Oct. 6, 1931. A. KADOW 1,825,958

MAKING METAL ARTICLES

Filed Jan. 10, 1927

Fig-1

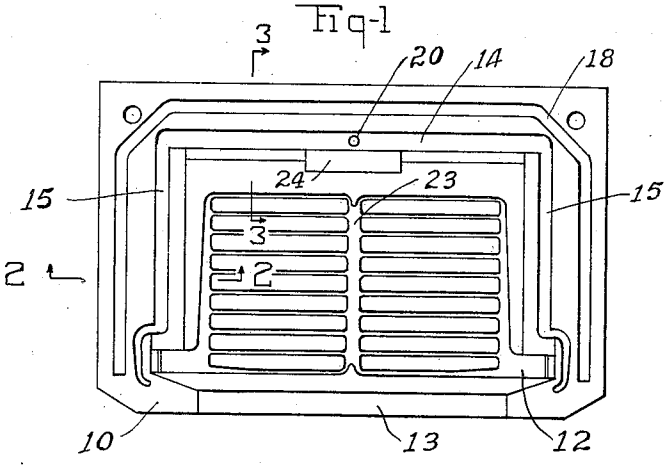


Fig-2

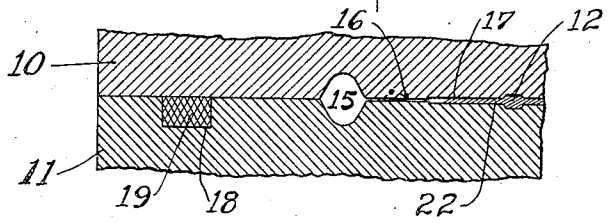
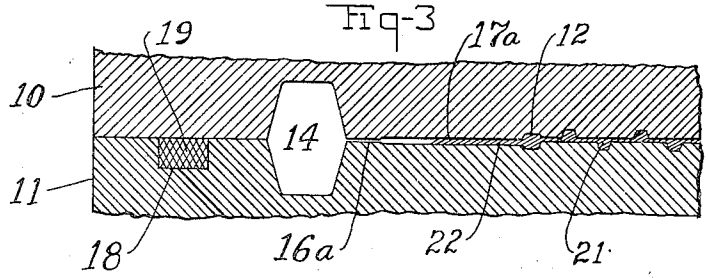


Fig-3



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UNITED STATES PATENT OFFICE

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MAKING METAL ARTICLES

Application filed January 10, 1927. Serial No. 160,020.

My invention relates to metal casting, and more particularly to metal casting where the mold is exhausted for filling purposes.

The purpose of my invention is to insure the complete filling of the mold, especially where the mold cavity is comparatively narrow in proportion to its length, at least in some portions of the mold cavity.

It sometimes happens, especially where the shape of the mold cavity requires flowing of the metal through comparatively long narrow passages to reach extreme portions of the casting, that the metal solidifies before it completely fills the casting.

The main object of the present invention is to provide a means and method whereby the metal is normally caused to flow beyond the extremity of the desired casting to form an extension or overcast which is subsequently trimmed off. In this way any incompletely filled portion of the mold cavity is likely to lie beyond the limits of the casting proper.

The details of the invention will appear more clearly as the description proceeds, in connection with the accompanying drawings, forming a part of this specification. In these drawings, Fig. 1 is an inside view of a section of a mold embodying one form of my invention; Fig. 2 is a section on the line 2—2 of Fig. 1; and Fig. 3 is a section on the line 3—3 of Fig. 1.

The mold illustrated is constructed of two sections 10, 11. A casting cavity 12 is provided between the mold sections when they are brought together. An inlet 13 is provided at the bottom of the mold and the faces of the mold sections above the casting cavity are cut away to form a vacuum chamber 14. Connected with the vacuum chamber are grooves 15 around the sides of the casting cavity. The faces of the mold sections are ground away to form slit 16 between the vacuum groove and the casting cavity. Next to the casting cavity the walls are ground away still further to form a space 17 into which the metal may flow beyond the limits of the casting proper. The exact proportions of the different parts is immaterial, but the slit 16 should be so narrow as to prevent the entrance of metal therein, while the space 17 should be wide enough to permit the metal to enter.

In the preferred form of mold there is a groove 18 running around near the edge of the face of one mold section, and a suitable packing 19 is provided in this groove in order to make a tight joint between the two sections when they are brought together.

In using the device described, vacuum chamber 14 is exhausted by suitable means connected therewith through opening 20 or some other suitable opening. The inlet 13 being connected with suitable source of molten metal, the metal flows up into the mold to replace the exhausted air, and a casting 21 is formed in cavity 12. The metal is drawn out, not only to the extreme limits of the casting cavity, but also into space 17 beyond the casting cavity, forming an overcast 22, which may be trimmed off to complete the casting. Inasmuch as any failure to completely fill the mold ordinarily takes place at the extreme limits of the casting, defects will occur in the overcast 22 rather than in the casting proper 21, so that, when the overcast has been trimmed off, the casting proper is a perfect casting.

The mold illustrated is intended for casting battery grids. In such a mold, incomplete filling is most likely to occur at the sides and top, and is more likely at the top than at the sides. Overcast space 17 along the sides insures the filling of the side margins of the mold, while overcast space 17^a at the top of the casting cavity is made somewhat larger than space 17, and insures the complete filling of the top of the cavity. It is usually preferable to make the overcast space largest where it adjoins the extremity of the casting cavity which is most difficult to fill. This is usually at the top, but in casting some forms of articles, the greatest difficulty might be experienced in casting a lateral projection.

It is preferable to render the communication between the overcast space and the exhausting groove freest where the overcast space adjoins the extremity of the mold most difficult to fill. In the mold shown, air exhausted from the overcast space 17^a at the

top of the mold does not travel as far through slit 16ª to reach the vacuum groove as air has to travel through slit 16 at the side of the mold to escape from overcast space 17. In fact, under usual conditions, space 17ª may be continued to the vacuum groove without troublesome entrance of metal into the groove. Overcast spaces 17 at the sides continue upward to chamber 14 at the top. Side grooves 15 are not always necessary when packing 19 is used, or other means are employed to prevent entrance of air between the mold sections.

Any leak between the mold sections allowing air to enter the mold cavity enhances the danger of defective castings by lessening the vacuum, reducing the tendency to draw metal to that portion of the mold, and furnishing air to be trapped at that point. Packing 19 lessens the danger of any such leaks, and vacuum grooves 15, when employed, intercept any air entering between the mold sections.

The mold shown is for forming a double battery grid, having a common bar at the center. The casting cavity groove 23 for casting this central bar affords a comparatively clear path from the bottom to the top of the mold, and immediately thereabove means are provided, such as raised portion 24, to block the passage of the metal into the vacuum groove.

It will be understood that this method of employing an overcast will be useful with many forms of molds, and with other methods of introducing metal, where difficulty is found is completely filling extremities of the mold. In such cases, by providing space for an overcast beyond the extremity of the mold which is difficult to fill, any imperfection will be included within the overcast instead of within the casting proper. This is especially true where metal is introduced into the bottom of the mold, and where air is evacuated from the space into which the metal flows to form the overcast. The overcast space provides a way of escape for trapped air even where this space is not connected with exhausting means.

It will be understood that the above specification shows and describes but one embodiment of the invention, and that various modifications may be made within the scope of the appended claims.

What is claimed is:

1. A two part mold having the meeting surfaces of its parts cut away to form a casting cavity having its greatest cross-section along the parting plane, an inlet opening into the bottom of the cavity, vacuum grooves along the sides and top of the cavity, an overflow space outside of the sides and top of the casting cavity, and a communicating slit between the vacuum groove and the overflow space.

2. A two part mold having the meeting surfaces of its parts cut away to form a casting cavity having its greatest cross-section along the parting plane, an inlet opening into the bottom of the cavity, vacuum grooves along the sides and top of the cavity, an overflow space outside of the sides and top of the casting cavity, and a communicating slit between the vacuum groove and the overflow space, the overflow space along the top being larger than along the side.

In testimony whereof, I have hereunto signed my name to this specification.

AUGUST KADOW.