

2 SHEETS—SHEET 1.

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DIE CASTING MACHINE.
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2 SHEETS—SHEET 2.

Fig. 3.

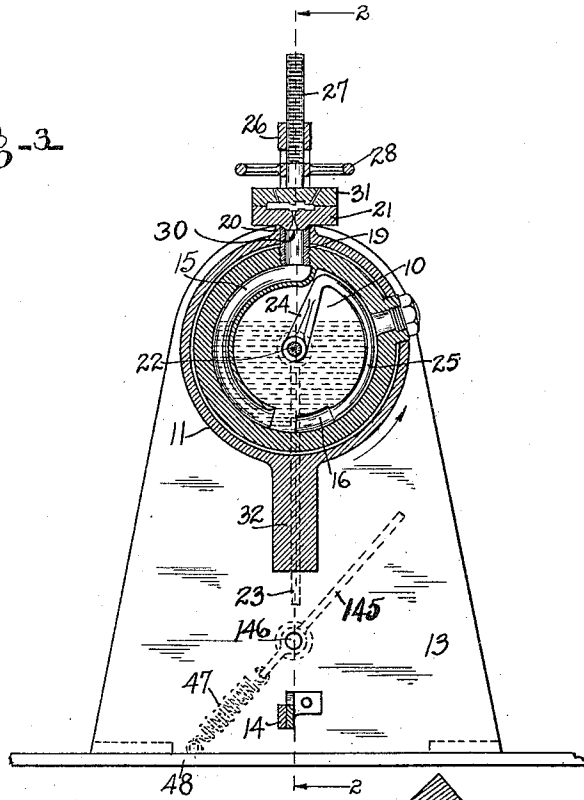
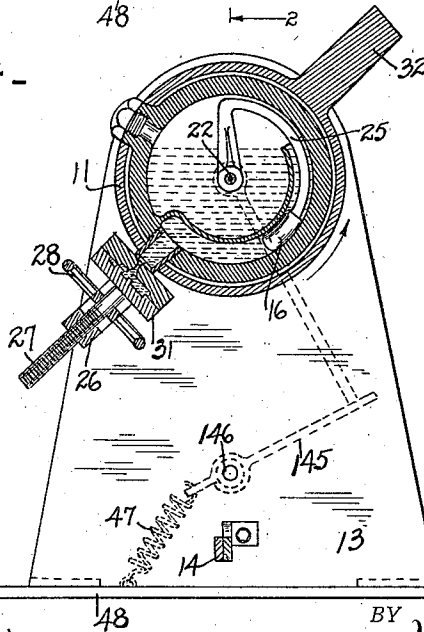


Fig. 4.



WITNESSES:

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DIE-CASTING MACHINE.

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To all whom it may concern:

Be it known that I, LAYTON M. PARKHURST, a citizen of the United States, and a resident of Indianapolis, county of Marion, and State of Indiana, have invented a certain useful Die-Casting Machine; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings.

The object of this invention is to improve the construction and operation of die casting machines, whereby the molten metal may be forced into the die in a direct and positive manner which shall have no deteriorating effect on the metal, such as results when air is used to cause the discharge of the metal into the die. The invention is particularly adapted for use with metals having a comparatively low melting point.

The features of the invention lie in providing a die casting machine with a revoluble metal pot having a discharge passage leading from the lower part thereof and beneath the surface of the metal to which the die is secured and with a plunger within the melting pot which is caused to enter said discharge passage as the pot is revolved and force the metal into the die.

The nature of the invention will be understood from the accompanying drawings and the following description and claims:

In the drawings, Figure 1 is a side elevation of a die casting machine showing the means for operating the same. Fig. 2 is a vertical section on the line 2—2 of Fig. 3. Fig. 3 is a vertical transverse section on the line 3—3 of Fig. 1. Fig. 4 is the same as Fig. 3, but with the parts in an operated position.

In detail there is shown in the drawings a die casting machine having a crucible or melting pot 10 centrally secured within a heating chamber 11 and revoluble on extensions 12 which have bearings in end plates 13 spaced apart by a brace 14. A die is secured upon the outlet 15 from the crucible 10 and there is a plunger 16 in said crucible which is caused to enter the outlet passage when said crucible is revolved to force the molten metal into the die.

The melting pot 10 is formed of two similar parts 17 having circular bowl-like inner ends which together form the chamber 10 for melting and holding the metal. The

outlet passage 15 is annular and is formed of substantially semi-circular troughs 18, one of which is secured to the inner end of each of the melting pot bowls 17. Said troughs extend for substantially half way about the melting pot. A pipe 19 is screwed into the upper end of the crucible or melting pot and leads through the heating chamber 11 and upon an annular external projection 20 the lower part 21 of the die is secured, as hereafter described. The lower end of the outlet passage 15 lies below the level of the metal within said pot except when said pot is inverted. The pivots 12 secured to the bowls 17 of the melting pot have bearings in the end plates 13. Said pivots are centrally bored to receive a shaft 22 which is operated by means of a lever 23, hereafter described, and within the crucible an arm 24 is secured on the end of which there is a curved arm 25 concentric with the shaft and with the outlet passage 15 and having the plunger 16 upon its end which is of the same diameter as the outlet passage 15.

The heating chamber 11 surrounds the melting pot 10 and is secured thereto and upon the upper side, as shown in Fig. 2, there is a yoke extension 26 through which a screw 27 is threaded with a wheel 28 secured thereto within the yoke. The lower half 21 of the die has a conical projection 29 which fits into an opening 30 in the projection 20 from the heating chamber and the upper part 31 of the die is secured in place by means of said screw 27 and the hand wheel 28. Upon the lower side of the heating chamber, as shown in Fig. 2, there is a weight 32 to counterbalance the weight of the die and the means for securing the same. The heating chamber 11 is substantially cylindrical in cross section and the open ends are closed by the end plates 13. Fuel and air are supplied through the pipes 34 and 35, respectively, and enter the heating chamber through the pipe 36 near the bottom thereof, see Figs. 1 and 2. There is an exhaust opening 37 substantially above the center of said heating chamber and leads to the outer air.

A sprocket wheel 38 is secured upon the left-hand pivot 12 of the melting pot, as shown in Fig. 2, and is driven by means of a chain 39 from a sprocket wheel 40 mounted in connection with a clutch 41 upon a shaft 42 driven from some convenient source

of power. A rod 43 is connected to said clutch and to the lower end of the lever 44 fulcrumed at 45 upon a projection 46 from one of the frames 13 and by operating said lever, the sprocket wheel 40 may be operated by the shaft 42 and the heating chamber 11 and melting pot 10 will be revolved. The construction of the clutch 41 forms no essential part of this invention.

10 The shaft 22 by which the plunger 16 is operated extends through the right-hand pivot 12 of the melting pot, see Fig. 2, and upon its end the lever 23 is secured. Normally the lever 23 takes a vertical position

15 due to gravity and when the melting pot 10 and heating chambers 11 are in their normal idle positions, the plunger 16 is spaced apart from the entrance to the outlet passage 15. The lever 145 fulcrumed upon the projection

20 146 from the right-hand end plate 13, as shown in Fig. 1, has a spring 47, shown by dotted lines in Figs. 3 and 4, which is secured to the base 48 of the machine and causes said lever to extend at an angle of

25 approximately 30 degrees from the vertical. After a die has been secured upon the outlet from the melting pot, and the sprocket wheel 40 has been thrown into gear with the shaft 42 by operating the lever 44, the melting

30 pot and heating chamber will be caused to revolve. This will cause the molten metal within the crucible 10 to flow through the passage 15 into the die and as it revolves, the outlet passage 15 will move over the

35 plunger 16 and push it to the right slightly, as shown in Fig. 4. This will also move the lever 23 to the right and in engaging the lever 145, will be retarded somewhat until the end of the arm 23 has slipped from engagement with said lever 145. This retarding

40 of the arm 23 will cause the plunger 16 to exert a pressure upon the metal above it and in the die and will force the same into all parts of the die and give a uniform density

45 to the same.

I claim as my invention:

1. A die casting machine including a crucible having a curved outlet passageway within the same, a plunger located within

50 the crucible and in alinement with the entrance of the outlet passageway and curved concentrically therewith, one of said elements being rotatably movable relative to the other so as to cause the plunger to force

55 the molten metal through the outlet passageway, and means for securing a die in communication with the outlet passageway.

2. A die casting machine including a crucible with a circular inner wall and an outlet thereto, a substantially semi-circular partition adjacent the inner wall thereof and with the outlet opening forming an outlet

60 passageway, a curved plunger in alinement with the entrance to the outlet passageway, means for causing relative movement of the

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crucible and plunger whereby the plunger will enter the outlet passageway and force the metal therethrough, and means for securing a die to said crucible in communication with the outlet therefrom.

3. A die casting machine including a revoluble crucible having a substantially semi-circular outlet passageway therein discharging normally upward, means for securing a die to said crucible in communication with the outlet passageway, a shaft extending

70 concentrically in the crucible, a curved plunger carried by said shaft within the crucible in position to enter the outlet passageway, and means for causing different relative revoluble movements of the crucible and plunger, whereby said plunger will enter the

75 outlet passageway and force the metal into the die.

4. A die casting machine including a revoluble crucible with a substantially semi-circular outlet passageway therein, a die secured to the crucible in communication with the outlet, a shaft extending into said crucible, a curved plunger in position to enter

80 the mouth of the outlet passageway, and means for yieldingly retarding the revoluble movement of one of said revoluble members while the other is given revoluble movement.

5. A die casting machine including a revoluble crucible having a substantially semi-circular outlet passageway therein discharging normally upward, means for securing a die to said crucible in communication with the outlet passageway, a shaft extending

85 concentrically in the crucible, a curved plunger carried by said shaft within the crucible in position to enter the outlet passageway, and means for yieldingly resisting the revoluble movement of the plunger as the crucible is given revoluble movement.

6. A die casting machine including a revoluble crucible having a substantially semi-circular outlet passageway therein discharging normally upward, means for securing a die to said crucible in communication with the outlet passageway, a shaft extending

90 concentrically in the crucible, a curved plunger carried by said shaft within the crucible in position to enter the outlet passageway, an arm extending from the external part of said shaft, and a spring-held bar in the path of said arm which yieldingly resists the

95 movement of said arm and plunger as the crucible is given revoluble movement.

7. A die casting machine including a revoluble crucible having a substantially semi-circular outlet passageway therein discharging normally upward, means for securing a die to said crucible in communication with the outlet passageway, a shaft extending

100 concentrically in the crucible, a curved plunger carried by said shaft within the crucible in position to enter the outlet passageway, an

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oscillatably mounted bar with one end in position to be engaged by said arm, and a spring holding the other end of said bar for yieldingly resisting the advancing movement of said arm as the crucible is given revoluble movement.

8. A die casting machine including a crucible, an external chamber inclosing the crucible, there being a curved outlet passageway in the crucible and leading through the crucible and outer chamber, means for mounting said outer chamber so that it is revoluble, means for securing a die in connection with the outer chamber, means for introducing heat between the crucible and the

outer chamber without interfering with its revoluble movement, a shaft extending into the crucible, a curved arm secured on the shaft within the crucible in alinement with the entrance to the outlet chamber, an arm extending from the outlet end of the shaft, and yielding means for resisting the revoluble movement of said arm.

In witness whereof, I have hereunto affixed my signature in the presence of the witnesses herein named.

LAYTON M. PARKHURST.

Witnesses:

G. H. BOINK,
E. H. MAYO.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
