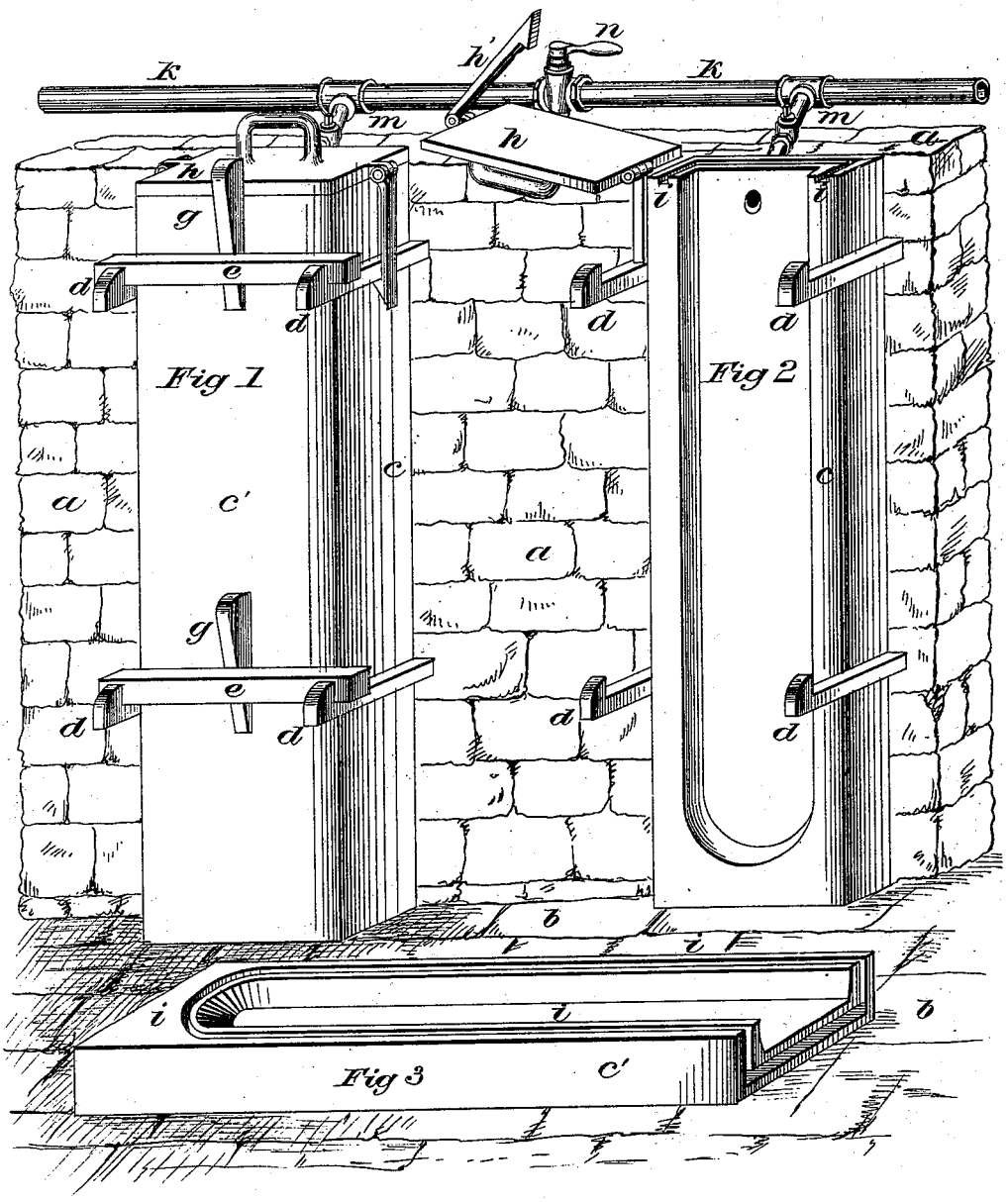
B. T. BABBITT.

Ingot-Mold.

No. 204,783. Patented June 11, 1878.



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BENJAMIN T. BABBITT, OF NEW YORK, N. Y.

IMPROVEMENT IN INGOT-MOLDS.

Specification forming part of Letters Patent No. **204,783**, dated June 11, 1878; application filed December 27, 1877.

To all whom it may concern:

Be it known that I, BENJAMIN T. BABBITT, of the city, county, and State of New York, have invented certain new and useful Improvements in Apparatus and Process for Manufacturing Steel, and for other purposes, which improvements are fully set forth in the following specification and accompanying drawings.

The objective feature of my invention is to improve the present generally employed apparatus and system of single, detached, and movable molds for casting steel ingots, and employ peculiar molds fixed in position, and constructed in a manner so that they may be readily united and securely locked, and as quickly dismounted to remove the ingot or casting at will; and, further, to improve the homogeneity of the casting, I employ with such detached and fixed molds fixed pipes, united with the molds, and any convenient apparatus to exhaust the air therefrom during the molding process.

My invention consists in providing sealed molds which, when closed, shall exclude atmospheric air, through the agency of a vacuum, by drawing all the air or gas enveloped within the fluid metal to the top, and insure a more solid and homogeneous ingot or casting when either is removed from the mold.

I construct the mold proper of cast-iron or other proper material, in one or more parts, as may be deemed best; but I prefer for steel ingots that the mold be made in three parts, divided from top to bottom, and provided with binding-straps, or contrivances to secure the parts together, the joint of the mold being closed, so that no air can possibly enter the mold from without, the top being also capped and sealed, for which sealing I make use of clay mixed with water to a proper consistency, for the efficiency of which purpose I form a chambered or grooved recess within the surface of the butting edges, into which the prepared wet clay is laid before the parts are united.

I form a tuyere through one side of the mold, near the top, to receive an exhaust-pipe from the vacuum-vessel. The molds, for convenience, should stand within a depressed recess below the main floor of the works, and convenient to the main vacuum-pipe, from which branches with stop-cocks extend to the molds, which may be coated or lined with fire-clay, asbestus, or other proper material to protract the cooling process.

The metal may be poured into the open mold, the cover placed upon it, and the vacuum-cock opened as quickly as possible; but in some cases it will be preferable to have a funnel-shaped sprue through the cover, which being fixed to the empty mold and the vacuum turned on, the metal will pass into its place under atmospheric pressure.

In the drawing, Figure 1 shows an ingot-mold closed for use and in position. Fig. 2 shows a mold open and dismounted, and Fig. 3 represents the front part of this mold laid on its back.

a shows the wall of the building, pit, or other fixed object against which the molds are supported in position; and *b*, the floor. *c c* show the back part of the molds, and *c' c'* the front and movable portion. *d d* are fastening-lugs, secured to the wall on each side of the molds, with their outer ends turned up to receive the latch-bars *e e*, to bind the molds firmly by means of the lock-wedges *g g*, driven between the bars *e* and the mold.

h h represent hinged covers, with locking-clamps *h'*, to secure them firmly. *i i* show grooves in the butting edges and top of the front mold, *c'*, and top of the back one, *c*, to receive sealing-clay, to make the mold tight when locked together. *k k* show an iron pipe leading from an air-pump or vacuum-chamber, and *m m* are stop-cocks in branch pipes leading from *k* to the upper part of the mold-chamber.

n represents a stop-cock, for shutting off a portion of the train of molds entirely when necessary.

I do not claim, generally, the use of a vacuum in a mold for casting steel or other metal; but

What I do claim, and desire to secure by Letters Patent, is—

In an ingot-mold, the combination of the fixed part *c*, supported vertically at its back, and having a branch air-exhaust pipe attached thereto, with the movable part *c'*, and with the brackets, cross-bars, and wedges, substantially as and for the purpose set forth.

B. T. BABBITT.

Witnesses:
J. B. HYDE,
CHAS. G. HEISER.