

W. N. BENNETT.
STEEL MOLD.
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1,027,585.

Patented May 28, 1912.

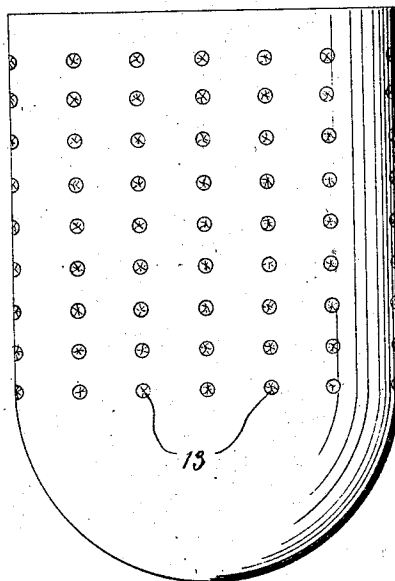


Fig. 1,

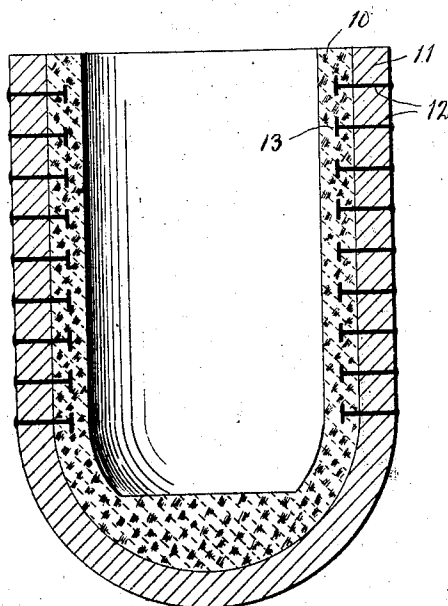


Fig. 2,

Witnesses:
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By his Attorney,
W. B. Hutchinson.

UNITED STATES PATENT OFFICE.

WILLIAM N. BENNETT, OF BELLEVILLE, NEW JERSEY, ASSIGNOR OF ONE-TENTH TO
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STEEL-MOLD.

1,027,585.

Specification of Letters Patent.

Patented May 28, 1912.

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To all whom it may concern:

Be it known that I, WILLIAM N. BENNETT, of Belleville, Essex county, New Jersey, have invented a new and useful Improvement in Steel-Molds, of which the following is a full, clear, and exact description.

My invention relates to improvements in molds such as are used in the casting of metal ingots.

According to the present practice in casting steel ingots, a considerable part of the ingot cannot be used owing to the formation of a cavity or pipe in the upper part of the ingot, which pipe or cavity forms when the metal is cooled in the mold. The forming of this pipe in the ingot is due to the fact that the molten metal becomes chilled or freezes on its outer surface where it contacts with the surface of the mold. As a result of this the metal contracts and pulls away from the center, and forms a hole or pipe in the upper part of the ingot, and the metal in the upper part of the mold does not remain fluid enough to flow down and fill up the cavity so formed.

The object of my invention is to provide a mold in which the metal after it has been poured will be allowed to cool so slowly that there will be sufficient molten metal at the top of the mold to flow into the cavity formed by contraction, and in this way avoid the formation of the pipe or any appreciable depression in the top of the ingot. To accomplish this I provide a mold having a casing or jacket, but the main or body portion of the mold coming in contact with the molten metal being made of a material which is a poor conductor of heat. This body portion of the mold I preferably make of fire clay or a mixture of several kinds of fire clay with asbestos. The asbestos in the mixture acts not only as a non-conductor of heat, but gives the mold sufficient toughness and elasticity to prevent cracking which otherwise would result from the expansion caused by the molten metal coming in contact with it. In such an ingot mold the metal, due to the fact that the body of the mold is a poor conductor of heat, will cool slowly enough so that it will settle naturally as it cools, and avoid the sudden contraction and pulling away from the center, and the formation of the pipe above referred to.

Reference is to be had to the accompany-

ing drawings forming a part of this specification, in which similar reference characters indicate corresponding parts in all the views.

Figure 1 is a side view of the mold embodying my invention, and Fig. 2 is a sectional elevation of the same.

In the drawings I have indicated the mold proper at 10, having a casing or jacket. The body portion of the mold 10 is composed of fire clay mixed with asbestos, and while in a plastic condition is formed to the shape required of the mold and dried and baked. In mixing the clay with the asbestos I preferably use a mixture of various clays such as American clay, English clay, German clay, and china clay, the proportions of the different clays and the asbestos naturally varying according to the size and shape of the molds required. The fibrous quality of the asbestos will insure sufficient toughness and elasticity in the mold when finished to prevent cracking from the sudden expansion caused by the molten metal being poured into it.

In order that the body portion of the mold may be secured and firmly held against the casing or jacket, I provide anchoring rivets 12 which are a part of the jacket and have turned ends so as to firmly anchor them in the body of the non-conducting part of the mold.

In making the mold, the different clays and the asbestos fiber are thoroughly mingled in a dry state, then moistened to make them plastic, and are then given the desired shape in the usual way, after which the mold is dried, tempered and baked.

I have referred to the mold as being specially adapted for forming metal ingots, but it can be used as a mold to receive any molten metal to give it the desired shape, and for the reasons stated will make a denser, better casting than the ordinary metal molds. I wish to call attention to the fact, too, that while I have referred to fastening rivets 12, any suitable fastening devices can be used to hold the mold to its jackets; and while I have shown a whole mold, that is a mold of a single integral piece, it can be made in the form of the ordinary split mold if desired, without affecting the invention. It is apparent therefore that I provide a mold which is tough and elastic and is a poor conductor of heat, so that

when molten metal is poured into the mold the metal will cool sufficiently slowly on its outer surface to permit of its flowing toward the center of the ingot, thus preventing the formation of a pipe and leaving the ingot with an essentially flat top.

I am aware that non-conducting materials have been used as a packing for molds, but this does not answer the purpose, as the non-conducting refractory material must come in actual contact with the molten metal to produce the desired effect and to prevent the heat of the metal from being too rapidly radiated. I wish to further call attention to the fact that the invention is not limited to the particular kinds of fire clay referred to, but I have found these materials most desirable, as they withstand the action of the molten metal and form, when combined, a more durable, smoother,

and tougher mold than when they are used separately, and the German fire clay seems to act as a binder for the other materials; but if desired any other well known or preferred binder can be used with the materials stated.

I claim:—

1. A mold comprising a body portion composed of a mixture of fire clay and asbestos, and a jacket surrounding the body portion.
2. An ingot mold comprising a body portion of material composed of a mixture of fire-clays and a fibrous refractory material, a jacket surrounding the body portion, and anchoring means supported in the jacket and engaging the body portion.

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Witnesses:

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