

E. H. BABCOCK & J. C. WHITING.

ANNEALING PLOW MOLD BOARDS.

No. 178,044.

Patented May 30, 1876.

Fig. 2.

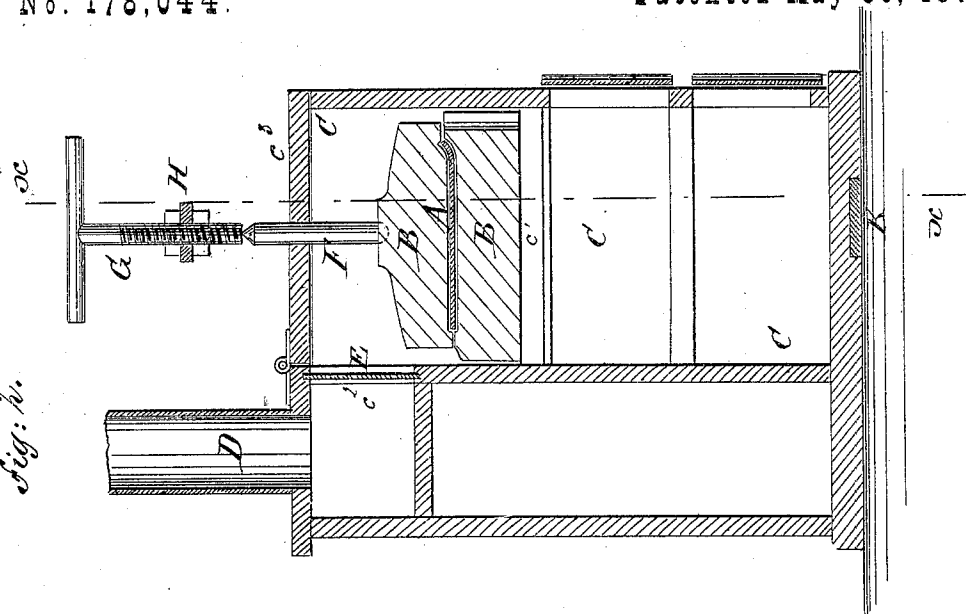
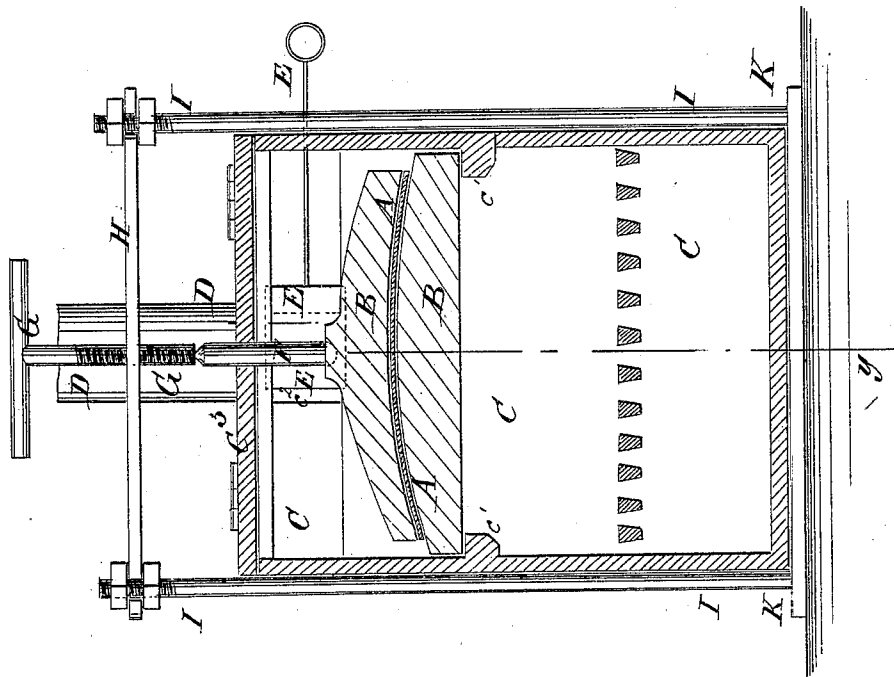


Fig. 1.



WITNESSES:

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IMPROVEMENT IN ANNEALING PLOW MOLD-BOARDS.

Specification forming part of Letters Patent No. **178,044**, dated May 30, 1876; application filed February 14, 1876.

To all whom it may concern:

Be it known that we, ELI H. BABCOCK and JOHN C. WHITING, of Canandaigua, in the county of Ontario and State of New York, have invented a new and useful Improvement in the Manufacture of Chilled Plows, of which the following is a specification:

Figure 1 is a vertical cross-section of our improved apparatus, taken through the line *xx*, Fig. 2. Fig. 2 is a vertical longitudinal section of the same, taken through the line *yy*, Fig. 1.

Similar letters of reference indicate corresponding parts.

The object of this invention is to enable chilled mold-boards and other chilled castings to be cooled without warping or being strained, and thus keep them in exactly the required shape.

The invention consists in the process of annealing chilled castings by removing them from the chills as soon as they are cool enough to be handled, placing them in hot forms, and cooling them under pressure, and under a gradually-diminishing heat, as hereinafter fully described.

The mold-boards A or other castings are cast in the usual way, and while still red hot, or only cooled enough to enable them to be handled, they are removed from the chills, and are placed in forms B, of exactly the required shape, and which are red hot, or hot enough to communicate their heat to the castings. The forms B are heated in an oven, furnace, or arch, and their heat is kept up for a time after the casting A has been put into them, until the castings conform exactly to said form, which is accomplished by pressure applied to the forms, and kept up until the castings are cooled.

In the form of oven shown in the drawings, C is the fire-chamber, in the upper part of which are placed the forms B, resting upon cleats or bars *c*¹, attached to the walls of the said oven. From the upper part of the oven, above the forms B, an opening, *c*², leads into the flue D, for the escape of the products of combustion. The opening *c*² is provided with a damper, E, so that it may be closed and opened as required. The forward part *c*³ of the top of the oven C is hinged to the stationary part of said top, to give access to the in-

terior, for putting in and taking out the forms B. In the top of the upper form B is formed a socket to receive the lower end of a rod, F, which passes up through a hole in the cover *c*³, and upon its upper end rests the concaved lower end of a hand-screw, G. The screw G passes through a screw-hole in a cross-bar, H, the end parts of the side edges of which are notched to receive the rods I, where they rest upon collars or nuts, and may be secured in place by nuts screwed upon the upper ends of the said rods I, and by which the resistance to the pressure is sustained. The rods I pass down at the sides of the oven C, and their lower ends are attached to a bar, K, or to some other substantial support.

This arrangement allows any desired pressure to be applied to the forms, so as to bring the casting to and keep it in the proper shape until cooled.

We are aware that it is not new to cast metal in molds, and after reheating in a furnace to press them in dies to produce the desired shape; but in the process of chilling mold-boards the iron chill forms one side of the mold, and causes the chilled surface to contract much more rapidly than the other surface. We find that the heat must be uniformly distributed through the casting, so as to produce an even shrinkage, and thus prevent warping or fracture. We accomplish this by our hot forms, in which the heat is gradually reduced, the first heat being preserved. We are thus enabled to make mold-boards comparatively light, while those in use are made heavy, or re-enforced with ribs.

Having thus described all that is necessary to a full understanding of our invention, what we claim is—

The process of annealing articles of cast-iron by removing the casting from the mold while at a red heat, and compressing it between hot conforming-dies, the initial temperature being gradually reduced while the casting is still under pressure, substantially as herein set forth.

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Witnesses:

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