(No Model.)

W. R. WALTON.

MOLD FOR CASTING COPPER INGOTS.

No. 315,192. Patented Apr. 7, 1885.

Fig. 1.

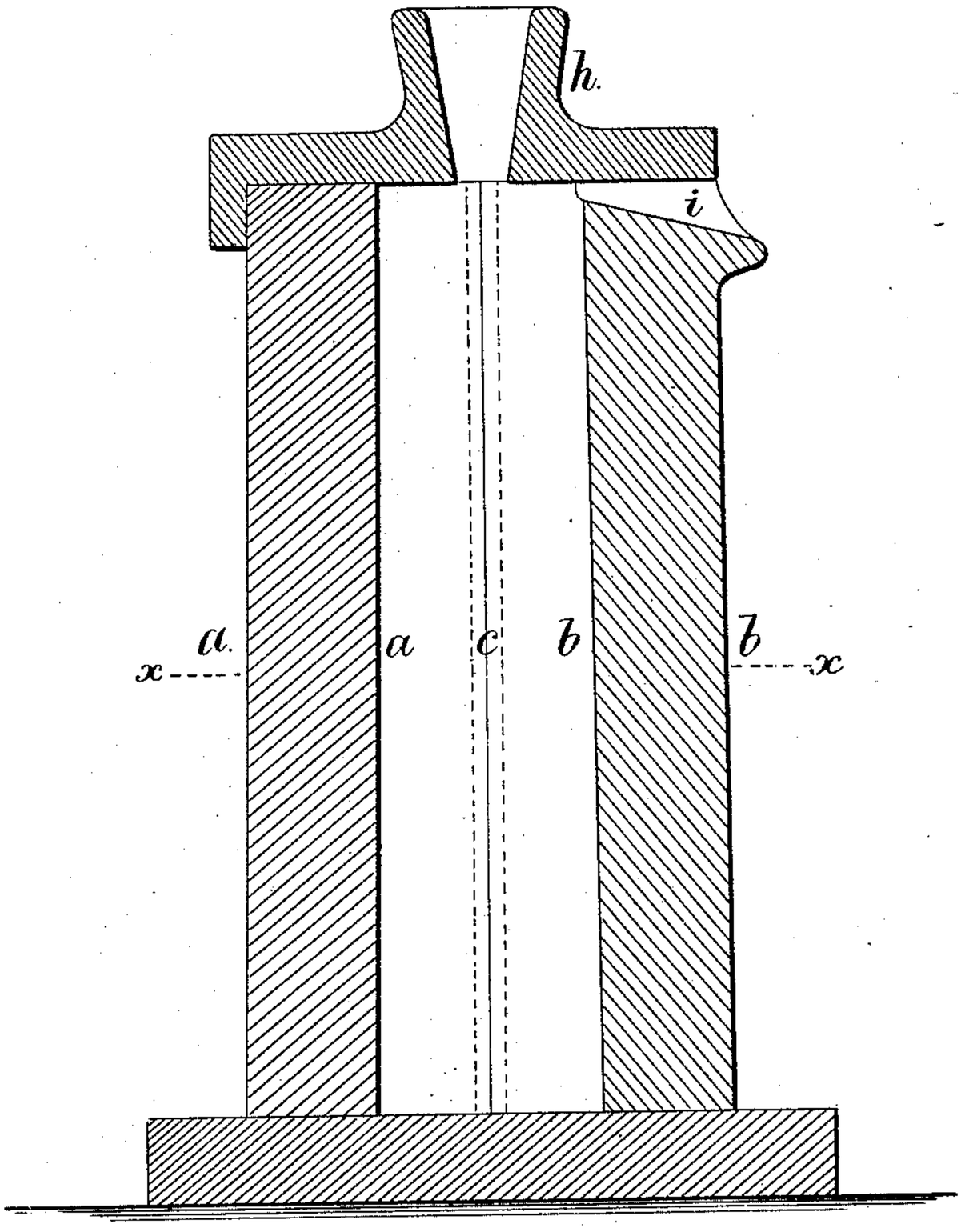
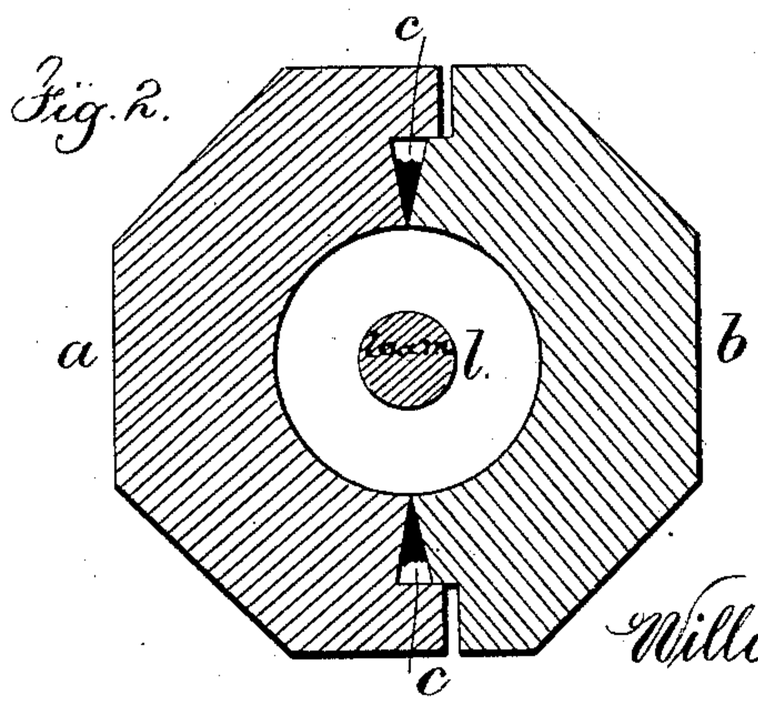


Fig. 2.



Witnesses

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UNITED STATES PATENT OFFICE.

WILLIAM R. WALTON, OF ANSONIA, CONNECTICUT, ASSIGNOR TO THE ANSONIA BRASS AND COPPER COMPANY, OF SAME PLACE.

MOLD FOR CASTING COPPER INGOTS.

SPECIFICATION forming part of Letters Patent No. 315,192, dated April 7, 1885.

Application filed December 22, 1884. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM ROBERT WALTON, a citizen of Great Britain, residing in Ansonia, in the county of New Haven and State of Connecticut, have invented an Improvement in Molds for Casting Copper Ingots, of which the following is a specification.

In casting copper ingots, especially tubular ingots, great difficulty has been experienced in producing perfectly sound ingots. Several causes have conspired to this end. The metal has usually been poured in through a gate, and the mold is filled up and the metal in the mold and in the gate remain as one, and the portion in the gate becoming chilled suspends the ingot, and the contraction causes the ingot to be lifted, and the copper being in a partially-hardened condition is injured or cracked. This injurious effect is increased by the small fins that are thrown off from the ingot into the partially-open joint between the parts of the mold.

The object of my invention is to prevent the formation of fins upon the ingot, to allow the casting to contract, and to supply to the top of the ingot a surplus amount of copper, so that the heat of the copper at the top of the ingot may be increased or maintained after the mold is full, thereby allowing the lower part of the ingot to chill or contract while the upper part of the metal is in a fluid condition.

In the drawings, Figure 1 is a vertical section of the mold, and Fig. 2 is a sectional plan of the same at the line *x x*.

The mold is of the proper size and shape. It is usually circular and tapering, the upper part being of less diameter than the lower part, to allow the ingot to shrink and settle as the metal solidifies. The mold is made in two parts, *a b*, the edges of which are made to interlock at *c c*, as usual, with the exception that the edges of the metal, instead of coming together flat and parallel to each other, are beveled backwardly, so that only the metal parts at the inner surface of the mold come together like two knife-edges.

In preparing the mold for the melted copper the beveled edges of the mold are luted with a putty of china-clay, and the interior surface painted or smeared over with china-clay mixed with oil, and then dusted with finely-pulverized charcoal. When the two half-molds are put together, the luting upon the beveled edges is pressed backwardly and the joint is closed entirely tight. Should there be any clay that is pressed inwardly, the beveled knife-edges nip off the luting and it falls away. The gate *h* at the top of the mold is of ordinary character, and at one side of the mold there is an overflow-opening, *i*. When the ingot is to be tubular, a core, *l*, is made of loam in the usual way, but it is coated with a mixture of china-clay and pulverized charcoal. The clay is entirely impervious to the melted copper, and under the action of heat it contracts as the carbon burns out; and hence the core shells out of the casting easily when the ingot is cold, thus dispensing with the old scraping process. When the copper is poured into the mold, the same gradually rises, the charcoal of the lining burns, and any pieces of luting float, and when the mold is full the surplus, instead of accumulating in the gate, runs off by the overflow-opening *i*, and the pouring is preferably continued until the ingot has partially cooled or contracted at the lower end. This prevents the ingot being suspended by the gate, and allows such ingot to contract in the mold and remain solid and free from cracks and imperfections.

I claim as my invention—

1. The ingot-mold having the interlocking edges beveled backwardly from the inner surface of the mold to receive the luting, and an overflow-opening at the top of the mold, substantially as set forth.

2. The mold for copper ingots formed of metal and having a surface of china-clay and oil, and a dressing of finely-pulverized charcoal, as and for the purposes set forth.

3. A tapering mold for copper ingots having the largest end at the bottom to allow the ingot to contract downwardly, and a lateral escape between the pouring-gate and the top of the ingot-mold for allowing the copper to overflow, substantially as and for the purposes specified.

Signed by me this 15th day of December, A. D. 1884.

WILLIAM R. WALTON.

Witnesses:
A. S. TERRY,
JOHN W. DREW.