No. 795,643. PATENTED JULY 25, 1905.

F. M. NEWINGHAM.

MOLD FOR CASTING ROLLS.

APPLICATION FILED APR. 22, 1905.

Fig. 1.

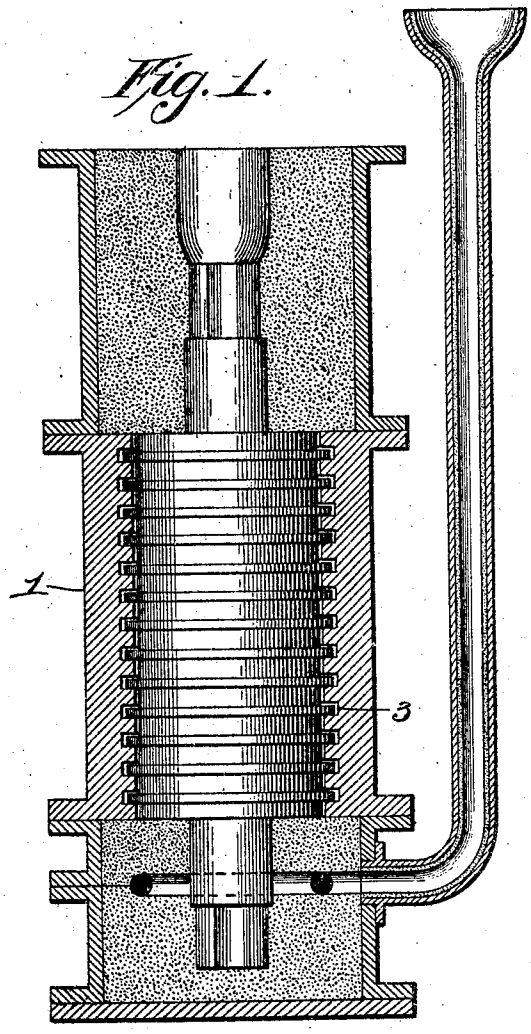
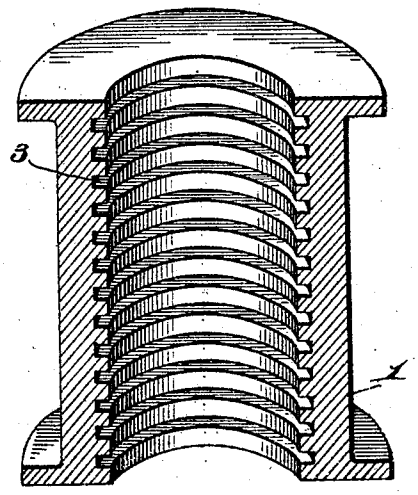


Fig. 2.



Witnesses

Louis D. Heinrichs

S. W. Fitzgerald.

Inventor

F. M. Newingham

By M. J. Fitzgerald & Co.

Attorneys

UNITED STATES PATENT OFFICE.

FRANK M. NEWINGHAM, OF APOLLO, PENNSYLVANIA.

MOLD FOR CASTING ROLLS.

No. 795,643. Specification of Letters Patent. Patented July 25, 1905.

Application filed April 22, 1905. Serial No. 256,974.

To all whom it may concern:

Be it known that I, FRANK M. NEWINGHAM, a citizen of the United States, residing at Apollo, in the county of Armstrong and State of Pennsylvania, have invented certain new and useful Improvements in Molds for Casting Rolls; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to chills for use in casting rolls; and its object is to provide a simple device of this character which will promptly form a crust upon the molten metal and which will support said crust until the entire casting is sufficiently cool to permit it to be quickly shrunk to enable it to be removed from the chill.

I am aware that it is old in the art to form a chill with corrugations in its inner surface, said corrugations having inclined or tapered walls; but such a construction is undesirable, for the reason that after the crust has been produced upon the casting and said casting has partly shrunk it will slip longitudinally through the chill, so that the weight of the casting will be supported by the end thereof, and therefore cause the same to crack or split.

My invention consists of a chill having annular grooves, the top and bottom walls of which are at right angles to the wall of the chill, and these grooves produce beads upon the casting, which serve to support said casting at all times and prevent it from moving longitudinally until the entire casting is sufficiently chilled to prevent injury thereto by withdrawing it from the chill.

The invention also consists in further novel construction and combination of parts hereinafter more fully described and claimed.

In the accompanying drawings I have shown the preferred form of my invention, and in said drawings—

Figure 1 is a vertical section through a mold constructed in accordance with my invention and containing a partly-chilled casting, and Fig. 2 is a section perspective view of the chill.

Referring to the figures by numerals of reference, 1 is a cylindrical hollow metallic body constituting a chill provided with annular grooves 3 in its inner surface, the top and bottom walls of which are at right angles to the wall of the chill. Any desired number of these grooves are employed, and the depth thereof is such that when the casting is entirely shrunk the portions thereof formed within the grooves are withdrawn therefrom, thereby enabling the chill to be readily raised or stripped from the casting.

When molten metal is poured into the chill, that portion thereof entering the grooves 3 and contacting with the inner surface of the chill will promptly harden and form a crust. As the metal within the grooves is chilled simultaneously upon three sides, it will become hard much sooner than the metal outside of the grooves, and therefore hard beads will be promptly formed within the grooves, said beads being rectangular in cross-section. Because of the peculiar shape of the beads longitudinal movement of the casting is prevented during the operation of the shrinking, and therefore the weight of the entire casting is never received by the lower end thereof, but instead is supported at all times by the crust of the casting and the hard beads produced thereon. As the casting gradually cools the beads thereon will be withdrawn slowly from the grooves 3 and the gases produced within the casting will escape into the grooves and prevent the formation of pin blows. When the casting becomes sufficiently hard to be removed from the chill without injury, the beads have been nearly withdrawn from the grooves 3, and the entire casting can then be quickly chilled in any preferred manner so as to completely contract it and withdraw the beads from engagement with the chill. Said chill can then be raised from the casting and said casting can be turned or otherwise dressed to remove the beads therefrom.

It will be seen that by providing a chill with annular rectangular grooves formed therein a casting can be quickly formed without danger of injury thereto as a result of the same settling upon one end. The chill is therefore particularly adapted for use in casting rolls or other like devices. A roll formed in this manner is perfectly cylindrical when removed from the chill and it only becomes necessary to remove the beads in order to place the roll in condition for use. It is not necessary to remove any of the outer crust of the roll to render the same smooth and cylindrical, and therefore the finished product has a surface of uniform hardness or chill.

In the foregoing description I have shown the preferred form of my invention; but I do not limit myself thereto, as I am aware that

modifications can be made therein without departing from the spirit or sacrificing the advantages thereof, and I therefore reserve the right to make such changes as fairly fall within the scope of my invention.

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

A chill comprising a hollow body portion formed in a single piece and having annular grooves in its inner face, the opposite walls of the grooves being at right angles to the wall of the chill.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANK M. NEWINGHAM.

Witnesses:

C. S. FRYE,

BENNETT S. JONES.