

M. T. MOONEY.
Ingot Molds.

No. 145,677.

Patented Dec. 16, 1873.

Fig. 1.

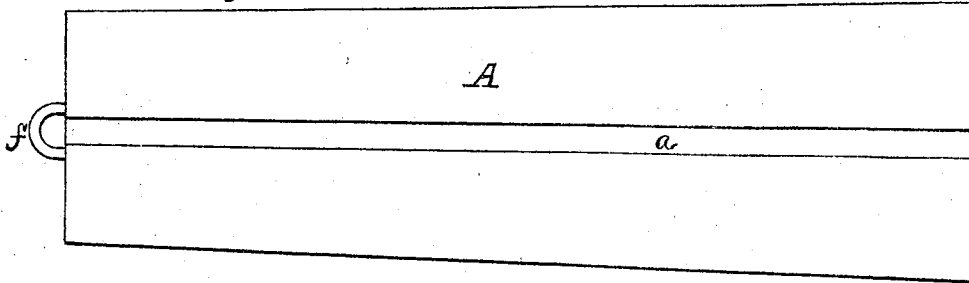


Fig. 2.

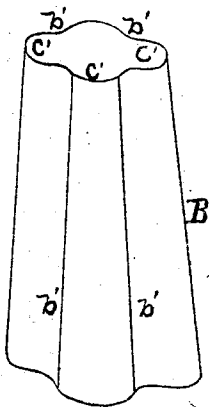
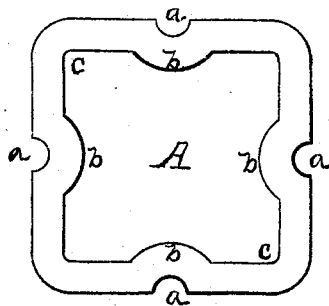


Fig. 4.

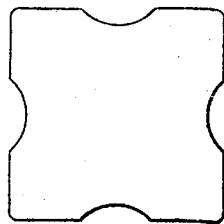


Fig. 5.

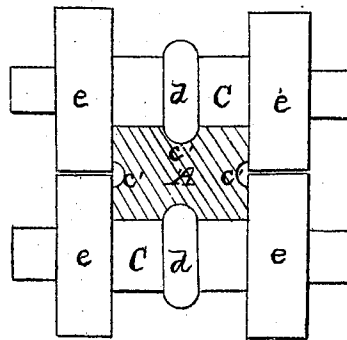
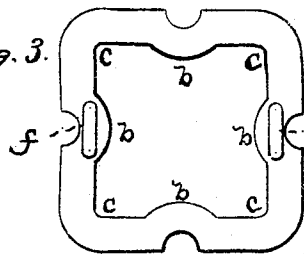


Fig. 3.



Witnesses.
E. H. Bates.
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UNITED STATES PATENT OFFICE.

MATHEW T. MOONEY, OF JOHNSTOWN, PENNSYLVANIA.

IMPROVEMENT IN INGOT-MOLDS.

Specification forming part of Letters Patent No. **145,677**, dated December 16, 1873; application filed August 19, 1873.

To all whom it may concern:

Be it known that I, MATHEW T. MOONEY, of Johnstown, in the county of Cambria and State of Pennsylvania, have invented a new and valuable Improvement in Molds for Steel Ingots; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a plan view of the ingot-mold. Fig. 2 is a bottom view of the mold and ingot. Fig. 3 is a top view of the same. Fig. 4 are views of the steel ingot. Fig. 5 is a view of the described rollers.

This invention relates to an improvement in the manufacture of cast-steel ingots, out of which to produce railroad-rails. My object is to improve the molds by forming elevations on the internal surfaces of their walls, and corresponding depressions or grooves externally, so that each wall presents one expansible corrugation, for the purpose of preventing the molds cracking from sudden expansion or contraction.

In the accompanying drawings, A represents my improved mold, which is quadrilateral in shape, and tapered from one end to the other, as shown by Fig. 1, and also provided with eyes, for the purpose of attaching crane-hooks to it, to lift it and carry it from one place to another. The four walls composing this mold are centrally corrugated—that is to say, each wall has a convex ribbed surface, *b*, formed on it internally, and a corresponding concavity, *a*, formed on it externally, as shown in the end views, Figs. 2 and 3. The corners *c* of the mold are more or less rounded. This mold is coated with soot or other carbonaceous substance, usually the practice before pouring the metal into it to form the ingots, for the purpose of preventing the steel adhering to or burning the surfaces with which it comes into contact.

The result of a casting in such a mold is represented in Fig. 4. It is an ingot, B, presenting four rounded corners, *c'*, and four longitudinal central indentations or grooves, *b'*; and it is tapered from one end to the other, correspondingly to the internal shape of the mold.

The corrugated shape of the mold prevents it from cracking under sudden extremes of heat and cold, and the knocks which are necessarily given to it for the purpose of loosening and separating the ingots from it.

The corrugations present a greater amount of superficial cooling-surface than is presented in the old and well-known flat-surface ingot-molds, and hence the process of cooling the cast ingots is greatly expedited.

The ingot formed in such a mold will cool more uniformly throughout than the ingots produced in the old mold, and hence the ingots are more homogeneous than ingots hitherto produced.

Furthermore, my improved ingots present on each side a central longitudinal groove, *b'*, as above stated, which not only increases surface in a given area, but also affords a means for centrally guiding them between rollers, which are represented in Fig. 5, but not herein claimed. The rollers C C are flanged at *e e*, to prevent undue lateral spread of the ingots. They are also constructed with annular beads *d*, which are centrally located between the flanges, and which are of a shape corresponding to the grooves *b'* in the ingots, that they may hold the ingots in place against lateral displacement while they are passed between the rollers.

Another advantage of the grooves *b'* in the ingots is, that during the heating and cooling of them in a furnace suitably adapted to the purpose, the grooves *b'* allow a free circulation of the highly-heated or cooler air beneath the ingots. The grooves *b'* in the ingots also allow them to be more firmly and safely grasped between the jaws of lifting-tongs than can be done with the old and well-known flat-faced ingots.

What I claim as my invention, and desire to secure by Letters Patent, is—

A mold corrugated internally and externally, in which to cast steel ingots, substantially as described.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

MATHEW T. MOONEY.

Witnesses:

D. D. KANE,
PHIL. C. MASI.