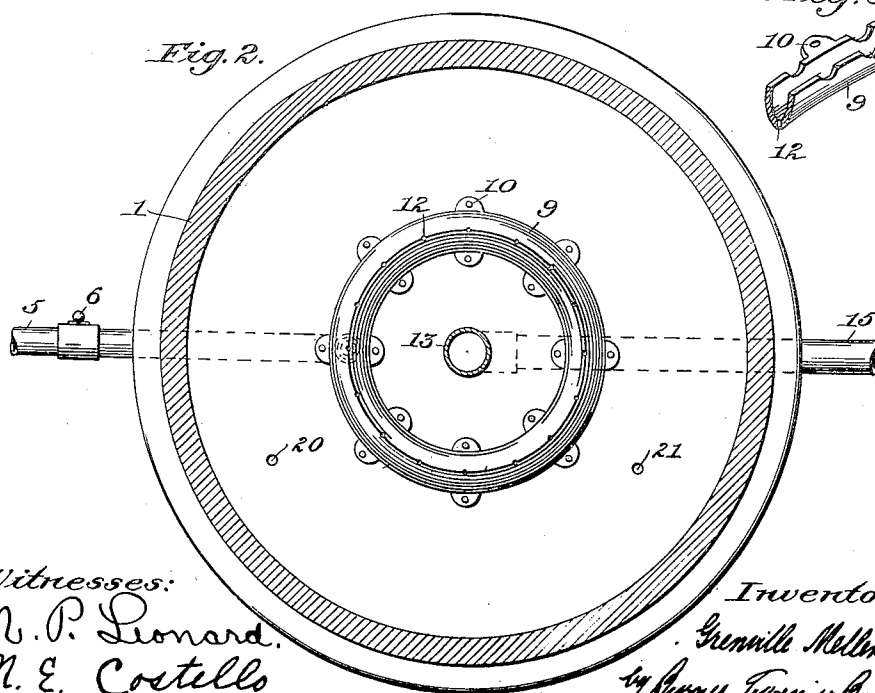
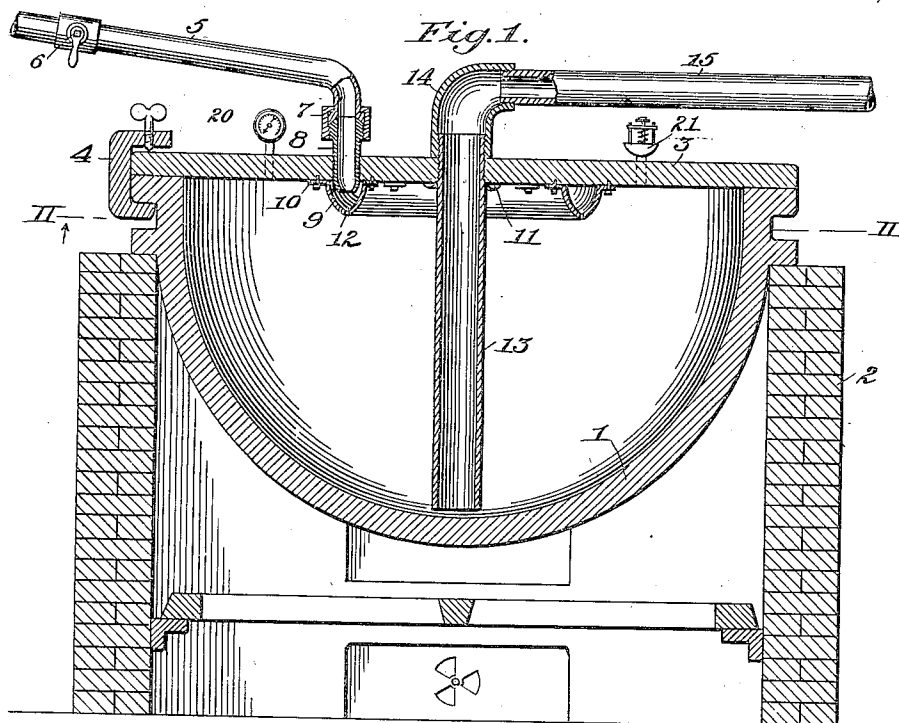


G. MELLEN.
PROCESS OF AND APPARATUS FOR DELIVERING MOLTEN METAL.
APPLICATION FILED JULY 26, 1911.

1,053,948.

Patented Feb. 18, 1913.



Witnesses:
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N. E. Costello

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Att'y.

UNITED STATES PATENT OFFICE.

GRENVILLE MELLEN, OF SUMMIT, NEW JERSEY.

PROCESS OF AND APPARATUS FOR DELIVERING MOLTEN METAL.

1,053,948.

Specification of Letters Patent.

Patented Feb. 18, 1913.

Application filed July 26, 1911. Serial No. 640,702.

To all whom it may concern:

Be it known that I, GRENVILLE MELLEN, a citizen of the United States, residing at Summit, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Processes of and Apparatus for Delivering Molten Metal, of which the following is a specification.

According to this invention, molten metal contained in a closed melting-pot is ejected and delivered, for example to an ingot mold, by subjecting the surface of the metal to the direct pressure of steam. The steam is preferably generated within the pot, by supplying water to a vaporizing chamber in the upper part of the pot, some of the water also being permitted to run down in fine streams onto the surface of the molten metal, where it vaporizes.

Suitable apparatus for carrying out the invention is shown in the accompanying drawings in which—

Figure 1 is a transverse vertical section of the melting-pot and appurtenances; Fig. 2 is a horizontal section of the pot on the line II—II of Fig. 1, looking upward; and Fig. 3 is a perspective view of a water-evaporating trough.

The apparatus illustrated comprises a hemispherical cast-iron melting-pot 1, set in a furnace 2. A flat cover 3 rests on and makes a steam-tight joint with the upper edge of the pot, being removably secured thereto by clamps 4 or otherwise. A water-supply pipe 5 containing a shut-off cock 6 is connected by a union 7 to a nipple 8 extending through the cover. This nipple opens into an annular vaporizing trough 9, having marginal lugs 10 by which it is secured to the underside of the cover. The upper edge of the trough has notches 11 at various points, to permit the escape of steam. A metal-delivery pipe 13 extends centrally upward through the cover, making a tight joint therewith, and is connected by an elbow 14 to a horizontal pipe 15.

In use, the metal, for example a soft metal or alloy, is charged into and melted in the pot 1. The cover 3 is then clamped on the pot and water is supplied through the pipe 5, the cock 6 being then turned to the closed position. The water vaporizes in the trough and on the surface of the molten metal and the pressure in the inclosed space above the metal soon rises to a point sufficient to force the metal upward through the

pipe 13 and deliver it through the pipe 15 to the ingot mold or other desired point. It is also possible to operate by vaporizing water outside the pot and admitting the live steam thereto through the pipe 5.

The valve 6, instead of being a stop-cock of the ordinary kind, may be a regulating valve so arranged as to admit only sufficient water to produce, when changed into steam, the required pressure within the melting chamber. A pressure gage 20 may be provided on the lid, if desired, and a safety valve 21 may also be used to relieve any excessive pressure.

I claim:

1. The process of delivering molten metal, which consists in admitting water to a closed space above the molten metal, generating steam by the heat of the metal, confining the steam above the surface of the metal and causing it to force the metal upward through a discharge passage.

2. The process of delivering molten metal, which consists in admitting a controlled quantity of water in a confined space above the metal, vaporizing said water and causing the evolved steam to eject the metal through a discharge passage.

3. The process of delivering molten metal, which consists in admitting a controlled quantity of water to a closed space above the surface of molten metal, vaporizing the water by the heat of the molten metal, confining the evolved steam above the surface of the metal, and causing the steam to eject the metal through a discharge passage.

4. The process of delivering molten metal, which consists in vaporizing water in part in a chamber subject to the heat of the molten metal and in part directly upon the metal, confining the evolved steam above the surface of the metal, and causing the steam to eject the metal through a discharge passage.

5. In combination, a melting-pot having an upwardly-extending discharge-passage through the metal space, and means for admitting and vaporizing water and confining the evolved steam in contact with the molten metal.

6. In combination, a closed melting-pot having a discharge-passage, and a water-vaporizing chamber in proximity to and opening into said pot.

7. In combination, a melting-pot having a discharge-passage, a removable cover

therefor, and an apertured water-vaporizing chamber carried by said cover.

8. In combination, a melting-pot, a removable cover therefor, and a water-inlet and a metal-outlet pipe extending through said cover.

9. In combination, a melting-pot, a removable cover therefor, a water-supply pipe and a metal-discharge pipe extending

through said cover, and a vaporizing chamber carried by said cover and opening into said pot.

In testimony whereof, I affix my signature in presence of two witnesses.

GRENVILLE MELLEN.

Witnesses:

FRED. F. KUHLMANN,
S. R. MILLER.