No. 607,869. Patented July 26, 1898.

W. MAYER.

INGOT MOLD.

(Application filed July 30, 1895.)

(No Model.)

Fig. 1.

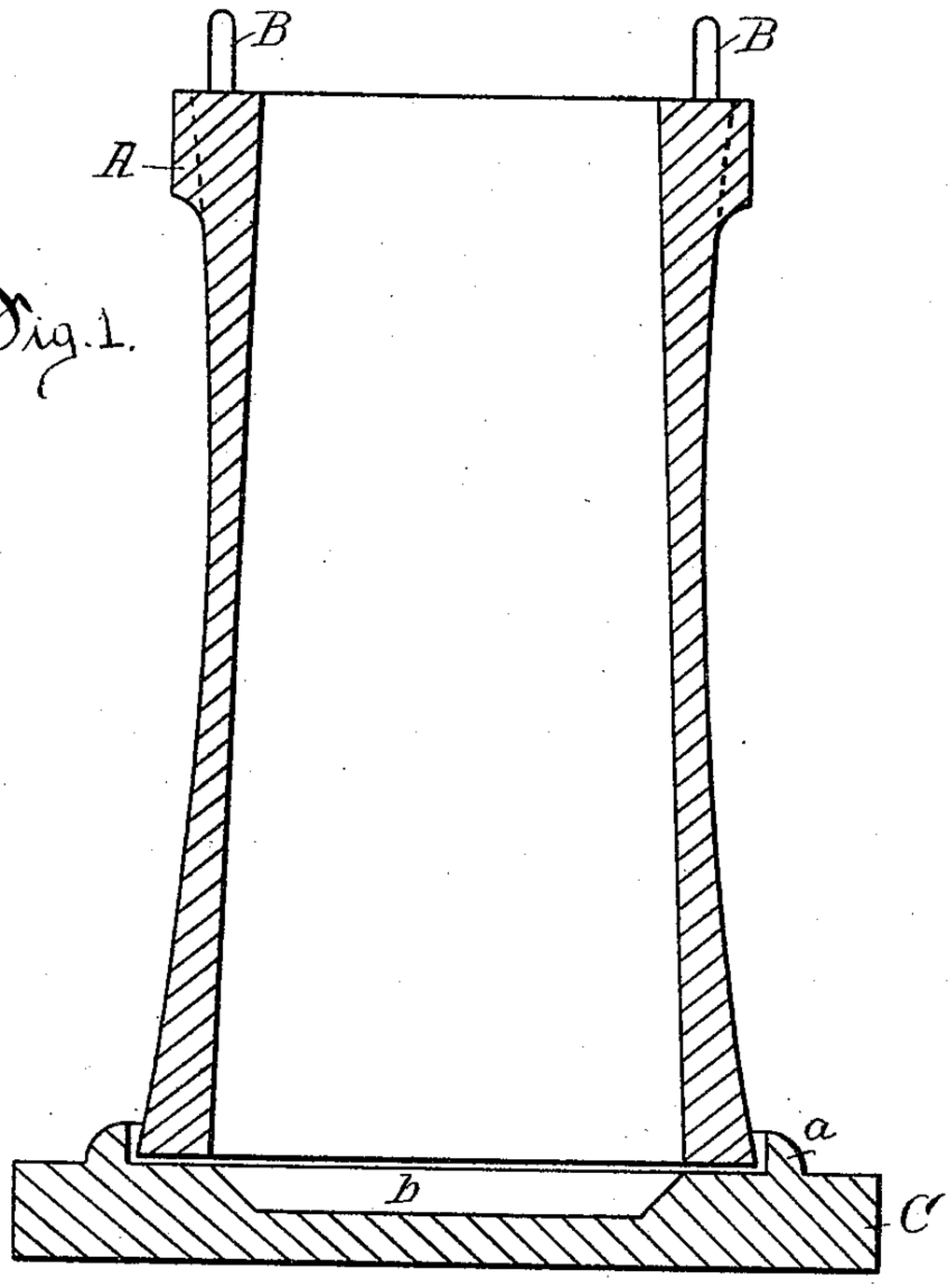
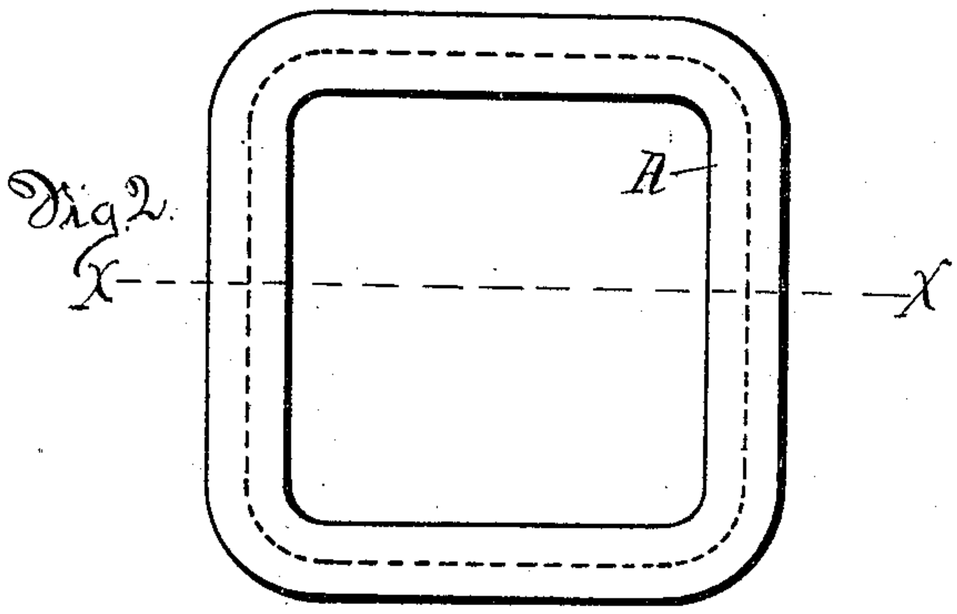


Fig 2.



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INGOT-MOLD.

SPECIFICATION forming part of Letters Patent No. 607,869, dated July 26, 1898.

Application filed July 30, 1895. Serial No. 557,568. (No model.) Patented in England June 30, 1893, No. 12,798.

To all whom it may concern:

Be it known that I, WILLIAM MAYER, a subject of the Queen of Great Britain, residing at Jarrow-on-Tyne, in the county of Durham, England, have invented certain new and useful Improvements in Ingot-Molds, (for which I have obtained British Letters Patent No. 12,798, dated June 30, 1893,) which improvements are fully set forth in the following specification and accompanying drawings, wherein—

Figure 1 is a central vertical section of an ingot-mold embodying my improvements, the section being taken on line *x x* of Fig. 2. Fig. 2 is a top plan view of same.

Similar reference-letters denote like parts in both views.

This invention relates generally to improvements in that class of devices known as "molds," the same being employed in producing or forming various objects from molten metals. It has special reference, however, to to molds designed for use in the production from molten steel of articles commonly known as "ingots."

Heretofore ingot-molds have in most, if not all, instances been provided with walls having plane outer surfaces. The life of such a mold under continuous use is usually limited to less than twenty days, for the reason that in service it is necessarily abruptly subjected to extreme variations in temperature, and this results in so seriously warping or distorting the mold as to render it entirely inoperative in a very short period of time. The chief object of my invention is to overcome as fully as practicable this objectionable feature of molds of the prior art and through the employment of a base-plate of somewhat peculiar form attain additional advantages to be hereinafter pointed out.

My invention consists in varying the thickness of the walls of the mold proper, in providing the mold proper with a peculiarly-formed base-plate, in certain combinations, and in certain details of construction, all of which will be specifically referred to hereinafter.

Having reference to the accompanying drawings, the letter A denotes the mold proper, ordinarily quadrangular in cross-section and formed from any suitable material, as cast-iron. The inside dimensions of this mold are slightly less at the top than at the bottom thereof—that is, pyramidal in general outline, as in common practice and for purposes well understood. The material from which the mold A is formed is distributed in a manner that secures for the respective walls of the mold a thickness increasing with substantial regularity from a point about midway thereof to the respective upper and lower ends thereof. In other words, each of the respective walls of the mold may be said to be transversely concaved, and the concavity should be such as to diminish the thickness of the wall at or slightly below a point midway between the given thickness at the respective ends thereof. top and bottom thereof to about one-half the

B are the ears commonly applied to molds of this description for convenience in handling.

In the absence of a base-plate the sand into which the mold is placed in the operation of molding has a tendency to rise and mingle to an undesirable extent with the molten steel upon the latter being poured into the mold A, the result being that the lower end of the ingot after removal from the mold usually contains more or less sand, which is objectionable. To overcome this, I provide a base-plate C, formed of any suitable material, as cast-iron, and provided with a vertical rib or lip *a*. This lip is readily formed integral with the base C and is adapted to take over the lower end of the mold A. Central within the space surrounded by the lip *a* there is a recess or depression *b*, coinciding with the inside dimensions of the lower end of the mold A. The mold A may, however, be used either with or without a base-plate, as desired.

The lip *a* on the base-plate C serves to prevent shifting or lateral displacement of the mold A upon the base-plate C, and the central recess *b* serves to give a desirable form to the lower end of the ingot, in the production of which the base-plate is used.

In practice the mold A is placed upon the plate C so that the lip will surround the lower end of the mold. The molten steel is now poured into the mold at the top. The heat from the same penetrates each wall of the mold, the thinner portions of the walls being raised to a higher temperature than the

thicker portions. Upon being cooled, as by means of a cold bath or otherwise, the outer surface of the walls contract more rapidly than the inner surface, which results in each wall resuming its normal condition as to thickness and form.

It has been demonstrated by actual tests that molds constructed as herein described may be used continuously three or four times as long as those of the prior art and under like conditions.

Having fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. An ingot-mold, having an inner surface, the vertical elements of which are straight lines, and having an outer surface, the vertical elements of which are continuously-curved lines, said latter elements being so continuously curved as to form a mold having side walls which are of least thickness at or slightly below a point midway between the top and bottom of said mold, as herein specified.

2. An ingot-mold, having integrant side walls, which have plane faces on the inner side, and continuously-curved faces on the outer side, the horizontal elements of said latter faces, being straight lines, and the vertical elements thereof being lines continuously curved so as to form a mold having side walls which are of least thickness at or slightly below a point midway between the top and bottom of said mold, as herein specified.

3. The combination with an ingot-mold, having an inner surface, the vertical elements of which are straight lines, and having an outer surface, the vertical elements of which are continuously-curved lines, said latter elements being so continuously curved as to form a mold having side walls which are of least thickness at or slightly below a point midway between the top and bottom of said mold, of a base-plate, having a central depression, and a vertical lip, the latter surrounding said depression, and adapted to surround the bottom of said mold, all substantially as herein described and for the purpose set forth.

WILLIAM MAYER.

Witnesses:
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