H. & W. E. BLEECKER & S. D. VOSE.

MOLD FOR CASTING.

No. 6,969. PATENTED DEC. 25, 1849.

Fig 1.

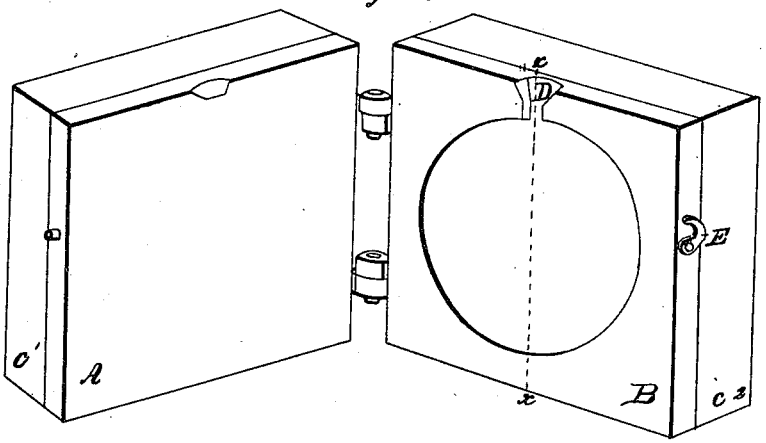
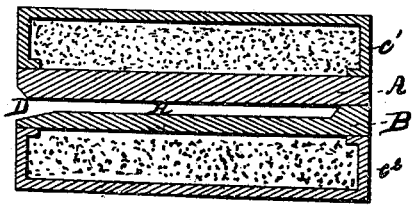


Fig 2.



UNITED STATES PATENT OFFICE.

HENRY BLEECKER, W. E. BLEECKER, AND SAML. D. VOSE, OF ALBANY, NEW YORK.

IMPROVED PROCESS OF MAKING THIN IRON CASTINGS.

Specification forming part of Letters Patent No. **6,969**, dated December 25, 1849.

To all whom it may concern:

Be it known that we, HENRY BLEECKER, W. E. BLEECKER, and SAML. D. VOSE, of the city and county of Albany, and State of New York, have invented a new and useful Improvement in Manufacturing Iron Castings; and we do hereby declare that the following is a full and exact description, reference being had to the annexed drawings, affixed to and making part of this specification.

Figure 1 is a perspective view of the open mold standing on its edge, showing the surfaces between which the melted iron is poured, with the boxes or knapsacks of non-conducting substance attached. Fig. 2 is a vertical section of the complete mold closed through the line *x x*, Fig. 1.

Similar letters in both figures refer to corresponding parts.

The nature of our invention consists in the manner of using a combined mold in repetition for the purpose of casting light cast-iron plates.

The following is a description of the invention or improvement: Two blocks of iron or metal, A and B, fitted closely and faced, are hinged or connected together on their edges in the manner shown in the drawings, Fig. 1, the process of opening or closing being performed like the opening and shutting of a book or the raising or depressing of a lid. A hollow space, H, is then formed in or between these two blocks, which, when they are closed together, correspond in size and shape to the pattern or casting wanted. In casting straight or uneven and configurated plates the mold is made to inclose a space that exactly corresponds with that which would exist in an ordinary mold of sand after any given pattern had been molded and withdrawn and the sand mold closed together. The surfaces of the mold may be cut or engraved from any given measure or model, but for configurated plates can be formed more readily and cheaply by taking false casts from a pattern in plaster, and then casting these false casts in metal and fitting and connecting them together. When the mold is thus formed, a channel or sprue is cut leading from the cavity to some point at the outer edge of the mold, as exhibited in Fig. 1, letter D, to admit the iron when poured into the mold. Before using the mold the cavity and sprue are coated on both sides with smoke. In order to obtain plates of a desirable softness, we heat the mold to a given temperature before using it, which is kept up by the process of repeated castings. To equalize the high temperature of the mold and to assist in maintaining a high and uniform heat, we apply a knapsack or covering to the outsides of the mold, which consists of a stratum of non-conducting substance (of ground pumice-stone or earth) inclosed in a box or frame, c' c^2, and fastened to the metal blocks. The mold is then clamped together by hooks E, or by any other convenient method, and is then ready for use. A single mold thus prepared answers for an indefinite number of plates, and is permanent in its character. The surfaces of the castings are bright and smooth and require no cleaning or scraping. The mold being properly fastened together, it has sufficient strength to resist the pressure or unequal straining of the metal in its liquid state, and therefore prevents inequality of thickness, which renders castings liable to crack. The mold being smooth and solid, no loose particles can mingle with the poured metal to render it unsound, and there can exist no decomposition of water or gases. When the mold is in operation, the castings are thrown out hot as fast as the iron assumes a solid form. In the first few operations of the mold the coating is laid on by smoking the surfaces with a torch of oil; but when the mold becomes heated to an intense redness, liquid oil is thrown on, which immediately ignites and burns off, leaving a residuum of smoke or carbon on the surface. This coating resists the action of the iron and prevents adhesion between the mold and the casting.

The design of the knapsack is to retard the natural conducting-power of the metal part of the mold. The non-conducting stratum confines the heat with which the mold becomes surcharged, checking the too sudden crystallization of the fused metal, and preventing the chilling or hardening of the casing. Besides assisting to produce soft castings, this knapsack maintains an equality of heat between the inner and outer sides of the parts of the mold, and by equalizing the expansion and contrac-

tion of the inner and outer sides of the mold-blocks prevents the mold itself from warping and cracking.

What we claim as our invention, and desire to secure by Letters Patent, is—

The process of making thin or light castings of iron by pouring the metal into a mold of iron that surrounds the article to be cast entirely, with the exception of the gates, said mold being previously smoked on the inside, and provided with a case or knapsack which contains a non-conducting material, the whole process being conducted substantially in the manner and for the purposes herein set forth.

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In presence of—
HENRY L. WILSON,
J. W. SESSIONS.