

J. S. THOMPSON.
METAL POT FOR TYPE CASTING MACHINES AND THE LIKE.
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Patented June 11, 1912.

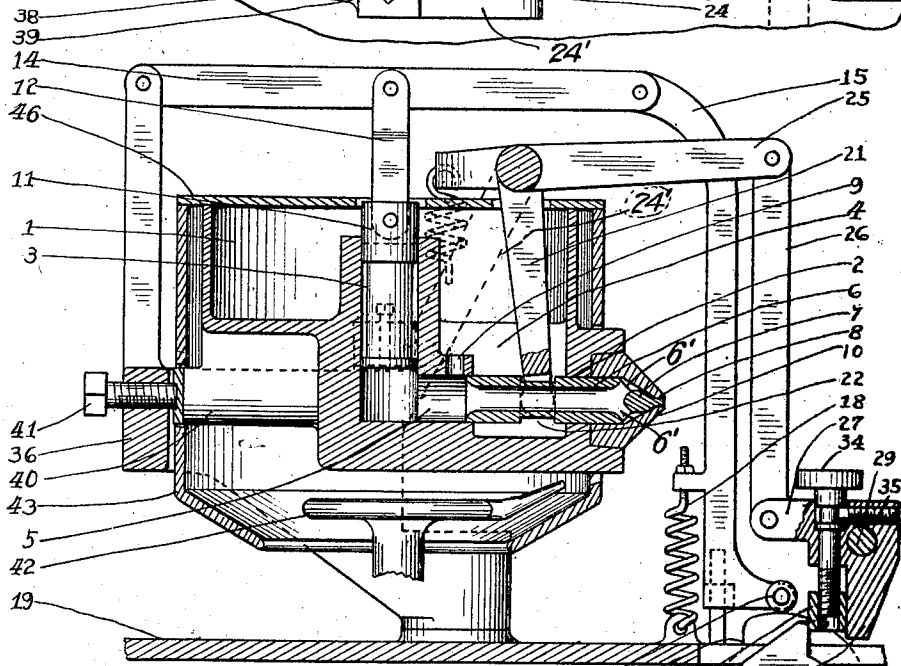
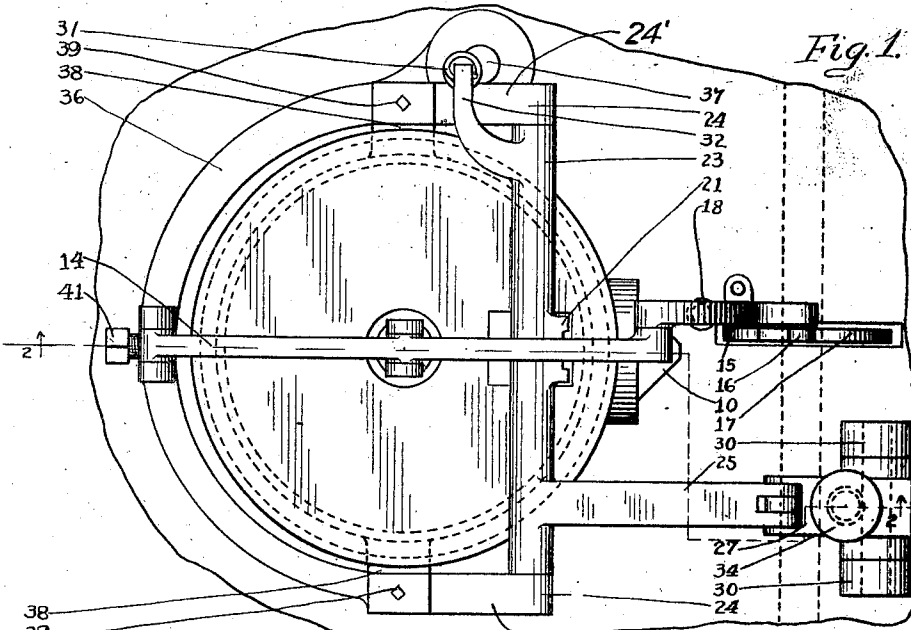


Fig. 2.

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UNITED STATES PATENT OFFICE.

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METAL-POT FOR TYPE-CASTING MACHINES AND THE LIKE.

1,029,243.

Specification of Letters Patent.

Patented June 11, 1912.

Application filed September 20, 1907. Serial No. 393,765.

To all whom it may concern:

Be it known that I, JOHN S. THOMPSON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Metal-Pots for Type-Casting Machines and the Like, of which the following is a description.

My invention relates to that portion of a metal casting mechanism known as the melting, or metal pot which is employed for storing a quantity of the desired metal or composition, maintaining the same at a suitable temperature, and ejecting a suitable quantity of its contents at each casting operation.

The object of my invention is to provide a simple and reliable device of the kind described adapted to discharge the metal from the pump cylinder to the mold by the shortest and most direct passage possible and also to provide means for varying the amount of metal delivered at each operation of the mechanism as desired.

To this end my invention consists in the novel construction, arrangement and combination of parts herein shown and described and more particularly pointed out in the claims.

In the accompanying drawings wherein like or similar reference characters indicate like or corresponding parts, Figure 1 is a plan view of my device with a portion of the stand upon which the same is mounted, broken away, and Fig. 2 is a section taken substantially on line 2-2 of Fig. 1.

In the preferred form shown in the drawings, my device comprises a crucible or receptacle 1 of any desired form or size, provided with an outlet opening 2 on one side near its bottom and a well or cylinder 3 for partially controlling the discharge of metal through said outlet opening.

In the preferred construction, the well 3 is positioned upon the interior of the receptacle near its center in a substantially vertical position, with its lower end extending below the normal bottom of the receptacle and provided with an opening into a pocket or depression 4 formed in the bottom of the receptacle. In the form shown, the depression 4 extends from the cylinder to the periphery of the receptacle, forming a channel or recess for a part of the discharge mechanism of the device and also serving as a pocket from which the metal may be

drawn by the discharge mechanism. The outlet opening 2 also preferably communicates with the pocket 4 at substantially the same level as the opening 5 at the lower end of the cylinder 3, the adjacent portions of the outlet 2 and opening 5 being preferably circular in section and finished upon their interiors with the axis of each opening in alinement, so that a choker 6 of substantially the same external diameter as the interior of the openings 2 and 5 may be positioned with one end in each and serve as a valve for controlling communication between the pocket 4 and the openings 2 and 5.

In the preferred construction shown, the choker 6 is tubular, with its end which is positioned in the opening 2 provided with a nipple 7 adapted to serve as a closure for the small opening or port 8 at the outer end of the opening 2, a suitable duct or channel 6' being provided at each side of the nipple 7, thus providing a substantially straight tubular connection, open at both ends between the cylinder 3 and the port 8. The parts are so proportioned that when the port 8 is closed, an opening or channel 9 extending between the opening 5 and pocket 4 is open, but when the choker 6 is moved to open the port 8, a portion of the choker 6 closes the opening or channel 9 thus preventing communication between the cylinder 3 and recess 4 simultaneously with establishing communication through the choker between the cylinder 3 and port 8. In the form shown, the port 8 is formed in a separate part or nozzle 10, which is preferably screwed, or otherwise secured, in position at the outer end of the opening 2, a portion of the nozzle 10 being bored to correspond with the opening 2, thus forming an extension of the opening and insuring accurate cooperation between the nipple 7 and associated parts of the choker and the opening 2 and port 8. This arrangement provides convenient means for introducing the choker 6 into its place and also for renewing or changing the nozzle 10 or choker 8 in case the same should become worn or otherwise damaged.

Any suitable means may be provided for forcing metal from the cylinder through the port 8. As shown, a plunger 11 is fitted to the cylinder 3 and connected by means of a link 12 to an arm 14 pivotally attached to an upwardly extending member 14' rigidly mounted upon a bracket 36 and adapted to

be operated by means of a rod 15 attached to the free end of the arm 14. The opposite end of the rod 15 is provided with a suitable roller 16 or equivalent means arranged to cooperate with a cam 17 to control the movement of the plunger 11. A spring 18 or other suitable means is attached at one end to the rod 15 and at the opposite end to a suitable portion of the stand 19 upon which my device is mounted to normally tend to hold the plunger 11 at the lowest limit of its movement and the roller 16 in contact with the face of the cam 17, which is so formed as to normally hold the plunger 15 in an elevated position in the cylinder. A suitable depression 20 is provided in the face of the cam 17 so that at each rotation of the cam when the depression 20 arrives at the roller 16, the same will be temporarily released, permitting the spring 18 to give the plunger 11 a sharp downward movement tending to force any metal in the lower end of the cylinder 3 through the choker 6 and out at the port 8, suitable means being provided to retract the choker at the same time for this purpose.

Any suitable means may be provided to control the movement of the choker 6. In the preferred construction, an arm 21 is provided, extending into the pocket 4 with its free end forked or otherwise suitably formed to engage an annular groove or equivalent means 22 upon the choker. The arm 21 is mounted upon a shaft 23, extending transversely of the metal pot and mounted in suitable bearings 24—24 at the upper ends of the arms 24, attached to the bracket 36 at its extremities. A second arm 25 is also rigidly attached to the shaft 23 with its free end connected by means of a bar 26 to the arm 27 of a bell crank lever 27—28 pivotally mounted upon a transverse shaft 29 in suitable bearings 30—30 upon the frame 19. The free end of the arm 28 extends into the path of a suitably formed cam 44 adapted to engage the same and thus move the choker to open the port 8. A spring 31 or other equivalent means is provided extending from an arm 32 rigidly connected to the shaft 23 to a suitable point upon the device for normally holding the choker in position to close the port 8.

In the preferred construction, to control the time the port 8 is held open, and thereby the amount of metal discharged at each operation of the mechanism, to correspond with the size of the type to be cast, an adjustable block 33 is provided upon the arm 28 so arranged that by changing the position of the block longitudinally of the arm the movement of the arm and associated parts may be adjusted as desired; that is, when the block 33 is positioned near the free end of the arm the cam 44 will move the arm and choker farther than when the block is po-

sitioned nearer the pivotal support 29. In the preferred construction shown, the block 33 is suitably threaded, and a cap screw 34 is provided for engaging the threaded portion and controlling its position. A set screw 35 or other suitable means is also preferably provided for engaging a suitably formed groove in the cap screw 34 and preventing its longitudinal movement, and may if desired be operated to retain the parts in their adjusted position.

The receptacle 1 may be mounted upon the frame 19 in any desired manner. In the form shown, an arm or bracket 36 is pivotally mounted at one end upon the frame as at 37 and extends around the rear of the receptacle to the opposite side thereof, where its free end may be secured in any suitable manner to the frame 19. Suitable lugs or projections 38—38 are provided upon the receptacle to engage the arm 36 and support the receptacle in position, the whole being adapted to be swung pivotally on the frame at 37.

Any desired means may be provided to control the vertical position of the metal pot. As shown, a suitably threaded opening is provided in each of the lugs 38 and a set screw 39 is positioned in each opening adapted to extend below the lower face of the lugs and engage, or rest upon, the bracket 36 for this purpose. In the preferred form also a lug 40 is provided upon the receptacle, directly opposite the nozzle 10 and a set screw 41 is provided in the arm in position to engage the lug and thus control the transverse position of the metal pot.

The usual or any preferred form of burner 42 may be provided for controlling the temperature of the receptacle, and connected in any desired manner with a suitable supply of gas, oil, or other fuel. A jacket or housing 43 having suitable openings for the lugs 38 and 40 and nozzle 10 is provided to inclose the receptacle and a cover 46 or equivalent means adapted to jointly close the top of both the jacket and the receptacle is provided of the usual or any desired construction. The jacket 43 merely rests upon the lugs 38 and 40 upon the receptacle and also preferably upon the boss surrounding the nozzle 10 as shown in the drawings.

In the drawings, the cams 16 and 44 are shown fixed upon a common transverse shaft 45, which may be rotated by means of a suitable motor or other convenient source of power (not shown), such operating means not comprising any portion of my present invention.

Having thus described my improvement, it is obvious that various immaterial modifications may be made in my device without departing from the spirit of my invention, hence I do not wish to be understood as lim-

iting myself to the exact form and construction shown.

What I claim as new and desire to secure by Letters Patent is,

- 5 1. A metal pot supported in a pivotally mounted yoke comprising a vertically movable plunger, and a horizontally movable choker valve, pivotally mounted levers supported by members on said yoke adapted to control the movements of said plunger and choker valve, non-resilient means for adjusting the horizontal position of the metal pot in said yoke, the whole adapted to be swung around in said supporting yoke.
- 10 2. A device of the kind described, comprising a pivotally mounted yoke, a metal pot loosely supported therein, adjusting means arranged on opposite sides of the pot for controlling its vertical position in the yoke, means behind the pot for controlling its horizontal position in said yoke, a plunger and choker valve, and operating levers therefor pivotally mounted in supporting members affixed thereto, the whole adapted to be swung around with said yoke to give access to the parts.
- 15 3. In a device of the kind described, a base, a yoke pivotally mounted upon said base, a metal pot suspended in said yoke, and means for adjusting said metal pot vertically and horizontally in said yoke.
- 20 4. In a device of the kind described, a base, a yoke pivotally mounted upon said base, a metal pot suspended in said yoke, and non-resilient means for adjusting the vertical position of said metal pot.
- 25 5. In a device of the kind described, a base, a yoke pivotally mounted upon said base, a metal pot suspended in said yoke, and non-resilient means for adjusting the metal pot horizontally therein.
- 30 6. A metal pot comprising a receptacle for molten metal having a discharge port, a choker valve arranged to normally close said port and means for forcing molten metal from said receptacle through said port, in combination with adjustable means for operating said choker valve arranged to vary the movement of said choker valve and the length of time said port is open.
- 35 7. A metal pot comprising a cylinder, a plunger to force molten metal from said cylinder, a choker valve to control the passage from said cylinder, in combination with means for operating said plunger with an unvarying stroke and adjustable means for operating said choker valve and varying the length of time said choker valve remains open.
- 40 8. A metal pot, having its discharge port in line with the bottom of said pot, a choker valve adapted to open and close said port, having a channel throughout its length, a plunger and means for operating said choker
- 45 and plunger.

9. A metal pot provided with two cylindrical intersecting borings, a plunger operating in one of said borings and a tubular choker valve operating in the other of said borings, in combination with means for operating said choker and said plunger to discharge metal from said pot.

10. A metal pot provided with a discharge port, a vertical cylinder having a plunger movable therein, a duct connecting said cylinder and said port having a tubular choker valve movable therein, adapted to control the passage from said cylinder to said port.

11. In a device of the kind described, a metal pot having its discharge port in the bottom of one side, a choker valve having an opening throughout its length, horizontally movable and adapted to open and close said port, a pump adapted to discharge metal through said port in a straight line from the bottom of said pot, and means for operating said choker valve and plunger.

12. In a device of the kind described, a receptacle having a discharge port in one side, a tubular choker valve adapted to control said port, means for operating said choker and means for periodically forcing metal through said choker and said port.

13. In a device of the kind described, a receptacle having a discharge port in one side at its bottom, a tubular choker valve adapted to control said port, means for operating said choker and means for periodically forcing metal through said choker and said port.

14. In a device of the kind described, a receptacle having a discharge port in one side, a well or cylinder positioned within said receptacle, a tubular choker valve connecting said port to the lower end of said cylinder and adapted to close said port, means for operating said choker, and means for periodically forcing metal through said choker.

15. In a device of the kind described, a metal pot having a discharge port in one side, a substantially vertical well or cylinder positioned within said metal pot, a tubular choker adapted to simultaneously open the port and close the opening between one end of the cylinder and the metal pot, means for operating said choker and means for periodically forcing metal through said choker and out of said port.

16. In a device of the kind described, a receptacle having a discharge port in one side, a well or cylinder positioned within said receptacle, a tubular choker valve arranged to form a passage between said port and said cylinder, open to the receptacle when the port is closed, and closed to the receptacle when the port is open, means for operating said choker and means for periodically forcing metal through said choker and said port.

17. In a device of the kind described, a receptacle having a discharge port in one side, a tubular choker adapted to control said port, means for operating and adjusting the movements of said choker, and means for periodically forcing the metal through said choker to said port.

18. A metal pot provided with two cylindrical intersecting borings, a plunger operating in one of said borings and a choker valve operating in the other, in combination with means for changing the length of the stroke of said choker valve to control the amount of metal delivered from said pot at each operation of said plunger.

19. A metal pot comprising a receptacle for molten metal having a discharge port, a choker valve arranged to normally close said port, a pump for forcing molten metal from said receptacle through said port, and means for operating said pump, in combination with adjustable means for operating said choker valve arranged to vary the length of time said port is open.

20. A metal pot comprising a receptacle for molten metal having a discharge port, a choker valve arranged to normally close said port, a pump positioned in said receptacle for forcing molten metal from the receptacle through said port, and means for operating said pump, in combination with adjustable means for operating said choker valve arranged to vary the stroke of said choker valve and the length of time said port is open.

21. A metal pot comprising a receptacle for molten metal having a discharge port, a choker valve arranged to normally close said port and means for forcing molten metal from said receptacle through said port, in combination with a cam and means connected to said choker valve having an adjustable part arranged to cooperate with said cam to operate said choker valve and vary the stroke of said choker valve and the length of time said port is open.

22. A metal pot comprising a receptacle for molten metal having a discharge port, a choker valve arranged to normally close said port, a pump for forcing molten metal from said receptacle through said port, and means for operating said pump, in combination with a cam and means connected to said choker valve having an adjustable part arranged to cooperate with said cam to operate said choker valve and vary the stroke of said choker valve and the length of time said port is open.

23. A metal pot comprising a receptacle for molten metal having a discharge port, a choker valve arranged to normally close said port, a pump positioned in said receptacle for forcing molten metal from the receptacle through said port, and means for operating said pump, in combination with a cam and means connected to said choker valve having an adjustable part arranged to cooperate with said cam to operate said choker valve and vary the stroke of said choker valve and the length of time said port is open.

24. A metal pot comprising a receptacle for molten metal having a discharge port, a choker valve arranged to normally close said port, a pump for forcing molten metal from said receptacle through said port, and means for operating said pump with an unvarying stroke, in combination with adjustable means for operating said choker valve arranged to vary the stroke of said choker valve and the length of time said port is open.

25. A metal pot comprising a receptacle for molten metal having a discharge port, a choker valve arranged to normally close said port, a pump for forcing molten metal from said receptacle through said port, and means for operating said pump with an unvarying stroke, in combination with a cam and means connected to said choker valve having an adjustable part arranged to cooperate with said cam to operate said choker valve and vary the stroke of said choker valve and the length of time said port is open.

26. In a device of the kind described, a tubular choker valve adapted to control the outlet opening of a metal pot and to direct the metal to said outlet opening, one end of said valve being adapted to extend into and close said outlet opening.

27. In a device of the kind described, a tubular choker valve adapted to serve as a passage to direct the metal to the outlet port of a metal pot, and means at one end of said choker valve adapted to cooperate with the walls of said outlet port to control the passage of metal through said choker valve.

In testimony whereof, I have hereunto signed my name in the presence of two subscribing witnesses.

JOHN S. THOMPSON.

Witnesses:

BURTON U. HILLS,
CHARLES I. COBB.