March 3, 1931. N. F. EGLER 1,794,840

HOT TOP

Filed Oct. 26, 1928

Fig. 1.

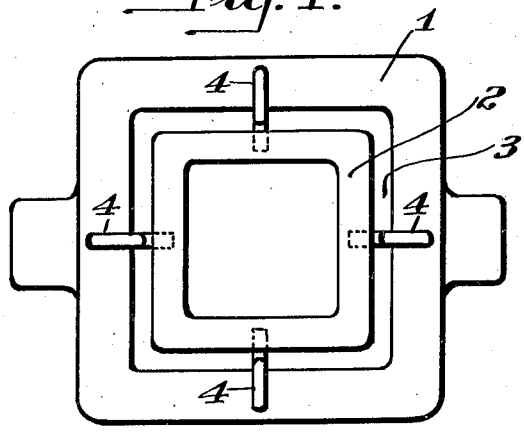
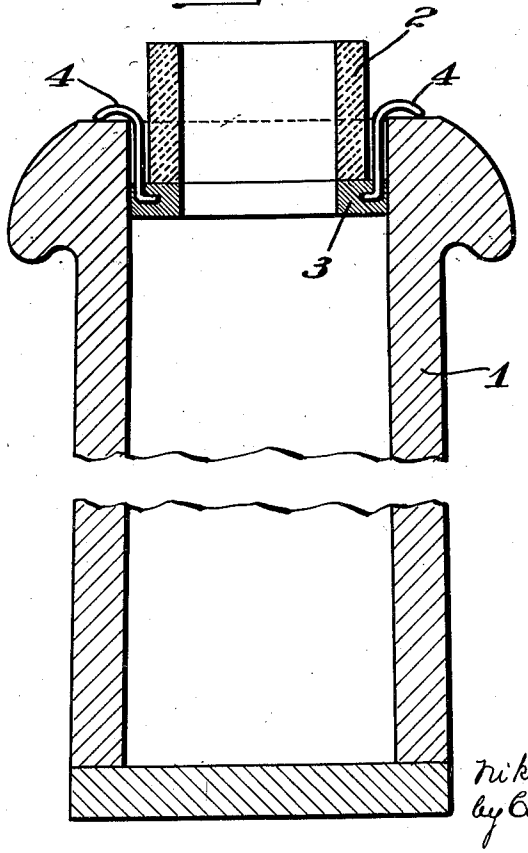


Fig. 2.



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UNITED STATES PATENT OFFICE

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HOT TOP

Application filed October 26, 1928. Serial No. 315,303.

My invention relates to improvements in hot-tops for ingot molds, and the object of my invention is the overcoming of disadvantages otherwise incident to the use of hot-tops such as are now commonly in use.

The invention is illustrated in the accompanying drawings, in which Fig. I is a view in plan and Fig. II a view in vertical section of the hot-top of my invention in place on the ingot mold.

Hot-tops such as are commonly used are molded and hardened bodies of refractory material, of such external size and shape as to be arranged within and to protrude from the open upper end of the ingot mold. This general arrangement of the hot-top in the mouth of the ingot mold is illustrated in the drawings. The ingot mold is indicated by the numeral 1, and the hot-top by 2.

Refractory hot-tops cannot be made to minutely accurate size. Incidental to the drying and burning, to which a refractory hot-top must in its manufacture be subjected, there is shrinkage which is so far variable and irregular that, as a practical matter, the average hot-top is somewhat under size, and there is an undesired but unavoidable space at which the hot-top when set in the mouth of the mold stands away from the mold wall. In consequence the operation of pouring must accommodate itself. When the body of molten metal rising within the mold cavity reaches the lower edge of the hot-top, the operation of pouring is arrested, and an interval of time is allowed to ensue, during which the metal in contact with or adjacent to the hot-top at its lower end grows colder and approaches solidification. Then when presently pouring is renewed and the molten metal rises in the hot-top the tendency of the metal to run into and to rise within such space as may exist between hot-top and mold wall is prevented and overcome. The development of a fin at that point is guarded against.

My invention consists in a heat-absorbing body arranged within the mold cavity at the lower end of the introduced hot-top and forming in effect a portion of or an extension of the hot-top, which body so present, absorbing heat from the body of molten metal has the effect which in the practice above described is accomplished by an intermission of the operation of pouring. The operation of pouring may be continued without intermission to the end, and the fin-forming tendency described is to an appreciable and practically adequate degree guarded against and prevented.

Such a heat-absorbing body is in the drawings indicated at 3. It will conveniently be formed of metal, preferably of cast iron or cast steel. It will be an endless band or ring of the shape and size of the mold cavity and of bulk sufficient to accomplish the end desired. Preferably it is formed as a separate member sustained in place within the mouth of the mold, conveniently by hooks 4 which take over the rim of the mold. It is of such width as to form a rest or support for the hot-top, and of such thickness as to act as a chill, in the manner described. Ordinarily, it is from 2 to 4 inches wide and an inch thick. The dimensions are given by way of example, merely. The body 3 being formed of cast metal, may be formed much more accurately to size than is possible in the forming of the refractory hot-top. The space interval between the body 3 and the mold wall may, accordingly, be reduced to a smaller value on the average than that between hot-top and mold wall. Such reduction of space interval contributes to the same end as does the heat-absorbing nature of the body itself—the end, namely, of prevention of fin formation.

In operation the chill 3 is first placed within the mouth of the mold and sustained in position by its hooks. The hot-top is then placed upon it, in the position indicated. The pouring of the metal into the mold so prepared is continued without intermission to the end, and during the pouring the chill is effective in the manner described. The adjacent metal is by contact with it so far chilled that fin formation in the narrow space interval between hot-top and mold wall is to a practical degree prevented and overcome.

I claim as my invention:

1. In combination with an ingot mold a fin-preventing chill-ring of cast iron ar-

ranged within the mold cavity adjacent the upper end thereof and extending in continuity around the entire inner wall of the cavity, and a preformed hot-top of refractory material resting upon said ring.

2. In combination with an ingot mold a fin-preventing chill-ring of cast iron arranged within the mold cavity adjacent the upper end thereof and extending in continuity around the entire inner wall of the cavity, together with means engaging the upper rim of the mold for suspending said ring in place, and a preformed hot-top of refractory material resting upon said ring.

In testimony whereof, I have hereunto set my hand.

NIKLAS F. EGLER.