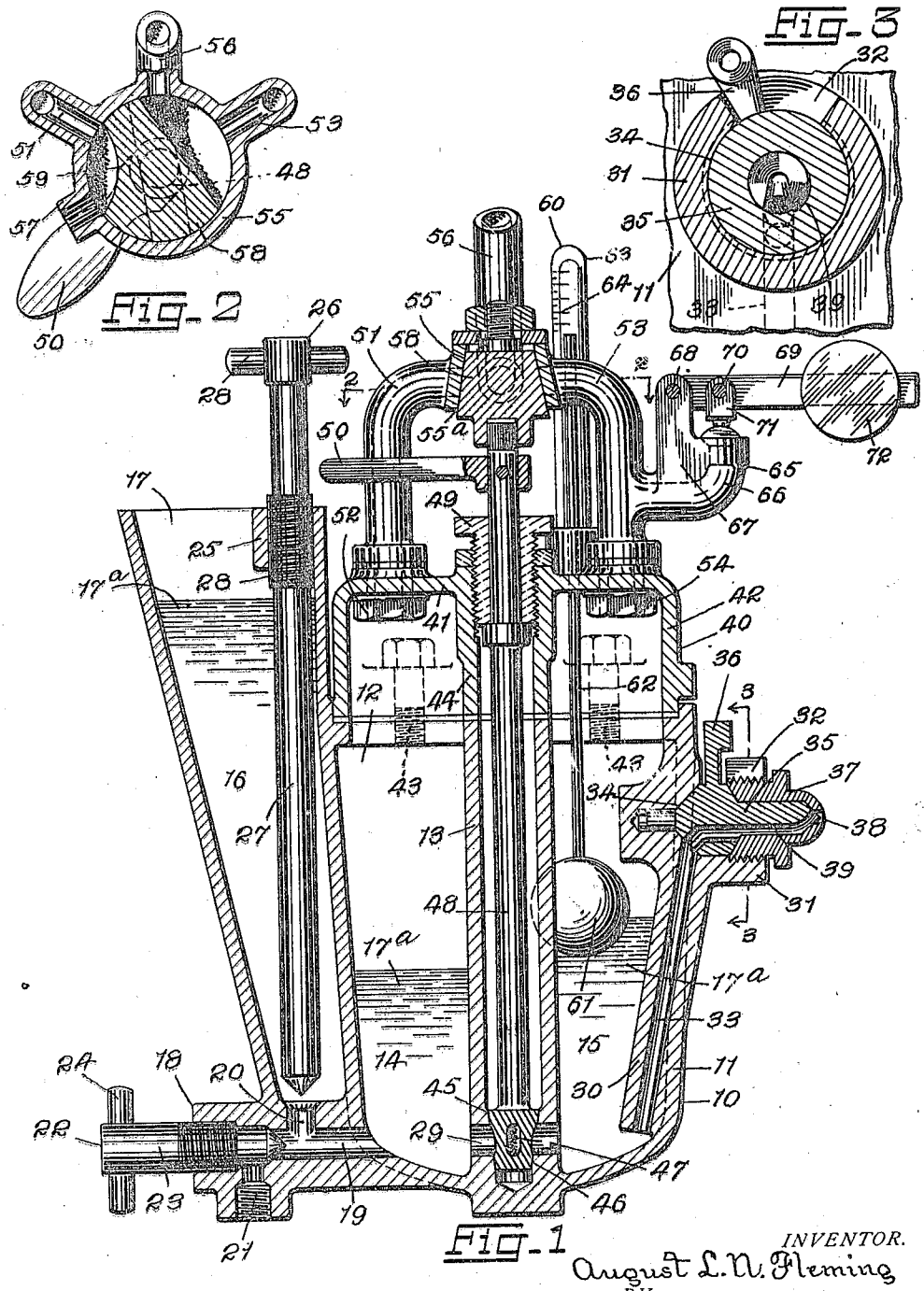
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MELTING POT.

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MELTING POT.

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To all whom it may concern:

Be it known that I, AUGUST L. N. FLEMING, a subject of the Republic of France, and a resident of Lyndhurst, in the county of Bergen and State of New Jersey, have invented certain new and useful Improvements in a Melting Pot, of which the following is a full, clear, and exact specification.

This invention relates to a class of apparatus adapted to be used for making metal printing type and the like.

My invention has for its object primarily to provide an apparatus or melting pot designed to be employed for casting metal type, slugs, spacing bars and the like for printing purposes, and which is of a form whereby air under pressure is used for causing molten metal to be fed to suitable molds in a manner so that the metal will be discharged in regulated fractional quantities or in a continuous stream so that spacing bars of long lengths as well as various forms of type having smooth and even faces may be made instead of the bars and type having irregular faces. The invention also contemplates the provision of a machine combining simplicity, efficiency and durability of construction which is susceptible of being made for ready use in either small, medium or large printing establishments. These advantages are attained mainly by providing a pot which may be heated, and the interior of the pot may be divided into chambers having regulated means for providing communication therebetween so that type metal when melted may flow through the chambers. Forms of the pot may be made having a supply chamber, a feed chamber and a discharge chamber with a regulated outlet through which the metal is fed to appropriate molds when type and the like are cast, and the feeding of the metal is accomplished by compressed air delivered into the pot from a regulated source of supply.

Other objects of the invention are to provide an indicator for determining the quantity of melted metal in the chambers; and to provide a regulator for discharging excess of air pressure in the chambers.

With these and other objects in view, the invention will be hereinafter more fully described with reference to the accompanying drawing forming a part of this specification in which similar characters of reference indicate corresponding parts in all the views, and will then be pointed out in the claims at the end of the description.

In the drawing, Figure 1 is a detail sectional view taken through one form of type casting machine embodying my invention.

Fig. 2 is a sectional view, partly in detail, taken on the line 2—2 of Fig. 1, and

Fig. 3 is an enlarged fragmentary view, showing a sectional view, partly in detail, taken on the line 3—3 of Fig. 1.

The apparatus has a pot 10 which may be of any suitable shape and size as well as being made of metal so that the pot may be appropriately heated. The pot has a hollow body part 11 with an open top 12. The interior of the body 11 may be divided by a hollow or tubular partition, as 13, into two chambers or compartments 14, 15, and on the wall of the chamber 14 opposite to the chamber 15 may be another chamber 16 with an open upper end 17. When a form of the pot is made having the three chambers the chamber 16 serves to receive molten type metal, as 17^a or pieces of type metal for being melted by heating the pot, and the chamber 14 serves as a feed chamber, while the chamber 15 serves as a discharge chamber. The supply chamber 16 may be of a length so that its upper portion extends considerable distance above the chambers 14, 15, and at the lower end of this chamber as well as projecting from the chamber 14 is a lug or casing, as 18, having a duct or passage 19 extending from its outer end into the feed chamber 14. Leading from the passage 19 upwardly into the bottom of the supply chamber 16 is a passage 20, and also from the passage 19 is another passage 21 which leads downwardly through the underside of the lug 18 to serve as an exhaust outlet. The opening and closing of the passage 21 is controlled by a valve, as 22, having a threaded stem, as 23, which is screwed into the threaded outer end of the passage 19 of the casing 18, and this stem is of a length so that when revolved accordingly one of its ends will be moved inwardly of the passage 19 across the exhaust outlet 21 for cutting-off the passage therethrough, and on the outer end of the stem 23 may be a handle, as 24, to allow the valve to be manually operated. Projecting into the interior of the open end

17 of the wall of the supply chamber 16 is a stationary sleeve or boss 25 having a threaded passage in register with the passage 20 of the casing 18 of the valve 22, and adjustable in the threaded sleeve 25 is a valve, as 26. The valve 26 has a stem 27 in the form of bar having a threaded part, as 28, which is screwed in the sleeve 25, and this stem is of a length so that it extends downward in the chamber 16 and so that its lower end may be removably seated in the passage 20 of the valve casing 18 to open and close this passage. The stem 27 of the valve 26 is of a length so that its upper end protrudes some distance above the supply chamber 18, and on the upper end of the stem may be a handle, as 28, for permitting the valve to be rotatably moved downwardly to close the passage 20 of the valve casing 18 or rotatably adjusted upwardly to open this passage of the valve casing when it is desired to open or close communication between the supply chamber 16 and the feed chamber 14. In the lower part of the tubular partition 13 of the pot is a transverse passage or opening 29 which provides communication between the feed chamber 14 and the discharge chamber 15, and this passage 29 is in communication with the passage of the partition 13. The portion of the wall of the discharge chamber 15 may be lengthwise enlarged, as at 30, and protruding outwardly from the upper part of this enlargement may be an interiorly threaded boss or ring, as 31, having in the upper part of its wall a lengthwise slot or opening, as 32. The lower end of the enlarged part 30 of the wall of the discharge chamber 15 terminates in proximity to the bottom of this chamber, and in the enlarged part extending from its lower end to the opening or passage of the boss 31 is an inclined passage 33 which serves as an outlet for the discharge of molten type metal from the chamber 15. The opening and closing of the outlet 33 is controlled by a valve, as 34, which is preferably of a form having a stem, as 35, rotatably arranged in the bottom part of the boss 31 of the enlarged part 30 of the wall of the discharge chamber, and protruding laterally from the stem 35 is a handle or lug 36 which is movably disposed through the slot 32 of the boss 31 for allowing the stem 35 of the valve 34 to be rotatably adjusted in the boss. The stem 35 of the valve 34 is adjustably held in the boss 31 by an exteriorly threaded nipple or cap, as 37, which is screwed in the boss 31, and in the center of the free end of the nipple 37 is a discharge hole or opening 38. Leading from the opening 38 through the stem 35 of the valve 34 is a passage 39 which is arranged as well as being formed so that its outer end may be moved into and out of register with the passage or outlet 33 of the discharge chamber 15 when the valve 34 is accordingly rotated for permitting the feed of the molten metal or for cutting-off the feeding of the metal.

The tubular partition 13 of the chambered pot 10 is of a height so that its upper end terminates at the opening or mouth 12 of the pot, and on this opening of the pot is a cover or cap 40. The cover 40 of the pot 10 has preferably a flat top 41 with a depending flange 42 which is removably bolted, at 43, to the edge of the opening or mouth of the pot. Extending interiorly of the cover 40 from an opening in its center is an interiorly threaded sleeve or boss, as 44, having its passage in register with the passage of the tubular partition 13. Adapted to open and close the passage 29 of the partition 13 is a valve 45 for cutting-off and allowing the flow of melted metal from the feed chamber 14 to the discharge chamber 15, and this valve 45 is preferably tapered downwardly as well as being rotatably seated in a tapered recess 46 arranged across the passage 29 of the partition 13. An opening 47 is provided transversely through the valve 45 for being moved into and out of register with the passage 29 when the valve is rotated accordingly so that the passage may be opened and closed, and this valve is provided on the lower end of a stem or bar, as 48, which movably extends upwardly in and through the tubular partition 13 and through the sleeve 44 of the cover 40 so that the upper end of the stem protrudes some distance above the cover. The stem 48 of the valve 45 may be held in accurate rotatable position by a bushing, as 49, which is screwed in the threaded sleeve 44 of the cover 40, and on the upper part of the stem 48 is a handle, as 50, to allow the stem and the valve 45 to be manually rotated.

Leading into the feed chamber 14 is an air inlet 51 which is in the form of a pipe having its lower end secured, at 52, in an opening in the cover 40 of the pot 10, and this inlet pipe is bent in somewhat the shape of an inverted L so that its second end terminates above the tubular partition 13 of the cover. Also leading into the discharge chamber 15 is another inlet 53 in the form of a pipe having its lower end held, at 54, in an opening in the cover, and this pipe is likewise bent in somewwhat the shape of an inverted L so that its second end terminates in spaced relation to the second end of the inlet pipe 51. The second ends of both of the inlet pipes 51 and 53 lead into a circular casing 55 having an open lower end 55ª, and also leading into this casing between the pipes 51 and 53 is an intake pipe, as 56, which may be connected to an air compressor or other source of compressed air supply for delivery into the casing 55, through the inlet pipes 51, 53 and into the chambers 14 and 15 of the pot 10. In the casing 55 in spaced

proximity to the inlet pipe 51 is an air outlet, as 57, and the interior of the casing 55 is preferably tapered in an outward flared fashion toward its open lower end 55ª.

Held on the upper end of the stem 48 of the valve 45 is another valve, as 58, which is rotatably seated in the casing 55 for controlling the supply of compressed air fed through the intake pipe 56 and through the inlet pipes 51 and 53. The valve 58 is approximately semi-circular of a size slightly larger than one-half the diameter of the casing 55 so that when rotatably adjusted accordingly the intake pipe 56 and the inlet pipe 53 will be open with the interior of the casing 55, as shown in Fig. 2. The inlet pipe 51 and the air outlet 57 will then be cut-off. Another part of the valve 58 is cutaway, as at 59, so that by rotating the valve reversely the inlet pipe 51 and the intake pipe 56 will be open with the interior of the casing, while the inlet pipe 53 and outlet 57 will be cut-off.

The machine is suitably heated after adjusting the valve 26 to close the passage 20 leading from the bottom of the supply chamber 16 and following putting into this chamber the required quantity of type metal. The outlet 21 may be opened by adjusting the valve 22 accordingly to exhaust all excess of air pressure in the feed chamber 14 through the passage 19 and outlet 21. The valve 22 is then readjusted to close the outlet 21, and the valve 26 is also readjusted to open the passage 20 and 19 so that the molten metal from the supply chamber 16 will flow into the feed chamber after which the valve 26 is closed on its seat of the passage 26. The relative positions of the valves 45 and 58 being such that by accordingly rotatably adjusting the stem 48 by the handle 50 the valve 45 will be moved to open the passage 29 of the tubular partition 13 by the opening 47 of the valve 45 being registered with the passage 29. The valve 58 will also be adjusted in the casing 55 so that the inlet 53 will be closed and so that compressed air will be admitted into the inlet 56, into the casing 55, and through the inlet pipe 51 into the feed chamber 14 for forcing the molten metal to flow through the passage 29 and through the opening 47 of the valve 45 into the discharge chamber 15. The stem 48 is then rotated to adjust the valve 58 for cutting-off the air inlet pipe 51 as well as opening the air outlet or exhaust 57 to allow the air pressure in the feed chamber to escape, and with this adjustment of the valve 58 the inlets 56 and 53 will be opened to allow compressed air to be admitted into the discharge chamber 15. By rotatably adjusting the valve 34 so that its passage 39 will be in register with the outlet passage 33 the pressure of the air in the chamber 15 will cause the melted metal in the chamber 15 to be delivered into suitable molds for casting type, slugs, or casting spacing bars of long or short lengths as occasion requires since by using compressed air the metal may be fed in a continuous stream to molds for a desired period.

To determine the quantity of molten metal in the discharge chamber 15, an indicator, as 60, is provided. This indicator is preferably of a form having a hollow ball 61 arranged in the chamber 15 so as to float on the molten metal in this chamber, and this ball or float is held on the lower end of a stem or rod 62 which movably extends through an opening in the top of the cover 40 of the pot 10. The upper portion of the rod 62 is movably disposed in an inverted transparent glass tube or casing, as 63, which is carried on the cover 40, and on this transparent casing is provided a scale, as 64, divided into inches or other measurements so that with the rise or lowering of the level of the metal in the chamber 15 the upper end of the rod 62 of the float 61 will indicate on the scale the quantity of metal in the chamber by the float 61 and rod 62 also rising or lowering with the metal.

In order to maintain a given pressure of air in the discharge chamber 15 a regulator, as 65, is provided. This regulator may consist of any well known type of safety valve, as 66, having an upwardly projecting bracket 67 to which is pivoted, at 68, one end of a lever bar, as 69, and this lever bar is fulcrumed, at 70, to the stem 71 of the valve of the safety device. Adjustable on the second end part of the lever bar 69 is a weight 72 which is movable to regulate the action of the valve so that when the air in the chamber 15 is above a given pressure the safety valve will operate to discharge the excess air.

In the foregoing description, I have embodied the preferred form of my invention, but I do not wish to be understood as limiting myself thereto, as I am aware that modifications may be made therein without departing from the principle or sacrificing any of the advantages of this invention, therefore, I reserve to myself the right to make such changes as fairly fall within the scope thereof.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:—

1. A type casting machine, comprising a heatable pot with an outlet, and adapted to receive compressed air for causing the molten metal to be discharged in a continuous stream from the outlet, an indicator for determining the quantity of melted metal in the pot, and means for discharging excess of air pressure in the pot.

2. A type casting machine, comprising a heatable pot with a valve controlled outlet, and adapted to receive compressed air for causing molten metal to be discharged from

the outlet, and means for discharging excess of air pressure in the pot.

3. A type casting machine, comprising a heatable pot with a regulated outlet and having an inlet adapted to receive a regulated supply of compressed air for causing molten metal to be discharged from the outlet by the pressure of the air, and a regulator for discharging excess of air pressure in the pot.

4. A type casting machine, comprising a heatable chamber with an outlet for discharge of molten metal from the pot and having a valve controlled inlet for admitting air under pressure for causing the metal to be fed from the outlet, an indicator for determining the quantity of melted metal in the chamber, and a regulator for discharging excess of air pressure in the chamber.

5. A type casting machine, comprising heatable communicating chambers adapted to receive compressed air for causing molten metal to be fed and discharged from the chambers, and a regulator for discharging excess of air pressure in the chambers.

6. A type casting machine, comprising heatable regulated communicating chambers adapted to receive a regulated supply of air under pressure for causing molten metal to flow in and be discharged from the chambers in regulated quantities, an indicator for determining the quantity of melted metal in the chambers, and a regulator for discharging excess of air pressure in the chambers.

7. A type casting machine, comprising valved controlled heatable communicating chambers, a number for feeding molten metal and one for discharging the metal, the discharge chamber having a valve controlled outlet and one of the feed chambers as well as the discharge chamber having an inlet adapted to be connected to a regulated source of compressed air supply whereby the metal will be caused to flow in the chambers and forced to be discharged in a continuous or regulated stream from the outlet by the pressure of the air, an indicator for determining the quantity of melted metal in the discharge chamber, and a regulator for discharging excess of air pressure in the discharge chamber.

8. An apparatus as characterized, comprising a heatable pot with a regulated outlet and having an inlet adapted to receive a regulated supply of compressed air for causing molten metal to be discharged from the outlet by the pressure of the air, a heatable supply chamber on the pot, regulated means for feeding molten metal to the pot, and a regulator for discharging excess of air pressure in the pot.

9. In a melting pot, a heatable chamber with an outlet for discharge of molten metal from the pot and having a valve controlled inlet for admitting air under pressure for causing the metal to be fed from the outlet, a heatable supply chamber on the pot, regulated means for feeding molten metal from the supply chamber to the other chamber, an indicator for determining the quantity of melted metal in the chamber, and a regulator for discharging excess of air pressure in the chamber.

10. In a melting pot, heatable communicating chambers adapted to receive compressed air for causing molten metal to be fed and discharged from the chambers, valve controlled means for regulating the communication between the chambers, and a regulator for discharging excess of air pressure in the chambers.

11. In a melting pot, heatable regulated communicating chambers adapted to receive a regulated supply of air under pressure for causing molten metal to flow in and be discharged from the chambers in regulated quantities, an indicator for determining the quantity of melted metal in the chambers, a regulator for discharging excess of air pressure in the chambers, and a valve controlled passage-way for exhausting air in one of the chambers.

12. In a melting pot, valved controlled heatable communicating chambers, one for feeding molten metal and one for discharging the metal, the discharge chamber having a valve controlled outlet and one of the feed chambers as well as the discharge chamber having an inlet adapted to be connected to a regulated source of compressed air supply whereby the metal will be caused to flow in the chambers and forced to be discharged in a continuous or regulated stream from the outlet by the pressure of the air, an indicator for determining the quantity of melted metal in the discharge chamber, a regulator for discharging excess of air pressure in the discharge chamber, a heatable supply chamber on the pot, and regulated means for controlling the flow of molten metal from the supply chamber to the feed chamber.

13. In a melting pot, a heatable hollow body divided into a feed chamber and a discharge chamber, regulated means in the body providing communication between the chambers, regulated means on the body providing an outlet to the discharge chamber, regulated means also on the body whereby air may be exhausted from the feed chamber, regulated means adapted to connect the body to a source of compressed air supply for delivery of air at intervals separately and directly into the feed chamber and into the discharge chamber, and a regulator for discharging the excess of air pressure in the discharge chamber.

14. In a melting pot, a heatable hollow body divided into a feed chamber and a discharge chamber, regulated means in the body

providing communication between the chambers, regulated means on the body providing an outlet to the discharge chamber, regulated means also on the body whereby air may be exhausted from the feed chamber, regulated means adapted to connect the body to a source of compressed air supply for delivery of air at intervals separately and directly into the feed chamber and into the discharge chamber, an indicator for determining the quantity of contents in the discharge chamber and a regulator for discharging the excess of air pressure in the discharge chamber.

15. In a melting pot, a heatable hollow body divided into a supply chamber, a feed chamber and a discharge chamber, regulated means in the body providing communication between the feed chamber and the discharge chamber, regulated means providing communication between the supply chamber and the feed chamber, regulated means on the body providing an outlet to the discharge chamber, regulated means also on the body whereby air may be exhausted from the feed chamber, regulated means adapted to connect the body to a source of compressed air supply for delivery of air at intervals separately and directly into the feed chamber and into the discharge chamber, an indicator for determining the quantity of contents in the discharge chamber, and a regulator for discharging the excess of air pressure in the discharge chamber.

This specification signed and witnessed this 26th day of September, A. D. 1921.

AUGUST L. N. FLEMING.

Witnesses:

R. SCHACHNER,

FREDERICK CRYER.