G. H. BRABROOK.

METHOD OF PRODUCING SOFT METAL CASTINGS.

Specimens.

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Inventor.

Witnesses.

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METHOD OF PRODUCING SOFT-METAL CASTINGS.

SPECIFICATION forming part of Letters Patent No. 691,527, dated August 27, 1901.
Application filed February 27, 1901. Serial No. 48,041. (Specimen.)

To all whom it may concern:

Be it known that I, GEORGE HALE BRABROOK, of Taunton, county of Bristol, and State of Massachusetts, have invented an improvement in Methods of Producing Soft-Metal Castings, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

The present invention relates to a process of making castings from soft metal, such as britannia metal or similar alloys composed mainly of tin or of lead.

It has been found impracticable to make thin castings from britannia metal in the ordinary method of running the molten metal into a mold, because the metal will not sufficiently retain its fluidity, but by reason of chilling or oxidation ceases to flow, and thus fails to fill the mold so as to obtain perfect castings, especially where the article to be produced is of considerable extent, but of relatively small thickness or body, as is the case with hollow articles for tableware and the like, which are commonly made in whole or part from such alloys, but which are now commonly made by working up the sheet metal, because of the practical impossibility of producing satisfactory castings.

The present invention is based upon the discovery that stearic acid, if properly applied to the molten metal in the mold, will increase its fluidity, probably by preventing or diminishing the oxidation, and will cause the metal to flow in such manner as to properly fill all parts of the mold.

The invention consists in exposing the molten metal to the action of stearic acid when running the metal into the mold, the said mold being composed of porous or absorptive material and having the portion forming and adjacent to the inner or pattern surface coated or impregnated with the acid.

The accompanying drawing illustrates a mold in cross-section properly treated or prepared for the purposes of this invention.

A mold for casting soft metal in accordance with this invention may be constructed in any usual manner, being made of porous absorptive material, such as plaster-of-paris or baked molding-sand, and in order that the metal may be properly subjected to the action of the stearic acid in the casting operation the inner surface of said mold is coated or impregnated with the acid. This may be done by warming or slightly heating the parts of the mold, so as to thoroughly dry the same, and then applying stearic acid to the inner surfaces of the mold that are to come in contact with and give form to the metal. The acid material will thus fill and impregnate the material of the mold adjacent to its internal surface, as indicated at a, without affecting or changing the form of said surface and will act on the molten metal, which may be poured into the mold in the usual manner and will cause the fluidity of the metal to be retained, so that it will readily flow and completely and perfectly fill the cavity of the mold, thus resulting in the production of a sound and homogeneous casting having a highly-finished surface. The result of the treatment of the metal indicates that some chemical action takes place between the hot metal and the stearic acid, this action probably involving the liberation of hydrogen which prevents or retards the oxidation of the metal, which oxidation takes place when the metal is not so treated and results in the solidifying or partially solidifying of the metal, so that it will not flow and properly fill the cavity of the mold.

It is found in practice that a single coating of stearic acid will enable a mold to be used for several castings, and when it becomes insufficient to cause the metal to flow properly the mold may be supplied with a fresh coating of the stearic acid and again used until the effect thereof is exhausted.

Of the fat acids tried in the exploitation of this invention stearic acid of more or less perfect purity has been found most efficient; but it is within my invention to use a substitute for chemically pure stearic acid. Furthermore, by the term “soft metal” as herein employed I mean to include britannia, alloys of tin and lead, and similar metals or so-called “metals” or metallic compositions.
I claim—
The method of producing a casting of soft metal, which consists in impregnating the inner surface of a porous non-metallic mold with stearic acid and running in the molten metal.
In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE HALE BRABROOK.

Witnesses:
JOSEPH P. LIVERMORE,
NANCY P. FORD.