Jan. 11, 1927. 1,614,360

F. C. GRANADE

APPARATUS FOR MAKING CASTINGS

Filed August 31, 1925

Fig. 1.

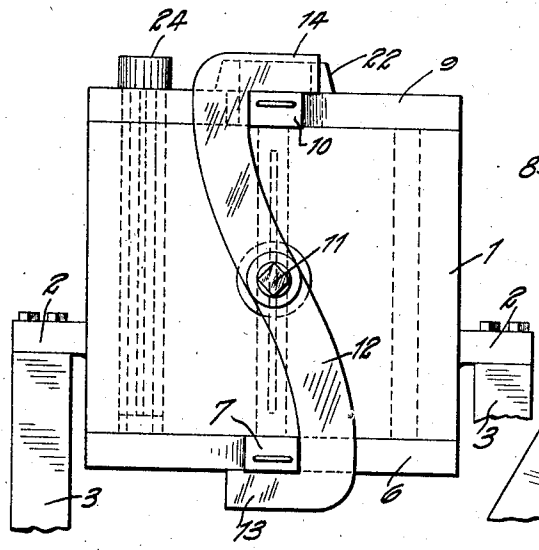



Fig. 2.

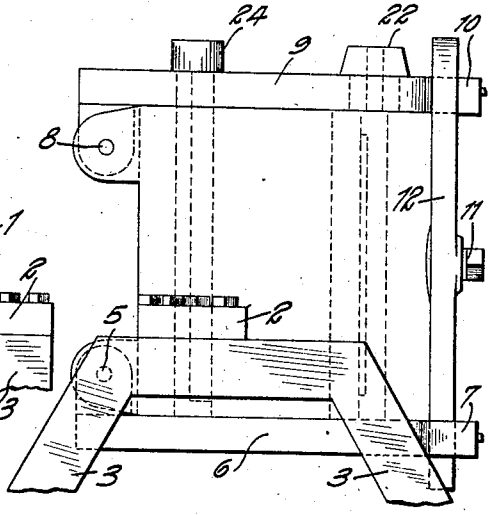



Fig. 3.

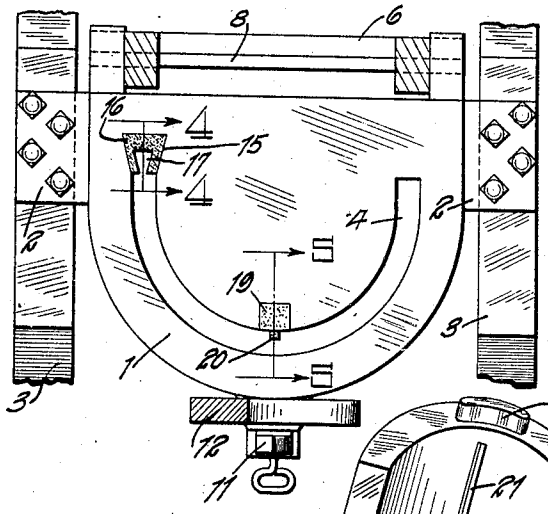



Fig. 4.

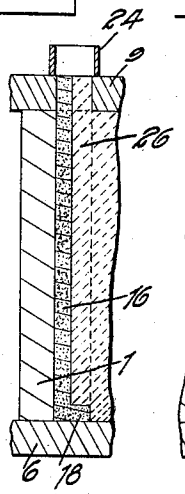



Fig. 5.

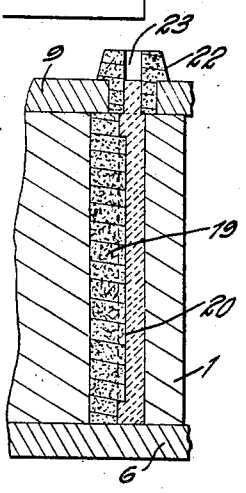
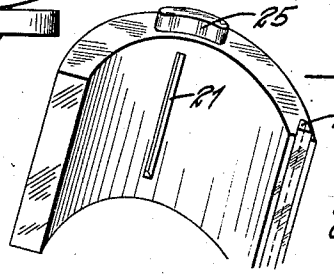



Fig. 6.




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Patented Jan. 11, 1927. 1,614,360

# UNITED STATES PATENT OFFICE.

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## APPARATUS FOR MAKING CASTINGS.

Application filed August 31, 1925. Serial No. 53,519.

This invention relates to a method and apparatus for making castings, and more particularly for making castings in a permanent mold.

One of the objects of this invention is to provide a method for casting in a permanent mold whereby the mold cavity may be formed in a solid block and the casting extracted through a simple end opening.

Another object of this invention is to provide a mold in which the ingate is formed in a fragile part which may be broken in extracting the casting.

Further objects will appear from the following description taken in connection with the accompanying drawing in which:

Figure 1 is a front view of a mold embodying this invention;

Figure 2 is a side view of the same;

Figure 3 is a top view of Figure 1 with the cover removed;

Figure 4 is a section on line 4—4, Figure 3;

Figure 5 is a section on line 5—5, Figure 3; and

Figure 6 is a view of the finished casting.

Referring to the accompanying drawing, 1 designates the body of a mold which may be mounted by means of brackets 2 on a supporting base 3. The body 1 is in the form of a solid block in which the mold cavity 4 is formed. In the case illustrated the mold is formed for casting bearings. These are usually cast of brass or bronze and in semi-cylindrical sections, each forming a half bearing; accordingly the cavity is crescent shaped and of considerable depth. Hinged to the body 1 at 5 is a bottom plate 6 provided with a lug 7. Also hinged to the body 1 at 8 is a top plate or cover 9 provided with a lug 10. Pivoted at 11 on the body 1 is an S-shaped latch bar 12 having hooked ends 13 and 14 adapted to engage under and over the lugs 7 and 10 respectively in order to latch the plates 6 and 9 in closed position.

One end of the mold cavity 4 is provided with an enlarged recess 15 adapted to receive a baked sand ingate 16 which has formed therein an ingate port 17. The ingate 16 is formed of baked sand in any well known manner and is provided with the port 17 extending therealong to within a short distance of the bottom of the mold cavity, leaving a portion 18 of the ingate to provide a bottom therefor upon which the molten metal may impinge during the pouring operation. The ingate part 17 communicates through a narrow opening with the mold cavity 4 along practically the entire length thereof as may be seen from Figure 4.

The mold cavity is further provided with a recess adapted to receive a baked sand core 19 having a rib 20 adapted to form in the finished casting an oil groove 21 as shown in Figure 6. Just above the core 19 an opening is formed in the cover 9 adapted to receive a baked sand riser vent 22 having an opening 23 therethrough arranged to communicate with the mold cavity 4 and through which gases may escape and into which the metal may rise upon completion of the pouring operation.

In carrying out this method, the sand core 19 which has previously been prepared and suitably baked is placed in its recess and the plates 6 and 9 are then closed and latched by the latch 12. The prepared ingate 16 is then slipped in place through an opening in the top plate and the riser vent 22 is set into its opening in the top plate above the mold cavity. The molten metal may then be poured into the mold through the ingate 17, a guiding spout 24 being provided, if necessary. The metal runs down the ingate 17 and therefrom into the mold cavity 4 filling the same and finally rising into the vent 23. The casting is then allowed to cool until hard enough to retain its shape. The casting now has the form of the cavity 4, indented to provide the oil groove 21, and has a riser 25 extending into the opening 23 and also has a sprue standing in the ingate 17 and connected to the casting by a narrow fin 26. As the cooling progresses the cover 9 may be opened and thrown back so as to facilitate cooling. When the casting is ready for removal the lower plate 6 is unlatched and dropped downwardly to open the mold at the bottom. A sharp blow on the casting will now cause the same to drop out of the bottom of the mold. As the casting emerges from the mold, the fragile sand parts 16, 19 and 22 are broken so as not to interfere with the exit of the casting.

It will be seen that this invention provides a method whereby castings may be formed in a solid permanent mold. This is made possible by providing the fragile portions formed of sand which may be broken for extracting the casting. The core

19 also provides means for forming a special projection or depression in the casting, such as the oil groove 21. The ingate 16 being provided with a bottom 18 upon which the metal impinges when poured into the ingate part, takes the wear of the impinging metal during the pouring operation, and thereby relieves the bottom plate 6 of such wear.

It is obvious that various changes may be made in details of construction without departing from the spirit of this invention; it is, therefore, to be understood that this invention is not to be limited to the specific details shown and described.

Having thus described the invention, what is claimed is:

1. A permanent mold having a cavity of considerable depth and provided with a closure whereby the casting may be withdrawn endwise and a fragile ingate extending along the cavity and adapted to permit withdrawal of the casting.

2. A permanent mold holding having a cavity and provided with a bottom closure and a fragile ingate extending along the cavity and in communication with the cavity throughout its length, said ingate having a bottom portion extending above said closure.

3. A permanent mold having a cavity and provided with top and bottom closures, a fragile ingate extending along the cavity, and in communication with the cavity throughout its length, and a fragile core extending along said cavity.

4. A permanent mold having a cavity and a fragile ingate extending along the cavity and in communication with the cavity throughout its length.

5. A permanent mold having a cavity and a fragile ingate extending along the cavity and provided with a port which terminates short of the bottom of the mold but is open to the cavity therealong.

6. A permanent mold having a crescent shaped cavity and a fragile ingate communicating with said cavity along one end thereof.

7. A permanent mold having a crescent shaped cavity, a fragile ingate extending along said cavity at one end thereof and a fragile core extending along said cavity at an intermediate point.

8. A permanent mold holding having a crescent shaped cavity, a fragile ingate extending along said cavity at one end thereof and in communication with the cavity throughout its length.

9. A permanent mold having a crescent shaped cavity provided with a bottom closure, and a fragile ingate extending along said cavity at one end thereof, said ingate having a bottom portion extending above said closure.

10. A permanent mold having a crescent shaped cavity provided with top and bottom closures, a fragile ingate extending along said cavity at one end thereof, and a fragile core extending along said cavity.

In testimony whereof I affix my signature this 10th day of August, 1925.

FRED C. GRANADE.