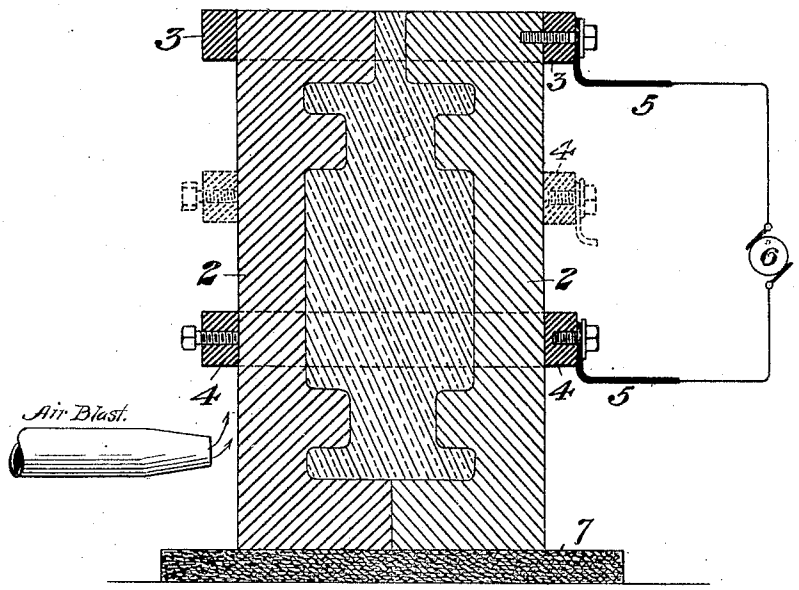
(No Model.)

A. E. HUNT.

MANUFACTURE OF CASTINGS.

No. 575,115. Patented Jan. 12, 1897.



WITNESSES

INVENTOR

Alfred E. Hunt
by Bakewell & Bakewell
his Attorneys.

UNITED STATES PATENT OFFICE.

ALFRED E. HUNT, OF PITTSBURG, PENNSYLVANIA.

MANUFACTURE OF CASTINGS.

SPECIFICATION forming part of Letters Patent No. 575,115, dated January 12, 1897.

Application filed September 21, 1896. Serial No. 606,471. (No model.)

To all whom it may concern:

Be it known that I, ALFRED E. HUNT, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in the Manufacture of Castings, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, which shows in vertical section apparatus adapted to the practice of my invention.

In my process of making castings I heat the mold by passage of a current of electricity therethrough, so as to bring it to or more nearly to the temperature of the molten metal, and then cool the same progressively toward the top or vent of the mold by varying the path of the current, assisting the cooling action, if desired, by a cooling liquid or by an air-blast. By this method very sound castings of intricate shape can be produced, even from such metal as aluminium, without cracking or breaking the metal as it solidifies.

The method may be applied to practical use in a variety of ways. In the accompanying drawing I show a simple apparatus suitable for the purpose and shall now describe the same, premising that my invention is not limited thereto, but may be modified by changing the apparatus and the manner of its use.

In the drawing, 2 represents a mold made of material which will conduct electricity and has sufficient electrical resistance to cause the generation of heat when a current is passed through it. Cast-iron will serve the purpose well.

3 4 are contact-pieces attached to the mold. The upper contact 3 may be fixed, and the contact 4 is movable along the mold toward and away from the other.

5 5 are the conductors of an electric current, connected, respectively, with the contacts 3 and 4 and leading from a suitable electric generator 6. The mold is set upon a support 7, of asbestos or other non-conducting material.

The operation of the apparatus is as follows: The contact 4 may be set on the mold at or near the lower portion thereof, and a current of electricity is passed through the circuit, so as to heat the mold to a heat preferably about that of the molten metal of which the casting is to be made. The metal is then poured into the mold and the contact 4 moved toward the contact 3, so as to shorten the circuit through the mold and molten metal and to cause the upper part to be heated by the current while the heating influence is removed from the lower part. The lower part will then cool, and its cooling may be accelerated by water or an air-blast. The contacts may then be caused to approach still more, so as to expose more of the lower part of the mold to the more rapid cooling, and so the operation may be continued until the casting becomes solid and sufficiently cold to prevent unequal shrinking. As the chilling of the metal progresses slowly from the bottom to the top, the casting shrinks in like direction and sound castings are produced. The whole operation is economical and very efficient, especially when it is conducted in places where electrical energy is cheap.

I do not limit the broader claims of this specification to the preheating of the mold by the current before the metal is poured, since such heating may not be begun until the metal is poured; nor do I intend to exclude from the broader claims the use of apparatus wherein, by reason of low conductivity of the material used for the mold, the current or the bulk thereof is caused to pass through the metal of the casting, heating it or maintaining it heated in parts, as above described.

I claim—

1. An improvement in the art of casting metal which consists in heating the same by first passing a current of electricity through the conductive material of the mold and substantially through the entire length of the mold, and then progressively shortening the portion included in the electrical circuit; substantially as described.

2. An improvement in the art of casting metal which consists in heating the same by first passing a current of electricity through

the conductive material of the mold and then excluding the bottom part of the mold only from the circuit, substantially as described.

3. Apparatus for casting metal, the same comprising a mold of conductive material, an electric circuit in which the mold is included, and contacts on the mold connected with said circuit, one of said contacts being movable toward the other to vary the length of the mold included in the circuit.

In testimony whereof I have hereunto set my hand.

ALFRED E. HUNT.

Witnesses:
EDITH O. KUESTER,
G. I. HOLDSHIP.