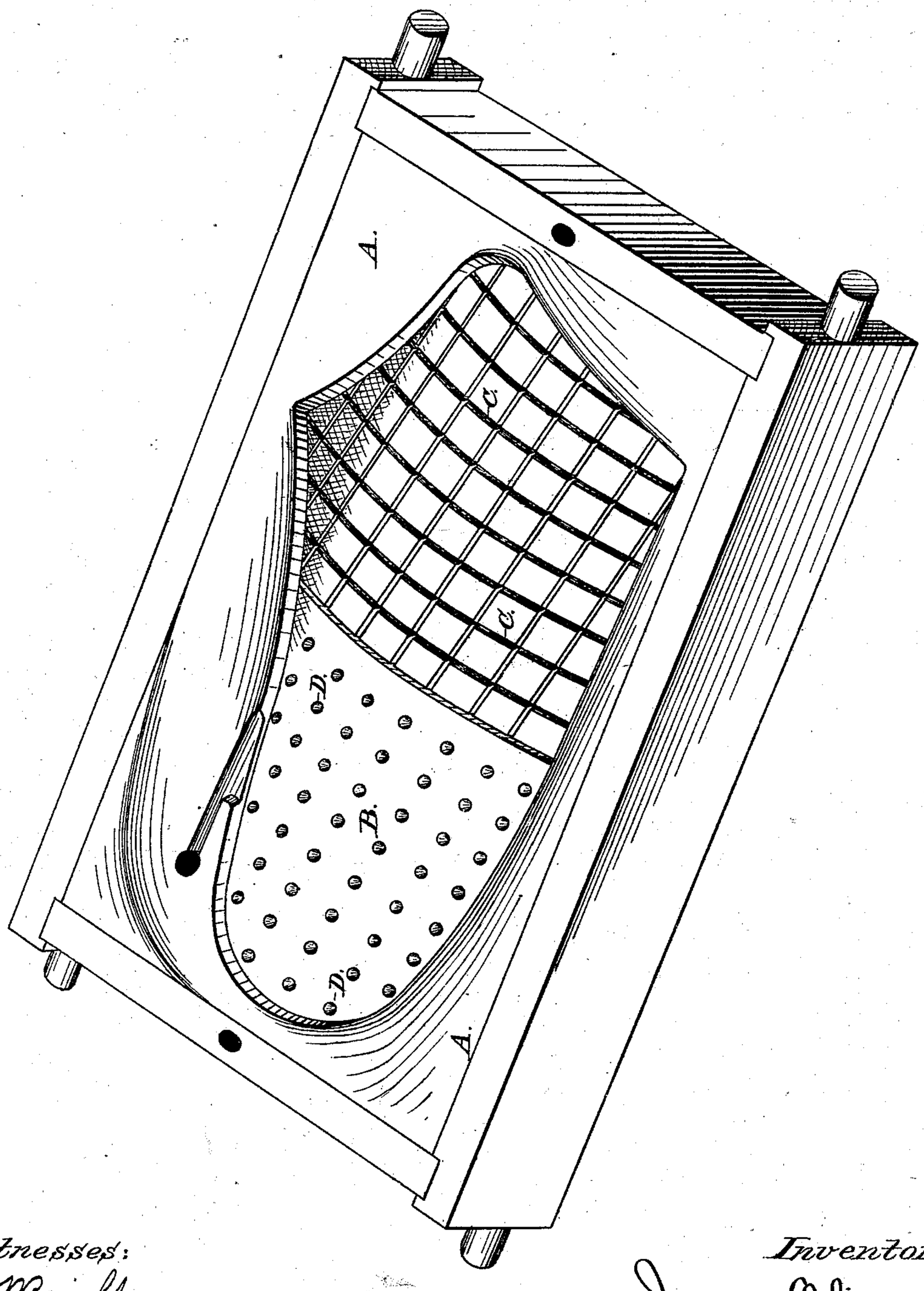
J. OLIVER.

CHILLS FOR CASTING MOLDBOARDS FOR PLOWS.

No. 189,874. Patented April 24, 1877.



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UNITED STATES PATENT OFFICE.

JAMES OLIVER, OF SOUTH BEND, INDIANA.

IMPROVEMENT IN CHILLS FOR CASTING MOLD-BOARDS FOR PLOWS.

Specification forming part of Letters Patent No. **189,874**, dated April 24, 1877; application filed March 29, 1877.

To all whom it may concern:

Be it known that I, JAMES OLIVER, of South Bend, in the county of St. Joseph and State of Indiana, have invented certain new and useful Improvements in Chills for Casting Mold-Boards; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to improvements in chills for casting mold-boards and the like; and consists in a chill provided with grooves or depressions of any form, sufficiently large and numerous to permit the melted iron to flow into the same, to ventilate the flask, and to prevent the casting from warping or blistering while the same remains in the flask.

In the drawing is represented a perspective view of the cope of a mold, showing a chill embodying my invention.

The object of my invention is to prevent the casting from warping, and at the same time to thoroughly ventilate the flask, and this I accomplish by providing the chill with grooves or depressions sufficiently large to allow the melted iron to flow into the same, the iron solidifying in said grooves serving as braces or cleats to keep the metal in place.

In the drawing, A represents the cope of the mold, and B the chill, which is preferably constructed of metal. It is provided with a series of grooves, C, of sufficient width and depth to permit the melted iron to flow into the same, and sufficiently numerous to serve the purpose of ventilation, and to retain the metal in place and prevent it from warping. Instead of these grooves or channels the chill may be provided with round, square, oval, or any other shaped depressions D, sufficiently numerous to accomplish the purpose served by the grooves. The chill, however, is preferably constructed with grooves.

The operation of the device is as follows: The melted iron when poured into the flask runs over the face of the chill and into the grooves, but does not entirely fill the same, for the reason that said grooves are partly filled by the steam and gas that have been generated in pouring the mold. The melted iron that enters the grooves, being formed into small thin bodies or streams, and being confined in these metal channels or grooves, rapidly chills and becomes solid before the larger body of melted iron, which flows over the lower or smooth face portion of the chill, solidifies. These small streaks of chilled iron serve as braces or cleats to keep the metal in place, and the large body of iron flowing over them, builds itself upon them, and comes in close contact with the smooth part of the chill lying between the grooves, until the space recently occupied by the pattern is entirely filled. By reason of the molten metal coming in close contact with the face of the chill, the whole face of the casting is hardened or chilled, and as thoroughly as when smaller grooves are employed, which serve the purpose of ventilation only. The grooves, as shown and described, therefore, serve the two purposes of preventing the casting from warping while in the flask, by forming on the casting the "cleats," as before described, and of ventilating thoroughly the flask. The "cleats" are formed by the cooling of the metal in the grooves, while the main body of the metal is still in a liquid state.

The difference between the invention herein described and the invention described in Patent No. 114,469, granted to me May 2, 1871, consists in the size of the grooves, which are larger in the invention hereinbefore set forth. The grooves as constructed in accordance with said patent are of a size which do not permit the molten metal to enter the same, and therefore can serve the purpose of ventilation only, as explained in said patent. But the grooves, as herein described, are made sufficiently wide and deep to permit the molten metal to enter the same, forming the "cleats" mentioned, which prevent warping. In addition, the grooves also serve the purpose of ventilation, inasmuch as the molten metal will not completely fill the grooves when poured against the chill, and the space thereby left affords the desired ventilation.

What I claim is—

A chill for casting mold-boards, flat plates,

&c., provided with a series of grooves or depressions of any form, sufficiently wide and deep to permit the molten metal to enter the same, forming thereby cleats or braces, whereby the casting is prevented from warping while cooling, and serving also as a means of ventilation, substantially as and for the purpose described.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES OLIVER.

Witnesses:
WILLIAM G. GEORGE,
SOLOMON KAHN.