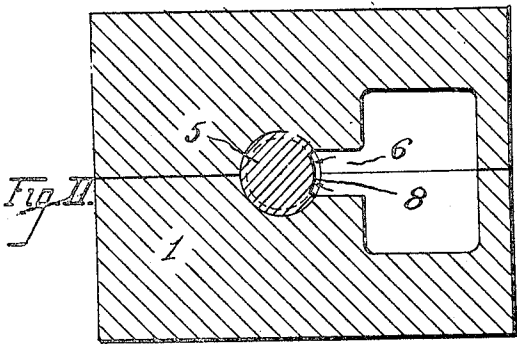
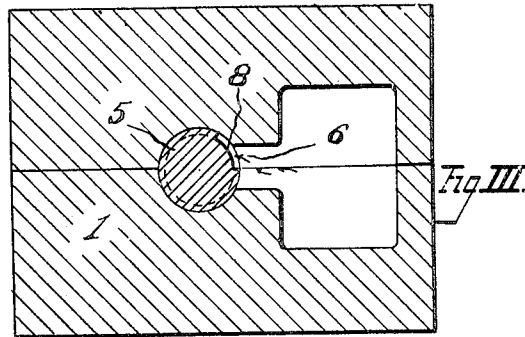
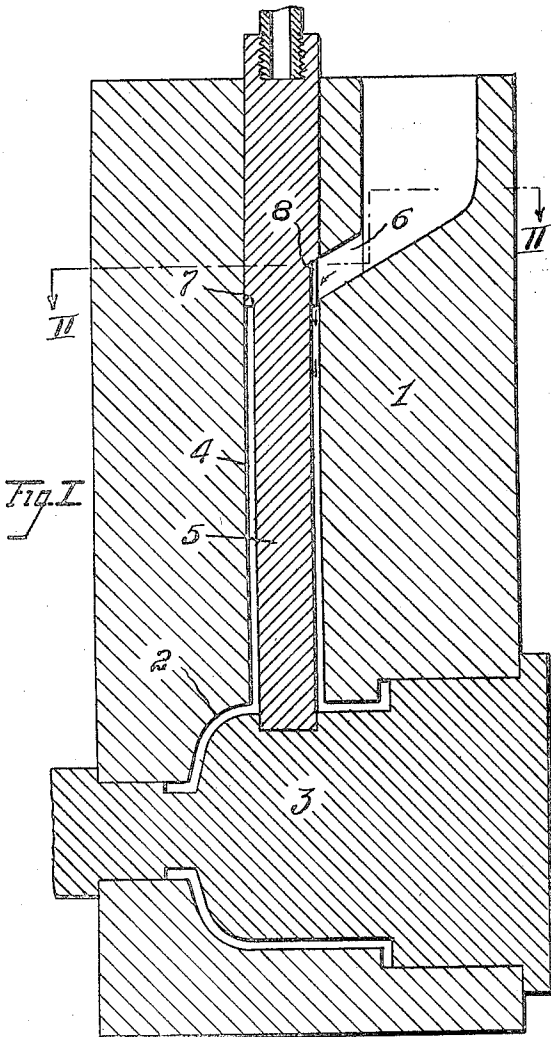
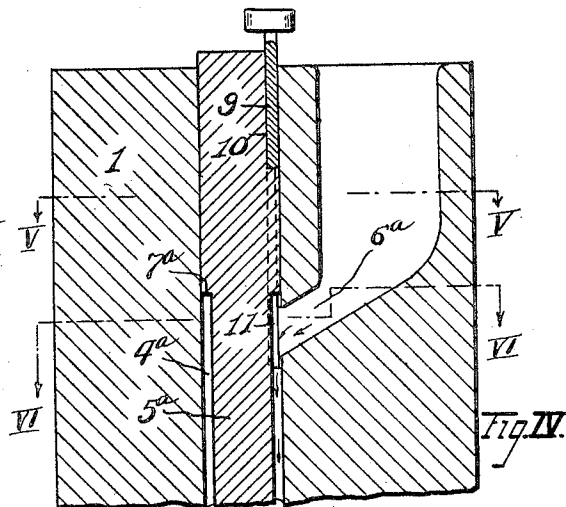
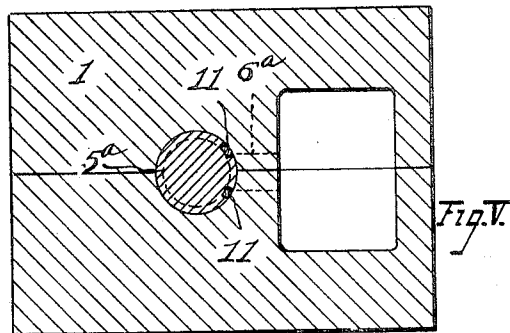
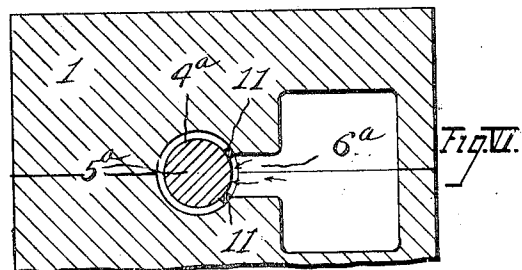


F. E. CUDELL.
 MEANS FOR POURING METAL INTO CORE MOLDS.
 APPLICATION FILED OCT. 10, 1913.

1,103,039.

Patented July 14, 1914.

3 SHEETS—SHEET 1.



In Witnesses:
 Herman Eichel
 Carl H. Mueller

Inventor:
 Frank E. Cudell
 by *Carl H. Mueller,*
 Attorney

F. E. CUDELL.
 MEANS FOR POURING METAL INTO CORE MOLDS.
 APPLICATION FILED OCT. 10, 1913.

Patented July 14, 1914.
 3 SHEETS—SHEET 2.

1,103,039.

Fig. XI.

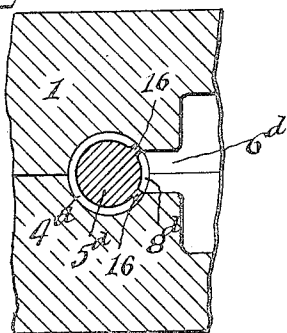


Fig. IX.

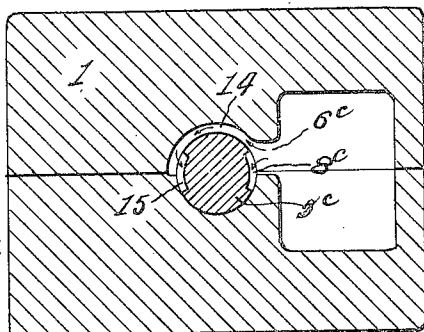


Fig. VIII.

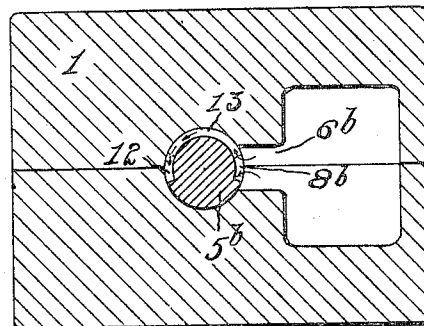
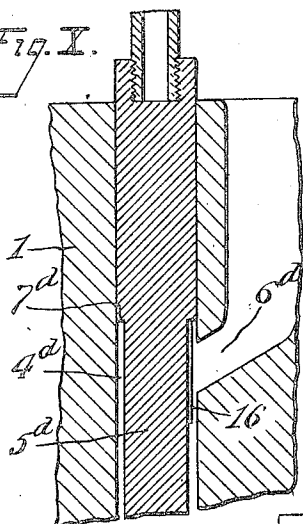


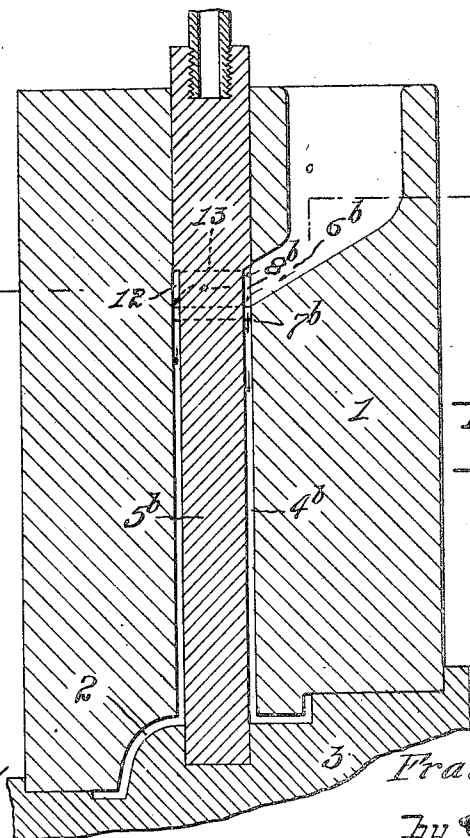
Fig. I.



VIII

VIII

Fig. VII.



Witnesses:

Arthur E. Esch
 Carl H. Mueller

Inventor:
 Frank E. Cudell

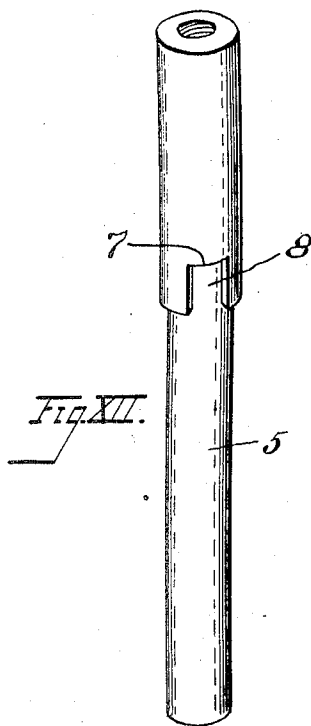
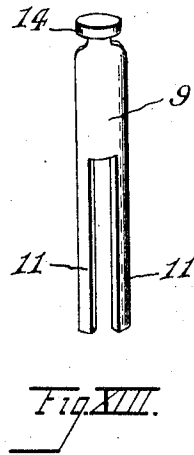
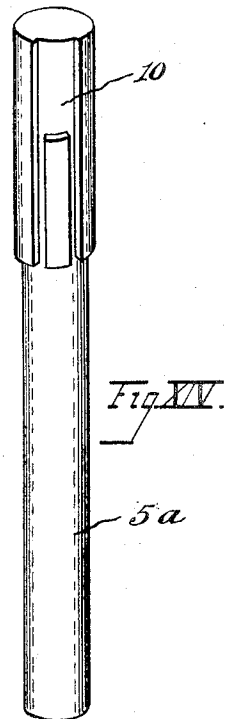
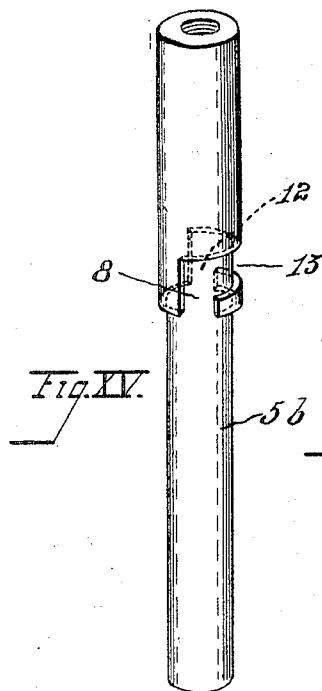
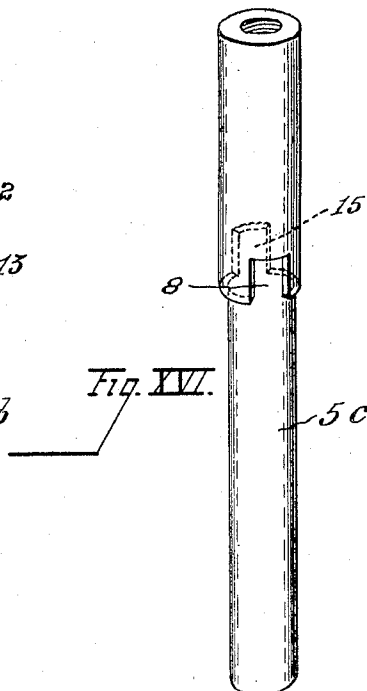
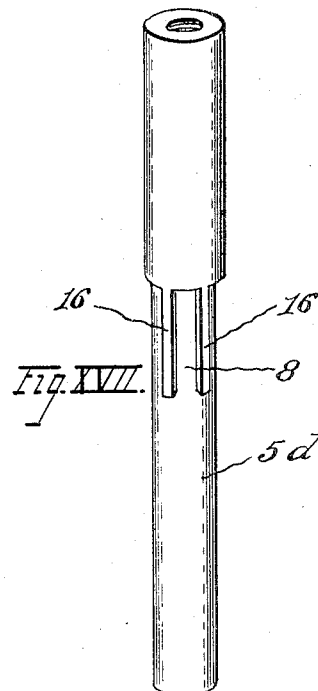
by *Carl H. Mueller*
 Attorney

F. E. CUDELL.
 MEANS FOR POURING METAL INTO CORE MOLDS.
 APPLICATION FILED OCT. 10, 1913.

1,103,039.

Patented July 14, 1914.

3 SHEETS—SHEET 3.



Witnesses:
Therman Eisele
Carl H. Mueller

Inventor:
Frank E. Cudell
 by *Carl H. Mueller*
 Attorney

UNITED STATES PATENT OFFICE.

FRANK E. CUDELL, OF CLEVELAND, OHIO.

MEANS FOR POURING METAL INTO CORE-MOLDS.

1,103,039.

Specification of Letters Patent.

Patented July 14, 1914.

Application filed October 10, 1913. Serial No. 794,407.

To all whom it may concern:

Be it known that I, FRANK E. CUDELL, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and useful Improvement in Means for Pouring Metal into Core-Molds, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

The invention here explained relates to a process and the means for pouring metal into core-molds.

The object is to prevent defective castings.

This invention in so far as it has reference to a process is a continuing improvement upon my copending application of similar title filed August 18, 1913, Serial Number 785438.

According to present practice, when metal issues from the gate of a core-mold a large portion impinges against that part of the core directly opposite. This causes the stream to divide and flow laterally in both directions around the core. During this time too the flow becomes disrupted into what might be termed a spray composed of variously sized globules which become chilled particles and preclude homogeneous castings. A disrupted and spattering stream will permit more dross to form. These deleterious circumstances attending the method now in vogue are especially pronounced when the upper part of the mold-form is elongated in an upward direction and is otherwise dimensioned to comparatively thin stock.

The drawing exemplifies a mold-form having a long upright extension in the shape of a tube. It will be readily appreciated that chilled particles such as have been suggested will frequently occasion serious defects over the thin areas of such a tube casting.

My invention consists of an arrangement for pouring molten metal into core-molds so that the metal stream on leaving the gate falls directly down a vertical passage which may be proportioned as desired with respect to the size of the gate. More specifically a guide or partition is provided on each side of as well as above the gate so that the flow of metal is confined to a single

stream in which the oxidation must be considerably lessened. In this manner also, the advantage is secured of avoiding sprays and drops which when occasioned become chilled and lodge between the mold and the core to form defects in the casting when the rising metal eventually envelops them.

The inventive conception is exemplified in means which are hereinafter explained and variously combined in the claims, while the annexed drawings and particular description thereof together set forth in detail several modes of accomplishing my invention, the disclosed means however being but three of various mechanical forms in which the principle of my invention may be applied.

Adverting to the drawings:—Figure I is a section of the mold embodying the preferred form of my invention. Fig. II is a section on line II—II of Fig. I looking downwardly. Fig. III is a view similar to Fig. II showing one member turned into a different position. Fig. IV is a view similar to Fig. I with the lower portion of the mold broken away and representing a modification of my invention. Fig. V is a section on line V—V of Fig. IV. Fig. VI is a section on line VI—VI of Fig. IV likewise looking in the direction of the arrows: Fig. VII is a view similar to Fig. I with the lower portion cut away showing a second modification. Fig. VIII is a section on line VIII—VIII of Fig. VII. Fig. IX is a view similar to Fig. VIII of a third modification. Fig. X is a broken vertical section of still another modification. Fig. XI is a broken horizontal section of Fig. X. Fig. XII is a perspective of one detail of the preferred form of my invention. Fig. XIII is a perspective of one detail of the modification disclosed by Figs. IV, V and VI. Fig. XIV is a perspective view of another detail associated with Figs. IV, V and VI. Fig. XV is a perspective view of a detail in conjunction with the construction of Figs. VII and VIII. Fig. XVI is a perspective view of a detail illustrated in Fig. IX. Fig. XVII is a perspective view of a detail which is seen in section in Figs. X and XI.

A mold 1 includes a primary mold-form 2 and its core 3. The secondary mold-form 4 consists of an elongated upward extension of circular cross section and this portion 4 of the entire mold-form is a mainly cylindrical core 5 axially alined therewith. The core

5 intersects the upper surface of the core 3 and is rotatable thereupon as seen in Fig.

I. A gate 6 finds indirect entrance as will now be explained from above the top 7 of the secondary mold-form.

That portion of the core 5 which is above the bottom of the gate is of increased diameter, and but for a vertically extending cut-out portion 8 opposite the gate would preclude the communication between the gate mold-form opening and mold-form both of which are below. This cut-out portion 8 is proportioned to the gate opening and while usually directly opposite the gate may, when rotated be variously proportioned with respect to the gate opening, and so correspondingly reduce the latter as desired. I should mention that in using the term "mold-form opening" I mean part of the space to be occupied by the finished casting or an upward continuation of such space between the gate and opposed core. In this manner the metal in flowing from the gate is compelled to fall directly downward in a full stream and obviously by reason of this less dross is permitted to form. Furthermore no appreciable spray can occur and absolutely no drops allowed to chill and become suspended between the core and the mold.

The modified form seen in Figs. IV, V and VI shows the application of my invention to molds in which the gate has direct communication with the mold-form below the top of the latter. In such case a rod 9 is seen to be made slidable in an upright opening 10 extending downwardly from the top of the mold between the core 5^a and a secondary mold-form. The lower end of this rod has two depending extensions 11 spaced from each other a distance corresponding to the width of the gate opening, and themselves of a width corresponding with the thickness of the mold-form at that point. In length these extensions or lateral portions 11 should preferably exceed the height of the gate opening. It will be perceived that by bringing the extensions 11 into the plane of the gate they are caused to serve the function of lateral partitions and therefore to similarly establish the essential elements of my invention. During the employment of this form the extensions 11 should be withdrawn from the mold-form just prior to the time when the metal has risen to their lowermost extremities.

Figs. VII and VIII relate to a further modification whereby the metal may be simultaneously supplied to the mold-form on opposite sides. A second cut-out portion 12 is provided on the other side of the core 5^b from which the gate 6^b and cut-out portion 8^b are located. The two upright channels thus formed are connected by a semi-

circular horizontal groove 13 around which the metal flows in order to reach the channel formed in conjunction with the mold 1 by the cut-out portion 12. When advisable to have the metal enter the mold on both sides, as in this form, the cut out portions usually have about half the cross sectional area so that the two together may exactly account for the flow from the gate. However this may be occasionally preferable otherwise and such variation may be similarly accomplished by the rotation of the core 5^b.

Fig. IX is a modification so nearly similar to the idea suggested by Figs. VII and VIII that but one view is necessary. The single difference consists in fashioning the passage 14 which connects the spaces 8^c and 15 in the mold rather than in the core 5^c.

Figs. X and XI show a modification very similar to that seen in Figs. IV, V and VI, the only variation being that the two lateral partitions here each designated as 16 are attached to the core 5^d instead of suspended from a slidable rod. In utilizing a mold so constructed, that portion of the casting which would occupy the portion of the mold-form above the lower edges of the partitions 16 would have to be removed.

My invention being thus described with sufficient thoroughness, what I desire to secure by Letters Patent and therefore claim specifically, is:—

1. In means for pouring metal into core-molds, the combination of a mold provided with a mold-form, a core positioned in the latter, said mold furthermore provided with a gate communicating with said mold-form laterally of said core, and means for restricting such communication on opposite sides of the gate for the useful purpose specified.

2. In means for pouring metal into core-molds, the combination with a mold having a mold-form and a gate above the mold-form, said mold being furthermore formed with a duct connecting said gate and mold-form, and means for constricting said mold-form on each side of said duct outlet for the useful purpose specified.

3. In means for pouring metal into core-molds the combination with a mold having an upwardly extending mold-form provided with a core having a guide above said mold-form, said guide provided with a recess forming in conjunction with said mold a duct in communication with said mold-form, said mold being provided with a gate in communication with said duct.

4. In means for pouring metal into core-molds, the combination with a mold having an upwardly extending mold-form provided with a core having a guide snugly interposed between said mold and the upper end of said mold-form, said guide provided with a recess forming in conjunction with said

mold a duct in communication with the upper end of said mold-form, said mold being provided above said mold-form with a lateral gate in communication with the upper end of said duct.

5. In means for pouring metal into core-molds, the combination with a mold having an upwardly extending mold-form and a gate above the latter a core in said mold-form, a guide surrounding said core between said mold-form and gate and partially covering the upper end of said mold-form, said guide being provided with a cut-out portion opposite said gate opening whereby communication between said gate and mold-form is established.

6. In means for pouring metal into core-molds, the combination with a mold having an upwardly extending mold-form and a gate above the latter a core in said mold-form, a guide carried by said core between said mold-form and gate and partially covering the upper end of said mold-form, said guide being provided with a cut-out portion in communication with said mold-form and gate, the rotation of said guide being adapted to restrict said gate opening.

7. In means for pouring metal into core-molds, the combination with a mold having an upright mold-form and a gate in lateral communication therewith, a core positioned in said mold-form and extending upwardly across said gate, and partition means interposed between said mold and core, and adapted to be moved to either side of said gate.

8. In means for pouring metal into core-molds, the combination with a mold having an upright mold-form and a gate in lateral communication therewith, and a core positioned in said mold-form and extending upwardly beyond the horizontal plane of said gate, and an adjustable partition member resting against said core laterally of said gate for the useful purpose specified.

9. In means for pouring metal into core-molds, the combination with a mold having an upright mold-form and a gate in lateral communication therewith, a core positioned in said mold-form and extending upwardly

beyond the horizontal plane of said gate, and a guide carried by said core and movable with respect to said gate, said guide having partition members interposed between said core and mold laterally adjacent the sides of said gate respectively.

10. In means for pouring metal into core-molds, the combination of a mold provided with a mold-form, a core positioned in the latter, said mold furthermore provided with a gate communicating with said mold-form laterally of said core, and a partition supported between said mold and core adjacent opposite sides of said gate and adapted to constrict such communication.

11. In means for pouring metal into core-molds, the combination of a mold provided with a mold-form, a core positioned in the latter, said mold furthermore provided with a gate communicating with said mold-form, a guide supported adjacent said core and below the junction of said gate and mold-form, and means for moving said guide along said core for the useful purpose specified.

12. In means for pouring metal into core-molds, the combination of a mold provided with a mold-form, a sprue and a gate connecting the bottom of said sprue with the top of said mold-form, a core opposite said gate outlet, and a partition member interposed between said mold and core and extending downwardly from said gate for the useful purpose specified.

13. In means for pouring metal into core-molds, the combination of a mold provided with a mold-form, a core positioned in the latter, said mold furthermore provided with a gate communicating with said mold-form, and a guide supported between said mold and core laterally adjacent the point at which the inflowing metal impinges against the core for the useful purpose specified.

Signed by me, this 7th day of October, 1913.

FRANK E. CUDELL.

Attested by:

BERNICE R. FREESON,
C. F. FRANKE.