

C. E. CHAPPLE.
CASTING APPARATUS.
APPLICATION FILED NOV. 29, 1919.

1,385,201.

Patented July 19, 1921.

Fig. 1.

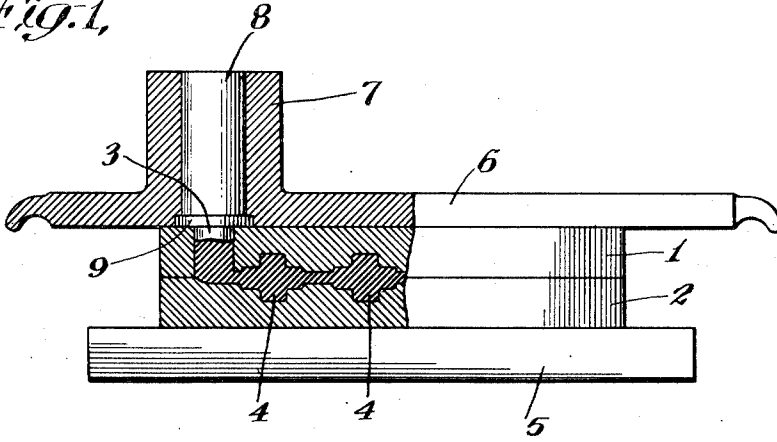


Fig. 2.

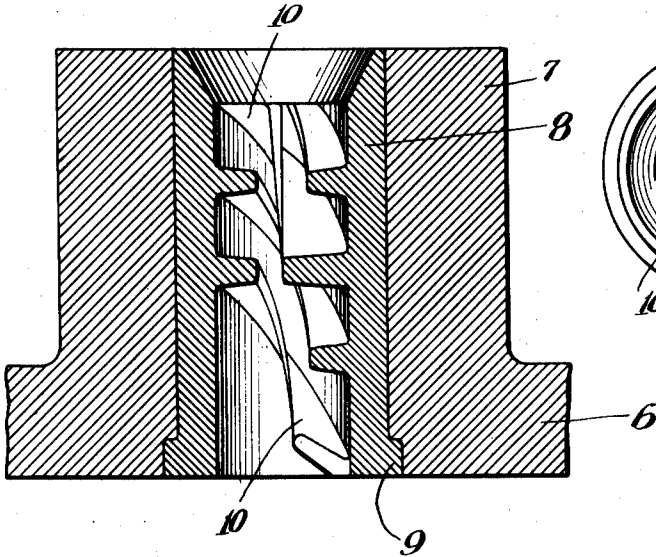
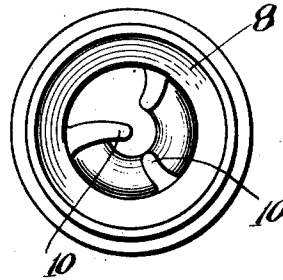


Fig. 3.



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UNITED STATES PATENT OFFICE.

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CASTING APPARATUS.

1,385,201.

Specification of Letters Patent. Patented July 19, 1921.

Application filed November 29, 1919. Serial No. 341,454.

To all whom it may concern:

Be it known that I, CHARLES E. CHAPPLE, a citizen of the United States, residing at borough of Brooklyn, city of New York, in the county of Kings and State of New York, have invented certain new and useful Improvements in Casting Apparatus, of which the following is a specification.

My invention relates to casting apparatus and more particularly to an improved form of ingate which may be formed in a mold or secured thereto or connected therewith.

My improved construction consists in the use of an ingate having a worm therein so arranged as to guide the fluid metal poured into the ingate in a continuous spiral path through the ingate. Preferably I provide a plurality, such as three, of helical threads which are formed on the bore of the ingate and are so arranged, and of such surface areas or widths, as to intercept all fluid metal poured into the ingate, no clear unimpeded passage being left through which the metal might drop. Such a construction insures the passage of the fluid metal into the mold cavity without agitation and also acts as an automatic skimmer to separate the dross from the clean metal. This construction also largely prevents the oxidation of the metal entering the mold. The device is particularly intended for use in connection with molds formed of a plastic composition such as a composition largely composed of plaster of Paris, which molds are to be used in the production of what is known as "finished" castings.

In the preferred form of my invention the worm construction referred to is formed within and integral with a supplementary tubular member which is formed of a suitable refractory material having a low heat conductivity, such as the plaster of Paris composition of which the mold is formed.

In order that my invention may be more clearly understood attention is hereby directed to the accompanying drawings forming part of this application and illustrating one form of my invention. In the drawings, Figure 1 represents a vertical section through a two-part mold having a supplemental member mounted thereon, in the ingate of which my improved ingate construction is mounted, the improved construction being shown in side elevation, Fig. 2 repre-

sents an enlarged partial vertical section of the supplemental member shown in Fig. 1, the ingate member positioned therein being shown in section and Fig. 3 is a top plan view of the construction shown in Fig. 2.

Referring to the drawings I have shown my invention as applied to the type of casting apparatus described and claimed in Patent No. 1308862 issued to Pack and Nock, July 8, 1919, although it should be understood that my invention is not limited in its applicability to such a structure.

In the construction shown in the drawings I have illustrated a two-part mold made up of parts 1 and 2, the part 1 having a gate 3 connecting, by means of suitable runs, with mold cavities formed in the two parts of the mold, in which the castings 4 are to be formed. The mold parts 1 and 2 are preferably formed of a plastic composition such as one embodying plaster of Paris and powdered asbestos. The mold may be positioned upon a suitable base 5. In the form of my invention illustrated a supplemental weighted member 6, which may be formed of metal, is superimposed upon the mold, so that the weight of the same, or pressure exerted therethrough, will prevent separation of the mold members when the castings are poured.

In the construction illustrated, the member 6 is provided with an enlarged portion 7 through which extends a vertical opening which may be axially alined with the ingate 3 of the mold. In the patent to Pack and Nock, referred to, the vertical passage through the enlargement 7 of member 6 was provided with a refractory lining of cylindrical form. In the present invention the cylindrical gate member having a helical surface or surfaces therein, referred to above, is inserted within the vertical passage through enlargement 7 in place of the refractory lining of the patent referred to, to form a supplementary ingate.

My special gate member takes the form, in the construction illustrated, of a tubular member 8 formed of a refractory material of low heat conductivity, such as a plaster of Paris and asbestos composition. This tubular member may be provided at its lower end with a peripheral flange 9, and the member 6 is provided with a corresponding recess, at the lower end of the cylindrical

vertical passage therethrough, so that the member 8 may be inserted into the opening through the enlargement 7, from the lower end thereof, into the position shown in Fig. 1, of the drawings.

The tubular member 8 is provided with a worm surface or surfaces upon its interior. This construction preferably takes the form of three helical threads or surfaces 10, 10, 10 which may be spaced at a distance of 120 degrees apart within the bore of the tube. These helical threads extend in a substantially radial direction inwardly from the bore of the tube for a substantial distance to form suitable bearing and guiding surfaces for the fluid metal. Preferably, they are so arranged in relation to each other as to leave no clear central passage through which the fluid metal may pass without obstruction.

The gate member may readily be molded as an integral construction with the worm surfaces formed thereon. As has been noted above the construction is not limited in its use to a position within a supplemental or superimposed member, the structure being applicable as a gate for various forms of mold. The ingate thus formed should be of a sufficiently large capacity to permit the rapid pouring of the entire charge of metal, the metal flowing at a comparatively slow rate over the inclined worm surfaces, the clean metal entering the mold without agitation.

It will be understood that my invention is not limited strictly to the exact details of construction described but is as broad as is indicated by the accompanying claims.

What I claim is:

1. Casting apparatus embodying a member having an ingate formed therein, said ingate having surfaces therein at an angle to the axis thereof, so arranged as to guide the fluid metal poured into said ingate and to prevent the unimpeded passage through the ingate of substantially all the fluid metal

poured therein at any point in the cross-sectional area thereof.

2. Casting apparatus embodying a member having an ingate formed therein, said ingate having a plurality of helical threads formed therein, so arranged and of sufficient width as to prevent the unimpeded passage through the ingate of substantially all the fluid metal poured therein.

3. Casting apparatus embodying a gate member having a passage therethrough, said member being adapted to be positioned upon a mold so as to align the bottom of said passage with the top of the ingate of the mold, said passage having a worm formed on the wall thereof so as to extend to a substantial extent into the path of fluid metal poured into said passage.

4. Casting apparatus comprising a mold having a mold cavity therein and an ingate leading to said cavity, and a supplemental member having an ingate registering with the ingate of the mold, said last named ingate having a worm formed therein of refractory material having a low heat conductivity, so arranged as to extend in the path of fluid metal poured into said last named ingate.

5. Casting apparatus embodying a member adapted to be positioned upon a mold, having a passage therethrough adapted to be axially aligned with the ingate of the mold, and a tubular member, formed of refractory material of low heat conductivity, adapted to be inserted as a lining within said passage, said tubular member having a worm formed within the same so as to extend to a substantial extent into the path of fluid metal poured into the same.

This specification signed and witnessed this 26th day of November, 1919.

CHARLES E. CHAPPLE.

Witnesses:

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WILLIAM E. BAUERSCHMIDT.