H. R. BENWELL.

Chill-Mold for Casting Metal.

No. 198,925. Patented Jan. 8, 1878.

Fig2

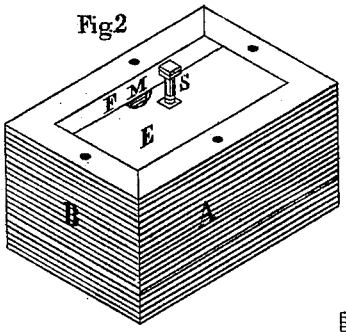


Fig1

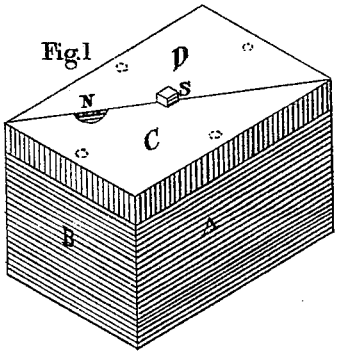


Fig. 7

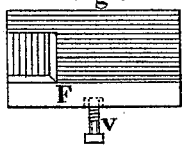


Fig. 6

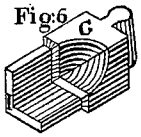


Fig 3

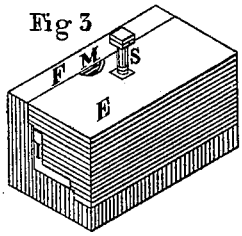


Fig. 4

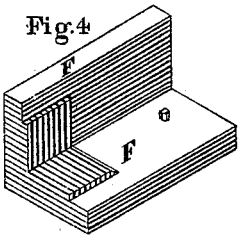


Fig. 5

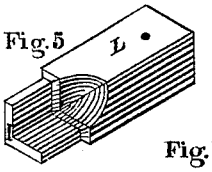


Fig. 12

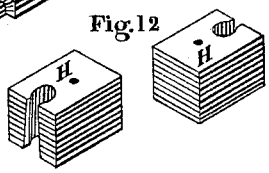


Fig. 8

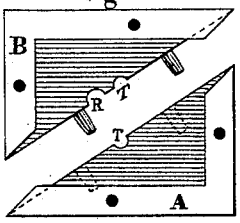


Fig. 9

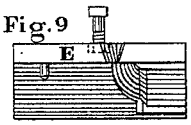


Fig. 10

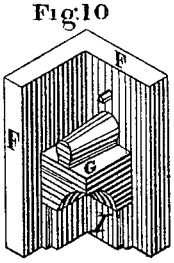


Fig. 11

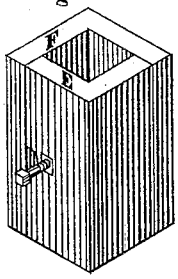


Fig. 13

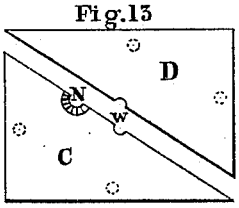
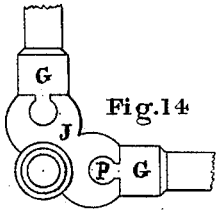


Fig. 14



Witnesses: Wm. S. Henson, John D. Toppin

Inventor: Henry Robert Benwell

UNITED STATES PATENT OFFICE.

HENRY R. BENWELL, OF NEWARK, NEW JERSEY.

IMPROVEMENT IN CHILL-MOLDS FOR CASTING METAL.

Specification forming part of Letters Patent No. **198,925**, dated January 8, 1878; application filed December 12, 1877.

To all whom it may concern:

Be it known that I, HENRY ROBART BENWELL, of the city of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in the Production of Chill-Molds, which may be used for a variety of purposes, which improvements are fully set forth in the following specification, reference being had to the accompanying drawings.

The object of my invention is to produce sets of molds composed of several parts like Figure 3 (used for certain special purposes) from molds originally made by the use of machinists' tools, and afterward reproducing new parts thereof, for use when required, by temporarily combining the extra piece L and some parts of the mold with a box, (shown complete at Fig. 1,) thereby enabling me to replace any worn-out part of the mold, always taking care to cast said new parts while the pieces required to form the mold are in good condition, which new parts are in their turn used, in combination with the box, Fig. 1, and the extra piece L, as parts of molds for producing other parts required to make complete molds identically like the originals, and so on indefinitely, being able to reproduce new sets of molds without again requiring the use of machinists' tools with their contingent expenses.

I will now show a special application of my system of producing castings from molds and molds from castings combined with the box, Fig. 1, the castings being temporarily used as a part of a mold for that purpose, whereby I am enabled to produce unlimited quantities of special castings identically alike.

The special castings (for which I will now show the mode of producing the molds used in casting them) are such as I use in manufacturing metallic bedsteads, &c., and are shown at G, Figs. 6 and 14, the mold used for said special castings being one of a number of molds made by the same system, and used specially in manufacturing bedsteads, &c.

For illustration, a number of castings, technically known as "dovetails," which are cast onto the ends of the angle-iron frame-pieces, and shown at G, Figs. 6 and 14, are cast in the mold shown at Fig. 3, which mold is formed by the pieces F E H, Figs. 4, 9, 12, the dovetail part of G, Fig. 6, being formed in the end of H, Fig. 12. The angle-iron frame-piece I being inserted a suitable distance into the mold, Fig. 3, at I, and the melted metal, being poured into the gate M, flows round the angle-iron, and by its contraction on cooling becomes firmly attached thereto. Their use is shown at Fig. 14, two of them dovetailing into a corner-piece, J, cast upon the leg or pillar P of the bedstead.

If it is required to cast a new piece, H, Fig. 12, a dovetail, G, Fig. 6, is placed as shown at Fig. 10, and, being inclosed by the two parts E and F, it is placed on end, as shown at Fig. 11, and the hot metal being, poured into the open upper end and filled up level, then, when cooled, the piece H will be produced ready for use without any other work or fitting. The box, Fig. 1, is not required for casting this piece H.

I will now suppose it is required to make a new part, E, of the mold, Fig. 3. I first place the part F, Fig. 4, inside the box formed of the pieces A B, Figs. 2 and 8, and then place the extra piece or casting L, Fig. 5, inside F, Fig. 4, and cover the box with the two pieces C D, Fig. 13, and, having inserted the screw S through the hole W in the cover and attached a nut inside, (*vide* Figs. 1 and 2,) then pour the metal through the gate N, Fig. 1, and the part E, Figs. 3 and 9, will be produced complete, with the nut attached thereto. I next suppose it is required to make a new part, F, Figs. 3 and 4, which is done by first putting the parts A B, Figs. 2 and 8, of the box together, and inserting in the hole T through the bottom a screw, S, and turn the parts E L, attached together, with the upper side down—that is, with the nut side down—and place them inside the box A B, and with the screw S fasten the part E there in its place, the other piece, L, Fig. 5, (made especially for this purpose,) being attached to E by pins; then put on the covers C D, having a screw and nut fixed through the center hole in the upper side, as before, the nut being inside the covers; then pour the melted metal through the gate N, and, when cooled and set, the part F will be produced with its nut attached all complete and ready for use. These screws and their nuts are required, in conjunction with other suitable devices, to aid

in attaching the molds temporarily to the ends of the bedstead-frames while casting the dovetails G, Fig. 14, to the ends of said frames. They are also used by me, as described above, to aid in holding the several parts of the sectional molds together when casting new parts of said molds.

The mode hitherto and now used in making new molds is by making castings from wooden or metal patterns in sand, finishing them by using machinists' tools, aided by plaster-of-paris casts, with much skill and patience, often requiring several days to make a single part of the mold complete for use, whereas by the mode above described the shrinkage operates both ways, and keeps all the new parts identical in size with the original molds.

I claim—

1. The combination of a chill-mold composed of several parts, as E F H, with a casting produced by it, as G, as and for the purpose set forth.

2. The combination of a sectional chill-mold, as E F H, and an extra piece, as L, and box A B C D, Fig. 1, as and for the purpose set forth.

HENRY ROBART BENWELL.

Witnesses:
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