem.

The product of the operation just described, and of the apparatus illustrated in Fig. 9, is illustrated in Figs. 3 and 6. The blank illustrated in Fig. 3 while held between the dies 7 and 8, is next engaged by a head upsetting die member 14 which engages the previously coiled head 6 of the chaplet and reduces it to the thickness generally illustrated in Fig. 4. This flattening of the coiled head materially increases the surface area thereof which may have contact with the sand in the mold, and as hereinafter more fully explained this increased area and the nature of the surface is effective to properly support the chaplet within the mold.

Simultaneous with the head upsetting operation just described, the stem portion 11 of the chaplet may be engaged by opposing die members 15 and 16 which form on such terminal portion 11 the area 4 of reduced diameter. The product resulting from the foregoing steps is the chaplet illustrated in Fig. 1 and previously described.

Attention is directed to the fact that in the chaplet illustrated in Figs. 1 and 7, the coiled portion of the head 2 even when flattened down leaves a considerable space adjacent the center of the head where there is no metal, and consequently no bearing surface for the support of the chaplet in the sand. If the circumference of the head 2 is sufficiently great, it is not necessary that there be any bearing for the support of the chaplet in the center of the head for the reason that with a minimum amount of stock the bearing surface for the chaplet head may be displaced for an appreciable radius of gyration from the axis of the stem 1 so that even though the sand engaging area of the flattened head 2 is not very great, nevertheless sufficient support for the stem is afforded. Flattening the coiled portion of the head is the principal reason for the increased supporting power of such head. If the coiled portions of the head were left round as suggested by the prior art, such rounded portions would readily displace the sand laterally in engagement therewith and permit the chaplet to shift for an amount sufficient to displace the core within the mold.

While the chaplet illustrated in Fig. 1 has an appreciable open space in the head near the center thereof, it is nevertheless within the contemplation of my invention to provide a chaplet wherein the coils 17 forming the head are sufficient in number and so closely spaced as illustrated in Fig. 11, so that when the coils are upset the head 18 will be substantially continuous as illustrated in Fig. 12.

While the above outlined mode of manufacture has been described as including the step of flattening the head after coiling, it is nevertheless within the contemplation of my invention to flatten, as by rolling or otherwise, that portion of the blank forming the head before the head is coiled.

The advantages of the above-described forms of construction and the mode of manufacture by which the same may be produced, are believed to be sufficiently apparent to those familiar with the art so that a further description of the invention is not necessary.

Other modes of applying the principle of the invention may be employed, change being made in the form or construction, provided the elements stated by any of the following claims or the equivalent of such stated elements be employed, whether produced by my preferred method or by others embodying steps equivalent to those stated in the following claims.

I therefore particularly point out and distinctly claim as my invention:—

1. A chaplet, comprising a stem and a flat head formed from a flattened elongation of said stem, and bent into a plane substantially normal to the axis of said stem.

2. A chaplet, comprising a cylindrical stem and a flat head formed from a flattened elongation of said stem coiled in a plane substantially normal to the axis of said stem.

3. A chaplet, comprising a stem of substantially circular cross-section, and a flat head formed from a flattened laterally bent extension of said stem.

4. A chaplet, comprising a stem and a flat head formed from a flattened coiled extension of said stem.

RUDOLPH O. BRUNST.