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E. A. CUSTER.

MOLD FOR CASTING METAL PIPES.

APPLICATION FILED JULY 26, 1907.

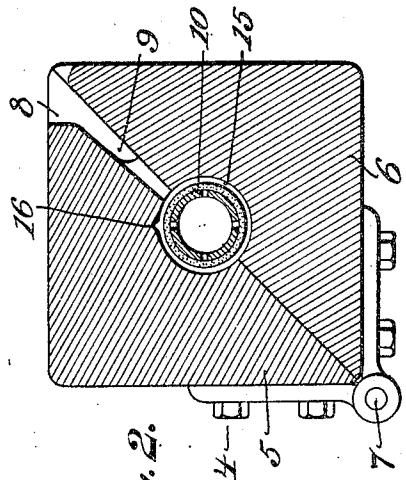


Fig. 2.

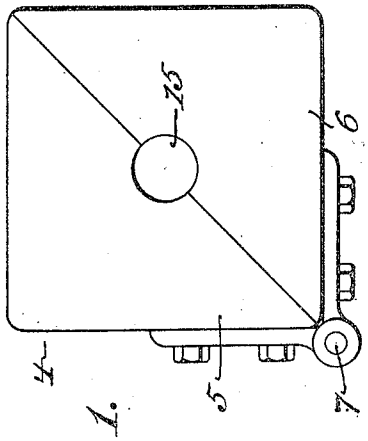


Fig. 1.

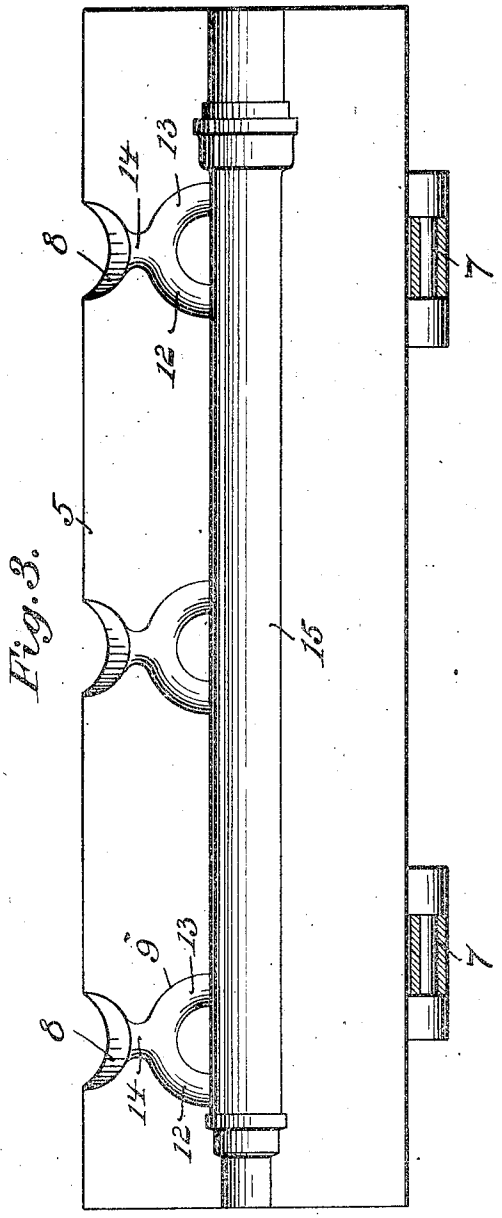


Fig. 3.

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MOLD FOR CASTING METAL PIPES.

No. 887,070. Specification of Letters Patent. Patented May 12, 1908.

Application filed July 26, 1907. Serial No. 385,612.

To all whom it may concern:

Be it known that I, EDGAR A. CUSTER, a citizen of the United States, residing at the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Molds for Casting Metal Pipes, of which the following is a specification.

My invention has relation to a mold for casting water, soil and other pipes therein from molten metal: and in such connection it relates particularly to the constructive arrangement thereof, wherein a cast pipe is produced ready for use without further finishing upon removal from the mold, and without blow-holes and other imperfections to be removed, and of the character shown, described and claimed in an application for United States Letters Patent Serial No. 369,489, filed by me, under date of April 22, A. D. 1907.

The principal objects of my invention are first, to provide a comparatively simple effective and easily manipulated two part permanent mold, consisting of cope and drag, in which the parting of the one from the other, is at angle greater than the horizontal: second to provide the cope of the mold with combined pour holes and gates, arranged in the parting surface of the mold; third, to provide a mold, in which pouring of the metal is effected directly against the core, in an oblique direction thereto; fourth to provide a mold, in which when the pipe is cast and cope is removed, the pipe and gates can be removed together; and fifth to provide a mold, in which pouring of the molten metal is rapidly effected and with waste of the metal in the operation, reduced to a minimum.

The nature and scope of my invention will be more fully understood from the following description taken in connection with the accompanying drawings forming part hereof, in which

Figure 1, is an end elevational view of a two-part mold, comprising cope and drag parting at an angle to the horizontal, embodying main features of my invention. Fig. 2, is a vertical sectional view through the two-part mold of Fig. 1, showing the cope hinged to the drag and also showing the location of the pouring holes and gates of the mold at an angle to the horizontal and an internal perforated composition core; and Fig. 3, is a plan view, showing the internal constructive formation of the cope of the mold and the pour-holes and gates thereof; the drag in this view being shown, as removed.

Referring to the drawings 4, is the permanent metal mold, consisting of a substantial solid body forming a cope 5, and a similar solid body forming a drag 6, shown as hinged at 7, to each other, but any other form of connection for both cope and drag may be employed, with good results. The two parts of the mold are divided in the present instance, at an angle of 45° to each other. At suitable distances apart in the surface of one of abutting faces of the mold 4, are provided depressions constituting when the faces are brought in contact pour-holes 8, and gates 9, as clearly illustrated in Fig. 2. In the present instance, the pour-holes 8, and gates 9, are illustrated as being arranged in the cope, but as a matter of fact they could be arranged partly in the cope and partly in the drag or wholly in the drag.

10, is the internal hollow perforated composition core, occupying a position between the cope and the drag, in operative position, as shown in Fig. 2, and around which core, the molten metal is run, after passing through the respective pour-holes 8, and gates 9. The pour-holes 8, each consist of an enlarged bowl-shaped mouth, adapted to conduct the metal into a contracted portion 14, from which the metal flows into branches 12 and 13, of the gates 9, and then into the annular depression 15, of the mold 4, around the core 10, to permit by the uniform velocities and equal pressures in the flow of the metal at the different points through the gates, of the casting of a pipe perfect in formation and free from blow, sand and other holes, due to the fact that air or gases carried in advance of the flowing molten metal in the formation of the pipe, are freed into the interior of the hollow perforated core, as well as into the groove 16, provided in the surface of the cope 5, of the mold as clearly illustrated in Fig. 2.

The character of the cope and drag of the permanent mold is such as that when brought together, the quantity of metal therein, is sufficient to withstand any possible tendency to warping or cracking, by the molten metal poured into the same, owing to differences in temperature. The fact that the two parts of the mold are readily separable from each other and the pouring is effected at an angle to the horizontal, directly against the core 10 thereof, is effected a great saving

as to waste of metal as well as enabling a pipe to be cast quickly and reliably perfect in formation and ready for use, upon removal from the mold, after natural cooling thereof. The mold by being provided with combined pour-holes and gates of the character described and located as they have been defined, avoids after use of the mold, the knocking out of such gates, because upon removing or reeing the cope from the drag, the gates will be freed from the cope, and when removed from the drag, the pipe and gates, can be lifted out together.

Having thus described the nature and objects of my invention what I claim as new and desire to secure by Letters Patent is:—

1. A mold for casting a metal pipe, consisting of cope and drag provided with an internal depression and a groove, abutting faces of cope and drag being arranged at an angle to the horizontal, in combination with a core adapted to be seated in the depression of said mold to permit of pouring metal directly against the core in an oblique direction thereto and freeing of gases into said groove.

2. A mold for casting a metal pipe, consisting of cope and drag having an internal depression, abutting faces of the cope and drag being arranged at an angle to the horizontal and pour-holes and gates in said mold, in combination with a perforated core adapted to be mounted in said depression to permit of pouring metal directly against said core in an oblique direction thereto.

3. A mold for casting a metal pipe, consisting of cope and drag parting at an angle to the horizontal and with pour-holes and gates having bowl-shaped mouths, the pour-holes and gates being arranged in abutting faces of said mold, in combination with a perforated core adapted to be mounted in the mold so as to permit of pouring metal directly against the core with the gases freed into the interior of said core.

4. A mold for casting a metal pipe, consisting of cope and drag, in operative position, parting diagonally to a horizontal plane thereof and having pour-holes and gates in an abutting face and means for holding the cope in operative position in contact with the drag, in combination with a perforated core arranged so as to permit of pouring metal directly against the core in an oblique direction thereto and freeing the gases into the interior of the core and mold away from the surface of the formed pipe.

5. A mold for casting a metal pipe, consisting of cope and drag having an internal depression and groove, said cope and drag in operative position parting at an angle to the horizontal and having pour-holes and gates in an abutting face of the mold, in combination with a core adapted to be removably mounted in said depression so as to permit of pouring metal directly against the core in an oblique direction thereto.

6. A mold for casting metal pipe, consisting of cope and drag in operative position parting at an angle to the plane of the mold, the cope having a groove directly connected with an internal depression and having pour-holes and gates in an abutting face of the mold, in combination with a hollow perforated core removably mounted in said depression of the mold so as to permit of pouring molten metal directly against the core in an oblique direction thereto.

7. A mold for casting a metal pipe, consisting of cope and drag having a depression, abutting faces of the cope and drag being arranged at an angle to the upper and lower faces of the mold and having pour-holes and gates in the surface of the cope and adapted to abut against the drag, in combination with a core arranged to permit of pouring molten metal directly against the same in an oblique direction thereto and means for closing the cope against the drag.

8. A mold for casting a metal pipe, consisting of cope and drag in operative position parting at an angle to the supporting surface of the mold and having pour-holes and gates in an abutting face, in combination with a perforated core, whereof pouring of molten metal is effected against the same in an oblique direction thereto and gases freed into the interior of the core and away from the exterior surface of the formed pipe.

In testimony whereof, I have hereunto set my signature in the presence of two subscribing witnesses.

EDGAR A. CUSTER.

Witnesses:
WILHELM VOGT,
THOMAS M. SMITH.