

J. B. BAIRD.
OHILL.

APPLICATION FILED JULY 6, 1908.

972,429.

Patented Oct. 11, 1910.

Fig. 1.

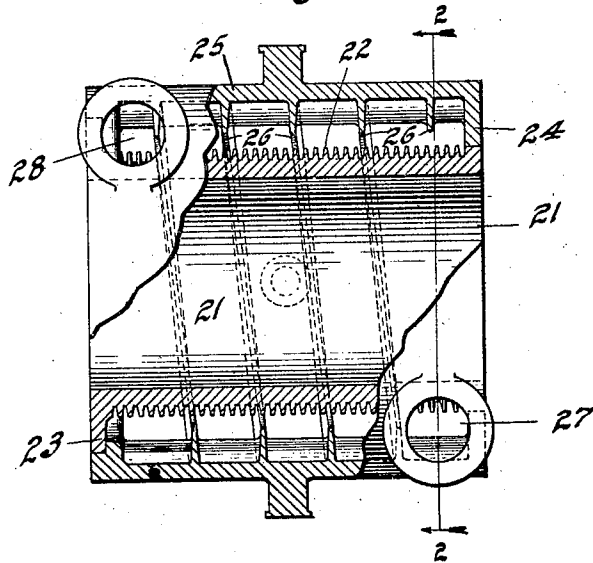
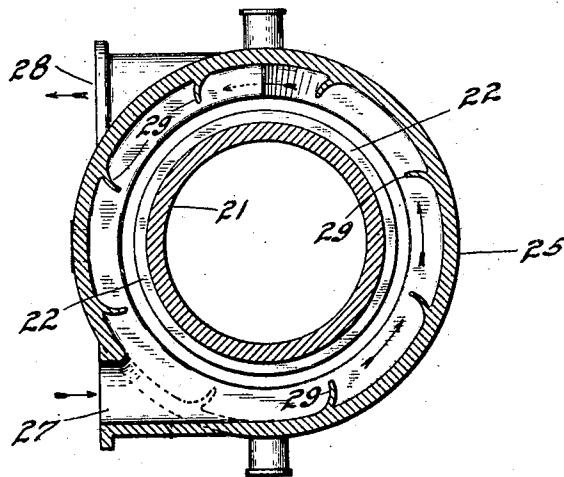


Fig. 2.



Witnesses
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UNITED STATES PATENT OFFICE.

JAMES B. BAIRD, OF CANTON, OHIO.

CHILL.

972,429.

Specification of Letters Patent.

Patented Oct. 11, 1910.

Application filed July 6, 1908. Serial No. 441,962.

To all whom it may concern:

Be it known that I, JAMES B. BAIRD, a citizen of the United States, residing at Canton, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Chills, of which the following is a specification.

My present invention relates to that class of devices, used in foundries, by means of which the surface of a casting is, by contact with a suitably placed piece of metal, hardened, and which devices are commonly known as "chills". These chills are commonly very large and heavy—a considerable mass of metal being necessary to absorb the heat from the molten metal sufficiently to impart the required degree of hardness to the casting being formed.

It is the object of my present invention to reduce this mass appreciably from that contained in the common form, and consequently save a considerable portion of the expense incident thereto. This I do by forming an air channel in the structure and propelling a large volume of air through this channel in contact with the outer surface of the interior member of the chill, thus carrying away rapidly a large amount of heat, and enabling the lighter and thinner shell which is immediately in contact with the molten metal to be of much less weight than has been required by the common practice. I have also provided various features of construction which aid materially in the performance of the work of this invention.

Referring to the accompanying drawings, which are made a part hereof, and on which similar reference characters represent similar parts, Figure 1 is a view partially in side elevation and partially in longitudinal vertical section of a chill of the character in question embodying my present invention; and Fig. 2 a transverse sectional view at the point indicated by the dotted line 2 2 in Fig. 1.

I have illustrated this invention in a chill of cylindrical form suitable to use in casting rolls, which is a form of casting where chills are very commonly employed. That portion 21 of this chill which comes in immediate contact with the device being cast is, interiorly, in the form shown, a plain cylinder, and may be called the inner wall. On its exterior I provide a number of thin projections 22 in order to give a greater radi-

ating surface. This inner wall, or chill proper, is secured within a larger surrounding cylinder or wall in such manner as to leave a chamber of considerable size between them. As a convenient means of closing the ends of this chamber, I provide an outwardly extending flange 23 on said inner wall 21, and a corresponding inwardly extending flange 24 on the outer wall 25. These flanges fit against the adjacent parts in the manner best shown in Fig. 1. The chamber thus formed is divided by a spiral partition 26 extending from end to end. At one end of this spiral channel thus formed is an ingress opening 27, and at the other end is an egress opening 28. At numerous points along the course of this channel I provide inwardly extending deflecting wings 29, which have the effect of constantly throwing the current of air inwardly against the outer surface of the inner cylinder, or chill proper, and thus enabling the air to more efficiently carry off the heat as it radiates from said chill. Thus, not only is the weight of the whole structure much decreased, thus reducing both the original cost and labor and expense of handling the chill, but the expense of renewal is also very much lessened. When the interior surface of the part 21 becomes roughened by wear, so that smooth castings can no longer be made with its use, the said inner portion 21 only needs to be renewed, as the outer portion 25 will last indefinitely.

It is necessary, in order to produce the best results, that the chill shall be heated to a suitable temperature before the molten metal is poured into it. I am able to do this by the same means that afterward carries off the heat: that is, I force the heated air through the chamber and thus warm the chill to the proper temperature; and then as soon as the pouring in of the molten metal commences change the air blast from warm to cold.

Having thus fully described my said invention, what I claim as new and desire to secure by Letters Patent, is:—

1. A chill comprising an inner and outer wall having a chamber between them, the outer surface of the inner wall and the inner surface of the outer wall being each provided with flanges spaced apart from each other thus giving increased radiating surface, said chamber being provided with ingress and egress openings, whereby a cur-

rent of air may be driven through said chamber between the walls and around said flanges and thus carry off the heat radiated from the outer surface of the inner wall.

5 2. A chill comprising inner and outer walls having a chamber between them, the inner wall having an outwardly turned flange at one end and the outer wall having an inwardly turned flange at the other end,
10 said flanges forming the ends of the chamber.

3. A chill comprising inner and outer walls having an annular chamber between them, an inlet at one end of said chamber, an
15 outlet at the other end of said chamber, the outer surface of the inner wall being provided with flanges, and the outer wall being provided with a spiral flange extending
20 through the said chamber intermediate the inlet and the outlet, whereby an air blast may be given a spiral direction as it passes through said chamber and the effectiveness thereof thus increased.

4. A chill comprising inner and outer
25 walls having a chamber between them, with an inlet at one end of the chamber and an

exit at the other, the peripheral surface of said chamber being provided with inwardly extending wings whereby an air current when driven through said chamber will be
30 deflected toward the outer surface of the inner wall.

5. A chill comprising inner and outer walls having a chamber between them, with an inlet at one end of the chamber and an
35 exit at the other, the outer wall having a spiral partition rib on its inner surface converting said chamber into a spiral passage, the peripheral surface of said chamber being provided with inwardly extending wings
40 whereby an air current when driven through said chamber will be deflected toward the outer surface of the inner wall.

In witness whereof, I, have hereunto set my hand and seal at Canton, Ohio, this first
45 day of July, A. D. one thousand nine hundred and eight.

JAMES B. BAIRD. [L. S.]

Witnesses:

JAMES B. GRANT,
HELEN D. WAGNER.