

(No Model.)

A. J. LUSTIG.  
INGOT MOLD COVER.

No. 344,451.

Patented June 29, 1886.

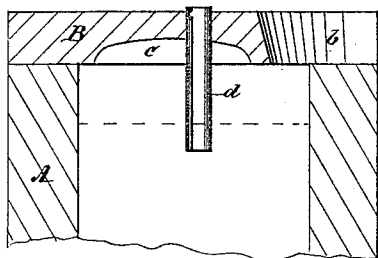


Fig. I.

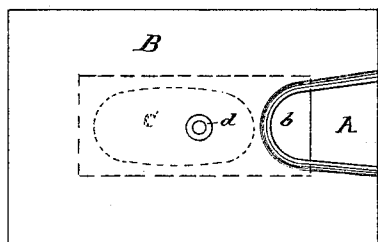


Fig. II.

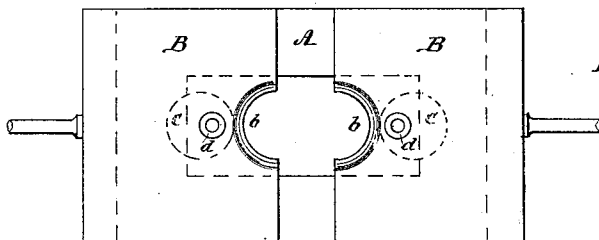


Fig. III.

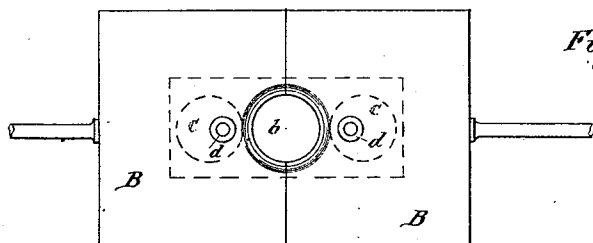


Fig. IV.

Witnesses  
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# UNITED STATES PATENT OFFICE.

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## INGOT-MOLD COVER.

SPECIFICATION forming part of Letters Patent No. 344,451, dated June 29, 1886.

Application filed November 25, 1885. Serial No. 183,918. (No model.)

*To all whom it may concern:*

Be it known that I, ADOLPHUS JOHN LUSTIG, of the city of New York, county and State of New York, have invented new and useful Improvements in Covers for Ingot-Molds Used in Casting Steel Ingots, of which the following specification is a full, clear, and exact description.

This invention relates to a suitable cover applied to the mold into which steel ingots are cast; and it consists in the construction of said cover, hereinafter more fully pointed out.

The present mode of casting steel ingots consists in pouring a quantity of steel into an ingot-mold. The mold having no cover, and the metal being poured into the open mouth of the mold, the consequence is that the rising column of heated air is continually replaced by a colder one, the oxygen of which is absorbed into the fluid steel. This oxidized metal, being in close contact with the carbon, decarbonizes the steel and evolves carbonic-acid gas. Through the radiation upward a skin on the metal is prematurely formed which prevents the formed gases from escaping. These gases in gathering under said skin form large blisters, and through the contraction of the skin and of the metal are either forced downward into the steel which is high in carbon or boil up in the steel low in carbon where the formation of the gages was slower, and consequently allows the formation of a thicker skin.

In order to counteract the oxidation of the steel within the mold I close the same with a cover having an ingress for the metal on the narrow side of the ingot-mold. In cases where two pots are emptied at the same time I make these ingresses at both ends of the cover opposite each other.

By the arrangement of this cover I prevent the current of cold air from getting into the mold, and also retain the carbonic-acid gas that has been formed therein from the start by the molten steel absorbing the oxygen and producing carbonic-acid gas. As only a small part of the steel can have been oxidized during the transit of the metal from the crucible to the mold, the decarbonization and consequent evolution of carbonic-acid gas is proportionately small. In order to allow these

carbonic-acid gases to escape, I provide the lower part of my cover with a concave depression, *c*, facing the metal, which at the same time reradiates the heat, and to quicken this reradiation I cover this depression with a white adhering substance or paint. This reradiation will retard the formation of the skin, and thereby the gases will be allowed to escape freely; but as the evolution of gases still continues after even the retarded formation of the skin I introduce a carbonized wooden tube, *d*, into the cover, suitably fastened in the same. The intention is to fill the mold sufficiently high or to make this tube sufficiently long, so that the tube will be embedded in the ingot, the position of the tube being as near as possible in the center of the ingot, where the most gases are. This tube pierces the skin and gives a vent to the gases, whereby they are not pressed down into the body of the ingot, said tube thus forming a funnel for the gases to escape.

In the accompanying drawings, Figure I represents a vertical section of part of an ingot-mold with my improved cover applied, and Fig. II a top view of the cover. Figs. III and IV show a modified form of cover in plan.

A represents part of the mold of the usual dimensions, upon which the cover B is placed before the metal is poured into the mold. The cover is provided on one end with a semi-circular opening, *b*, through which the metal is poured into the ingot-mold. On the under side of the cover a concave cavity, *c*, is made as large as possible, but not extending outside of the opening of the ingot-mold. *d* is a carbonized wooden tube passing through the cover B and extending some distance into the mold.

In case the molds are filled by the Martin Siemens arrangement two covers, B B, Figs. III and IV, may be arranged capable of being withdrawn or separated during the passage of the continuous stream, (see Fig. III,) until the same is centered over the mold, when the two covers are moved together, as shown in Fig. IV.

What I claim is—

1. In combination with a steel-ingot mold, roc

A, one or two covers, B, each provided with a circular opening, *b*, and concave cavity C at its under side, substantially as and for the purpose specified.

5 2. In combination with a steel-ingot mold, A, one or two covers, B, with circular recess *b* at one end, a concave cavity, C, at the under side, and the carbonized tube *d*, in the manner and for the purpose substantially as specified.

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Witnesses:

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