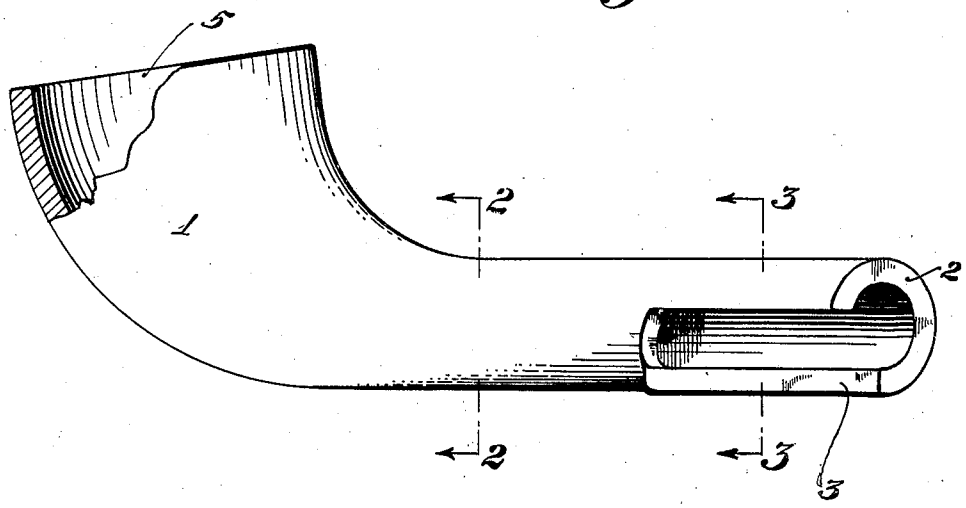
May 18, 1926. 1,584,840

L. CAMMEN

SPOUT

Original Filed Feb. 17, 1923

Fig. 1.



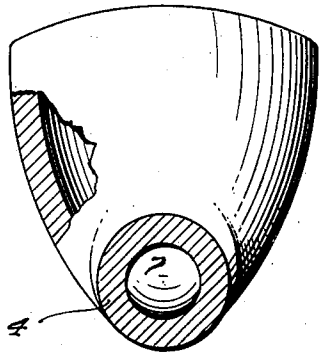


Fig. 2.

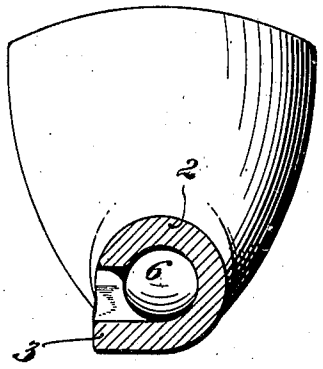


Fig. 3.

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UNITED STATES PATENT OFFICE.

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SPOUT.

Application filed February 17, 1923, Serial No. 619,769. Renewed April 1, 1926.

The present invention refers to spouts for use in centrifugal casting on a horizontal axis or inclined axis.

In the illustrations,

Fig. 1 shows a side view of the spout from the side where the side cut out is seen;

Fig. 2 is a front view of the spout cut off along plane indicated in Fig. 1 by 2—2;

Fig. 3 is a front view of the spout cut off along plane indicated on Fig. 1 by 3—3.

There are two main kinds of spouts used in centrifugal casting. The duty of the first kind is merely to deliver the metal to the front end of the mold, relying then on the centrifugal force itself or the shortness of the mold to distribute the metal lengthwise in the mold. In the second class of spouts the spout is designed so as to assist in and often control, the distribution of the metal lengthwise in the mold. To this second class belong all movable and sliding spouts, trough-like spouts extending the entire length of the mold, and long flat ledges, likewise extending the entire length of the mold. Each kind has to be used under conditions suitable to it, depending on whether in the given casting the action of centrifugal force is sufficient to distribute the metal lengthwise in the mold, or whether this action has to be assisted or governed by the spout. The present invention refers to spouts of the first class.

As shown in Fig. 1, the spout 1 is generally shaped somewhat like a corn-cob pipe, the metal being delivered into the large orifice 5, and discharged from the small end. With this construction, the spout need not project into the mold for a distance greater than a few, say 6 to 10 in., and even shorter spouts may be used.

The characteristic feature of the present invention lies however in the fact that, instead of ending as usual in a round pipe, the spout, as shown at 2, Fig. 1, and 6, Fig. 3, ends in a pipe in which a small part of the wall has been cut away, and the bottom slight flattened out, the plane of this flattened part 3 being preferably parallel to the plane passing through the axis of rotation of the mold. The length of this cut-away section need not be large, the general rule being that it need not be larger than about one and one half times the area of the free section at 2—2, Fig. 1, or 7, Fig. 2. It may be also expressed as being about twice the diameter of the free section 7, Fig. 2, the aim being to favor the discharge of the metal over the ledge 3 without making the cut-away section so long as to weaken it mechanically, and to limit the flow of metal to only the part next to the main section of the spout, or, as shown in the drawing, left hand part of the cut-away section.

The advantage of the spout such as shown and set forth in the present specification and drawings, lies in that it prevents excessive splashing of the metal, and thus permits to obtain a smoother casting. Also, because of the comparative shortness of the spout, it may easily be heated previous to pouring, so as to prevent excessive chilling of the metal as it flows through the spout: with long spouts, such heating might lead to the sagging of metal spouts, and breakage of clay or graphite spouts.

In actual practice it has been found that, especially with metals like steel having a high melting point and a small reserve of heat above the melting point, nothing is gained by making the spout longer than is absolutely necessary. The longer the spout, the more difficult it is to prevent the chilling of the metal while flowing through it. and formation of "skulls" in the spout, and the more the spout becomes subject to breakage. It would appear therefore that in a spout of the first class the open-slot delivery end should under no conditions exceed one-half the total length of the spout, except in spouts of very large diameters, where it may be as high as thrice the diameter of the smallest section of flow, which is in this case 7, or the section at 2—2.

It might be mentioned in this connection that while two methods of determining the useful length of the open-slot delivery end are here indicated, the result by both methods, if properly applied, ought to be substantially the same, namely, to make the open slot delivery end of such size as to permit the entire charge of metal to discharge over the ledge 3, i. e. edgewise, rather than flow over 2, i. e. lengthwise. It is obvious that there is no advantage in making the ledge 3, and hence open-slot delivery end, longer than is necessary to ensure such a discharge, because any excess of the length of ledge 3 which does not assit in the discharge, is not only useless, but harmful, as it increases the absorption of heat from the metal by the spout, and also the chances of breakage in the spout.

I claim:

1. A spout for centrifugal casting wherein a part of the wall, for a distance less than one half the total length of the spout, is cut away, near the delivery end.

2. A spout for centrifugal casting whereing a part of the wall, for a distance less than thrice the diameter of the smallest section of flow, is cut away near the delivery end.

3. A spout for centrifugal casting wherein near the delivery end a part of the wall, for a distance less than one half the total length of the spout, is cut away, and the bottom of the discharge runner is made substantially flat.

4. A spout for centrifugal casting wherein near the delivery end a part of the wall, for a distance less than thrice the diameter of the smallest section of flow, is cut away, and the bottom of the discharge runner is made substantially flat.

Signed in New York, in the county and State of New York, February 9, A. D. 1923.

LEON CAMMEN.