

No. 850,829.

PATENTED APR. 16, 1907.

H. GEISENHÖNER.
METAL CASTING APPARATUS.
APPLICATION FILED DEC. 4, 1902.

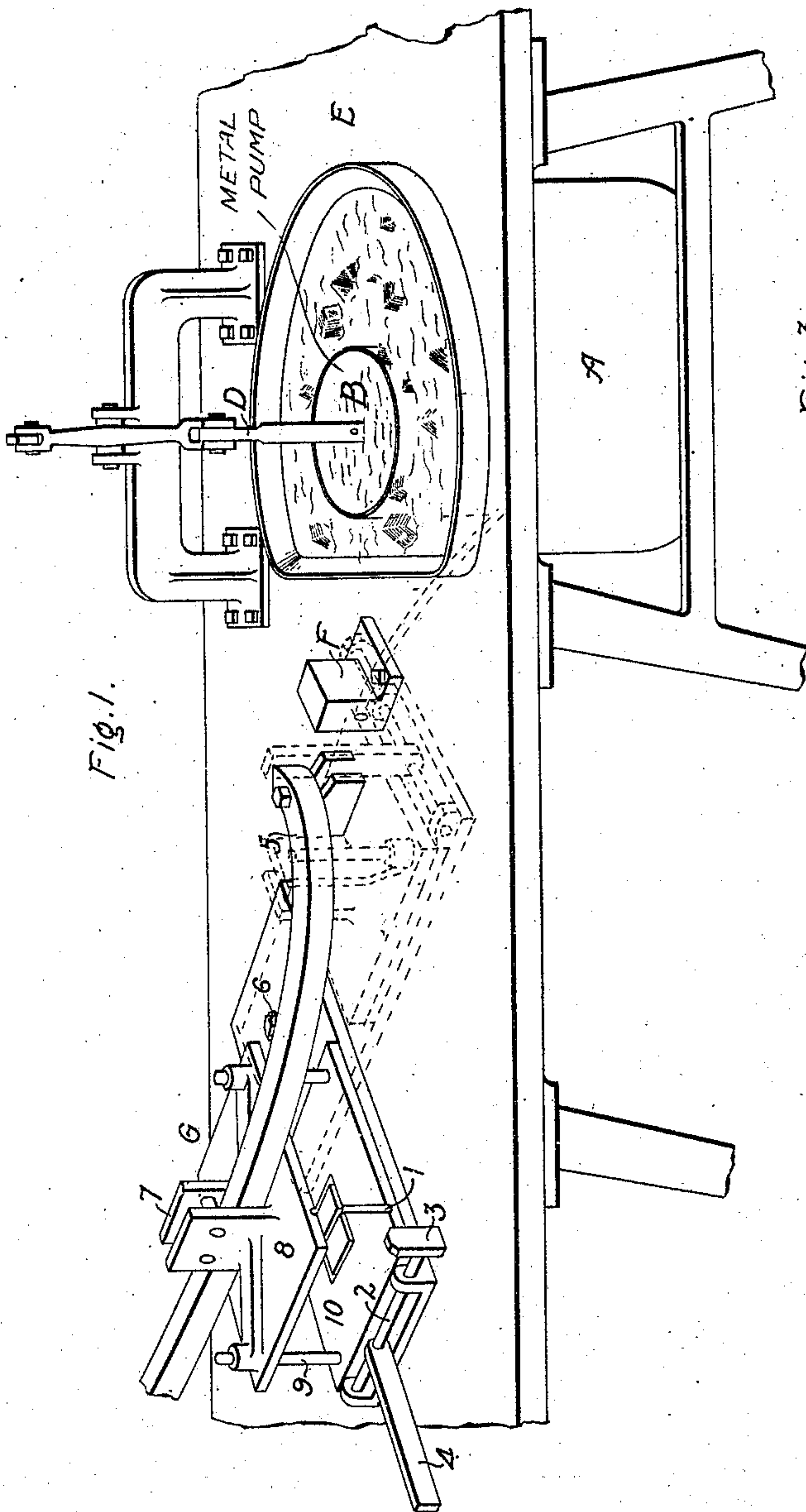


Fig. 1.

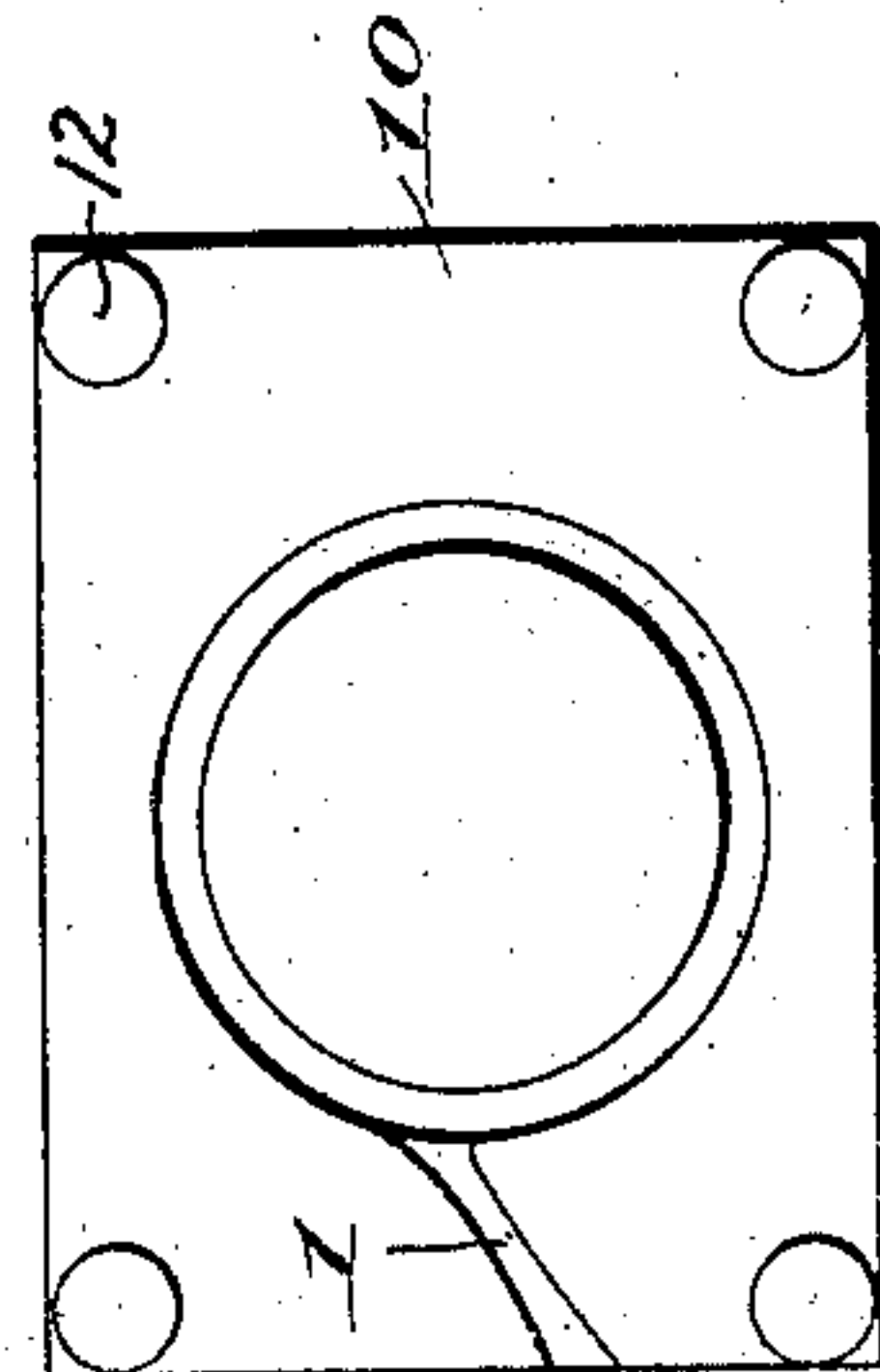


Fig. 3.

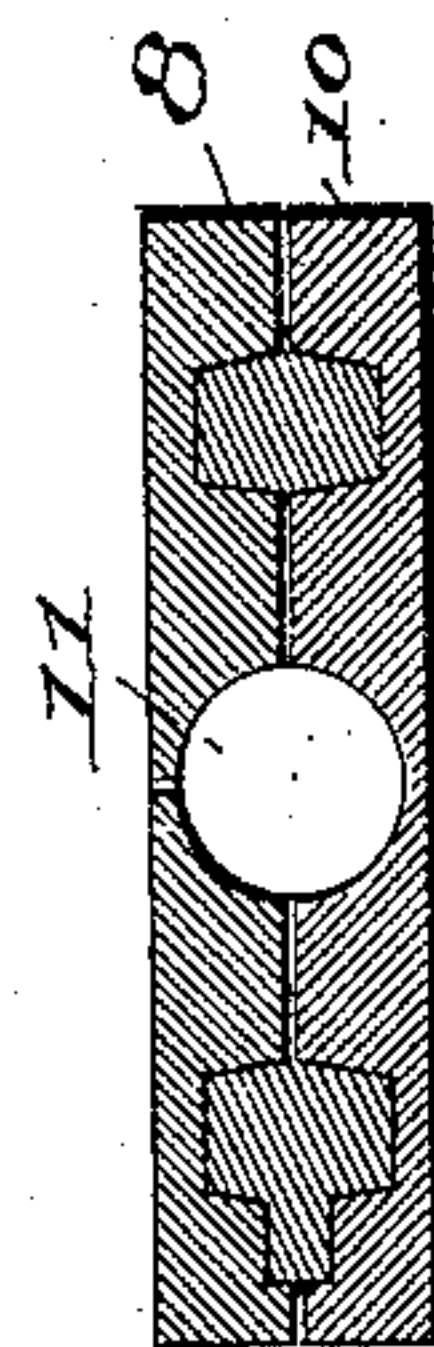


Fig. 2.

WITNESSES:

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UNITED STATES PATENT OFFICE.

HENRY GEISENHÖNER, OF SCHENECTADY, NEW YORK, ASSIGNOR TO
GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

METAL-CASTING APPARATUS.

No. 850,829.

Specification of Letters Patent.

Patented April 16, 1907.

Application filed December 4, 1902. Serial No. 133,866.

To all whom it may concern:

Be it known that I, HENRY GEISENHÖNER, a citizen of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Metal-Casting Apparatus, of which the following is a specification.

My invention relates to metal casting, and has for its object to provide means whereby molten metal may be forced into a mold without the formation of blow-holes in the product.

It is well known to metal founders that the cause of most blow-holes in castings is due to the inability of all the air either present on the mold or entrained by the metal as it flows therein to escape therefrom and permit the metal to occupy the entire space within the mold. In ordinary sand casting vent-holes are provided at points where the air is likely to be caught, and where the metal is forced into metal-molds under pressure it has been attempted heretofore to remove the air by means of exhaust-pumps; but the latter method in addition to requiring complex mechanism for its execution is not adapted for general use on account of the tendency of the parts of the mold to warp in the presence of molten metal or otherwise forming open joints which prevent the formation of a vacuum in the mold.

According to my invention the metal-mold is designed to have very narrow spaces leading out from the metal-cavity, through which the air may readily escape, but which will not allow the molten metal to escape or, at most, only in the form of a very thin snag, which may be easily removed.

In the accompanying drawings, forming a part of this specification, I have shown one form of device for carrying out my invention, in which—

Figure 1 is a perspective view of a pot and pump for the molten metal connected to a form on which is mounted the mold. Fig. 2 is a cross-section of a mold and casting, and Fig. 3 is an inner plan view of one-half of a mold.

As shown in the drawings, A is the pot in which the broken metal is placed and melted. B is the pump-cylinder; D, the pump-rod, which may be operated by foot or hydraulic power. E is the form or bench

upon which the several parts of the device are mounted, and F is a block through which the spout from the pump D passes. These parts may be of the usual construction, and therefore will not be described here in detail.

On the form E to the left of the block F is pivoted a heavy metal-mold G, adapted to be swung around to bring its right side, in which is located the gate or spout 1, up against the face of the block, so as to make a tight joint therewith, and with the gate 1 in alinement with the spout in the block. The front end of the mold G carries a latch-bolt 2, having a head 3, which is adapted to engage the rear side of block F and hold the mold in fixed relation therewith. A lever-arm 4 is provided on the bolt 2, whereby it may be rocked, and also constituting a handle for the manipulation of the mold toward and away from the block F. Suitably supported on the form E above the mold is an inclined track 5 in the form of a helix with its center in the axis of the bolt 6, about which the mold is pivoted, and operatively engaging this track is a projection 7 from the top of the upper member 8 of the mold. The upper member 8 is provided with apertures at two of its corners, through which pass guide-rods 9, secured to the lower member 10 of the mold, and whereby the two members are held in vertical alinement.

When the mold is moved to the right, the track 5 operates to carry the upper member of the mold toward the lower member, and when the mold is in the extreme right-hand position it exerts sufficient pressure thereon to prevent the two members from springing apart when the molten metal is forced into the mold, and when the mold is swung to the left it acts automatically to separate the members of the mold to permit the casting to be removed.

The mold, which is of any desired shape, has its members separated when in the operative position by very narrow spaces, through which the air may be forced by the inflowing metal, but which are too narrow for the passage of the molten metal. The amount of space provided between the contiguous surfaces of the members of the mold will vary according to the conditions of use—such as the kind of metal used, pressure exerted, size of castings, &c.; but in most cases it will be only a few mills. It is quite imma-

terial whether the space provided be at the lower or the upper part of the mold-cavity, for the reason that the molten metal is forced into the mold at such speed that the full
5 cross-section of the cavity is completely filled by the flood of the metal through the mold. However, pains are usually taken in forming the gate or sprue so that it will nearly aline with some part of the mold-cav-
10 ity, as indicated in Fig. 3. In order that the air may escape in both directions from a casting with an open center, such as a ring, I cut away considerable metal from the center of the mold, as indicated in Fig. 2, whereby a
15 chamber 11 is formed, into which an amount of air may be forced without materially increasing the pressure.

I have made use of a variety of means for holding the contiguous faces of the members
20 of the mold out of contact, such as providing disks of thin paper 12, which are cemented to one of two contiguous faces by removing considerable metal from the contiguous faces and leaving certain points which constitute

slight elevations and by cutting numerous 25 channels in the surfaces which increase in depth as they approach the outside edges.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The combination of a pivoted sectional 30 mold, an inclined track supported above said mold and having sliding engagement with a section of said mold, and means for holding the sections of the mold in alinement.

2. The combination with means for sub- 35 jecting molten metal to pressure, of a block provided with a spout connecting therewith, a pivoted sectional mold provided with a latch adapted to be moved into engagement with said block, and a circular inclined track 40 supported above said mold and having sliding engagement with a section of said mold.

In witness whereof I have hereunto set my hand this 3d day of December, 1902.

HENRY GEISENHÖNER.

Witnesses:

EDWARD WILLIAMS, Jr.,

HELEN ORFORD.