

G. K. SMITH.
CHILLS FOR MOLD BOARDS.

No. 175,261.

Patented March 28, 1876.

Fig. 1.

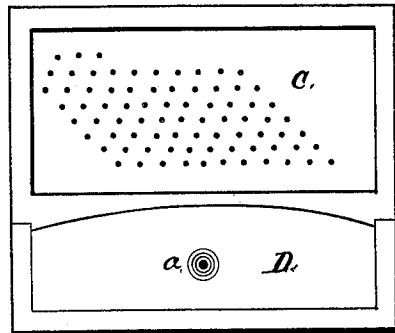


Fig. 2.

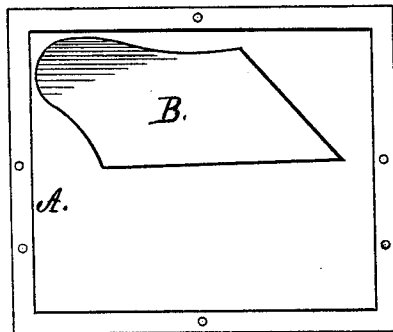


Fig. 3.

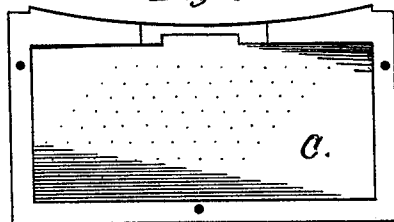
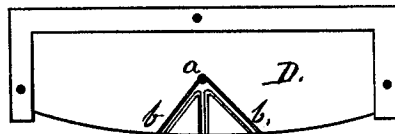


Fig. 4.



WITNESSES
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UNITED STATES PATENT OFFICE.

GEORGE K. SMITH, OF WATERLOO, IOWA, ASSIGNOR OF ONE-HALF HIS
RIGHT TO GEORGE W. MILLER, OF SAME PLACE.

IMPROVEMENT IN CHILLS FOR MOLD-BOARDS.

Specification forming part of Letters Patent No. **175,261**, dated March 28, 1876; application filed
October 19, 1875.

To all whom it may concern :

Be it known that I, GEORGE K. SMITH, of Waterloo, in the county of Black Hawk and State of Iowa, have invented a certain new and useful Improvement in a Perforated Chill-Plate or Form for Chilling Cast Mold-Boards for Plows; and the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents a top view of the flask for casting mold-boards, showing one portion of the cope, with the upper side of the perforated chill-plate, the other portion of the cope filled with molding-sand, in which is the sprue or gate for pouring the melted metal. Fig. 2 shows the drag or lower part of the flask, with the mold-board pattern in position, as molded, before being removed for putting on the perforated chill-plate and cope. Fig. 3 is the form or chill-plate, showing the under side that comes in contact with the casting, in which are the many small perforations for the escape of the air and gas. Fig. 4 shows the under side of sand-cope and sprue, or gate for pouring and conveying molten metal to the mold.

My invention consists in providing a series of very small holes or perforations through the chill-plate or block, against which the molten metal comes in contact, for chilling the surface, so as to give vent for the air and gas to escape while the mold is filling, thereby effectually securing a smooth hard surface, free from wrinkles and indentations.

To enable others to make and use my invention, I will describe it more in detail, referring to the several figures in the drawings, and to the letters marked thereon.

I make the under portion of the flask A (usually called the "drag" by iron-founders,) of a suitable size to receive and mold the pattern B, there being provided a suitably-formed molding-board, on which to place the pattern B and fill the drag A when the flask is turned upside down and the molding-board removed. The portion of the flask containing the perforated chill-plate or form C is then placed on the drag A, over the pattern

B, and also the other portion of the flask D is put in position on the drag and filled with sand, the gate *a*, and sprue *b b* being made in this portion of the flask, they both together forming the cope or upper portion of the mold. The form or plate C, that makes the chill-block, is made thick enough to keep it from warping, and shaped to conform to the face of the pattern B, and is made perfectly smooth where the melted iron comes in contact with it, and is perforated with series of rows of very small holes, *c c c*, not larger than an ordinary pin or small knitting-needle on the smooth face *c'*, but may be larger on the other or top side, the object being to let the air and gas escape rapidly from the mold, while the molten metal is being poured in, the perforations being so small that the metal will not run into them, but chill perfectly smooth as the face of the chill-block.

It is well known to foundrymen that in casting on a chill the hard surface will generally be very uneven, wrinkled, wavy, and often indentations caused by the air and gas, sufficiently deep to spoil the castings, and this is especially the case in casting so broad a surface in so thin a plate as a mold-board for a plow, for in the ordinary process the melted metal, coming in contact with the chill-block, generates a gas on the cold iron, which, together with the air in the mold, has no way of escape, and causes the difficulty.

By my invention, perforating the chill-plate or block C, the aforesaid difficulties are entirely remedied, and the chilled face of every mold-board will be as smooth and perfect as any casting can be made; and, furthermore, by my improved method of having the chill-block in the cope, not using any sand above the chill-block, and a separate cope for forming the gateway and sprue, more than twice the amount of chilled work can be molded or cast in a given time than by the ordinary process, as one chill-block cope may be used for any number of the molded flasks, by sponging it, and removing it to another immediately after the metal is poured.

What I claim is—

The form or chill-block C, the same being perforated with many very fine or small holes over the entire surface, of the face and size of the pattern of the mold-board to be cast on the chill, substantially as herein shown and described, for the purpose set forth.

In testimony whereof I hereunto subscribe

my name to the above specification for application for Letters Patent.

GEORGE. K. SMITH.

Witnesses :

MANSFIELD M. STURGEON,
EDWARD GEORGE.