

June 20, 1933.

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1,914,579

AUXILIARY MELTING POT

Filed Sept. 27, 1930

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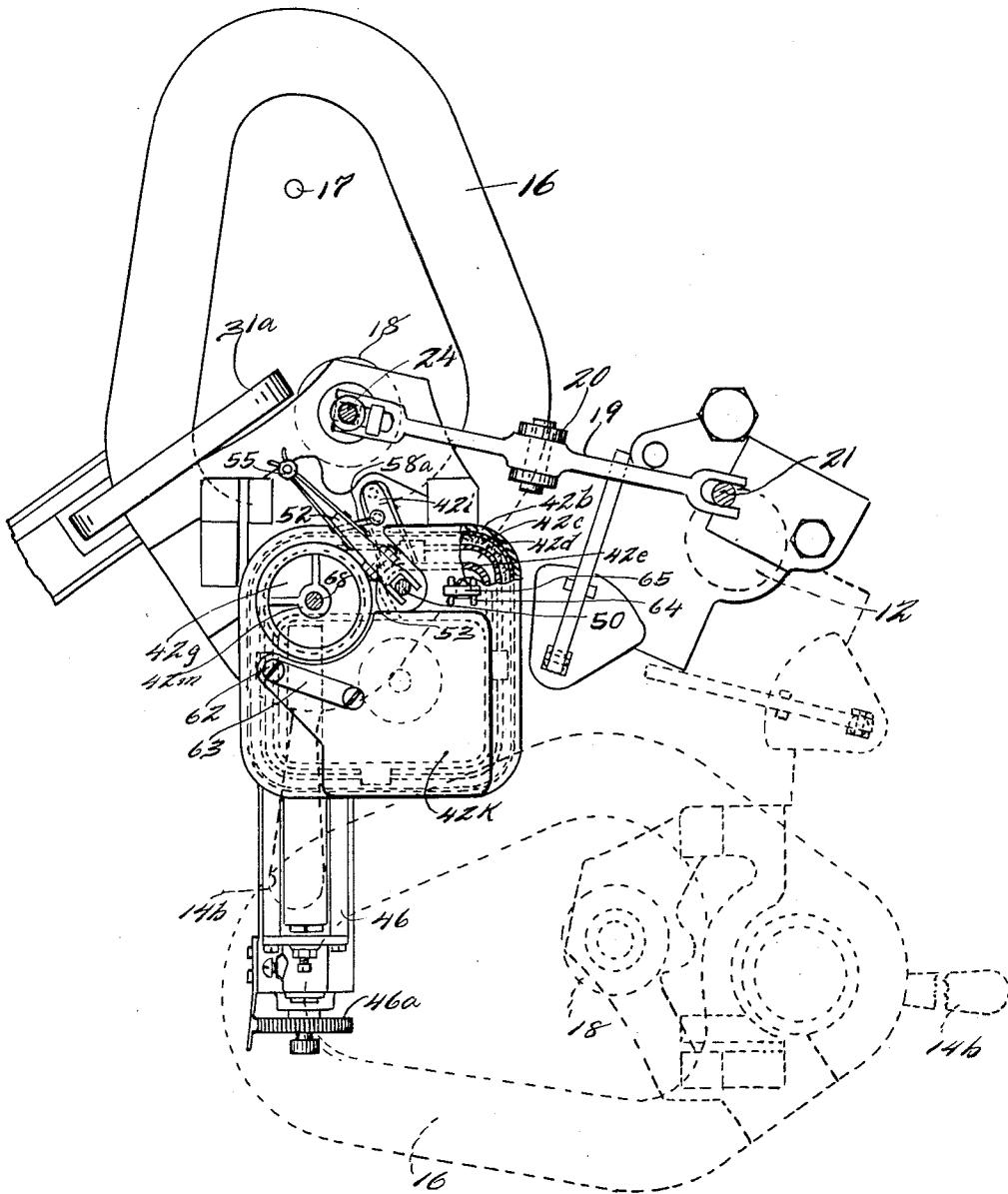


Fig. 1.

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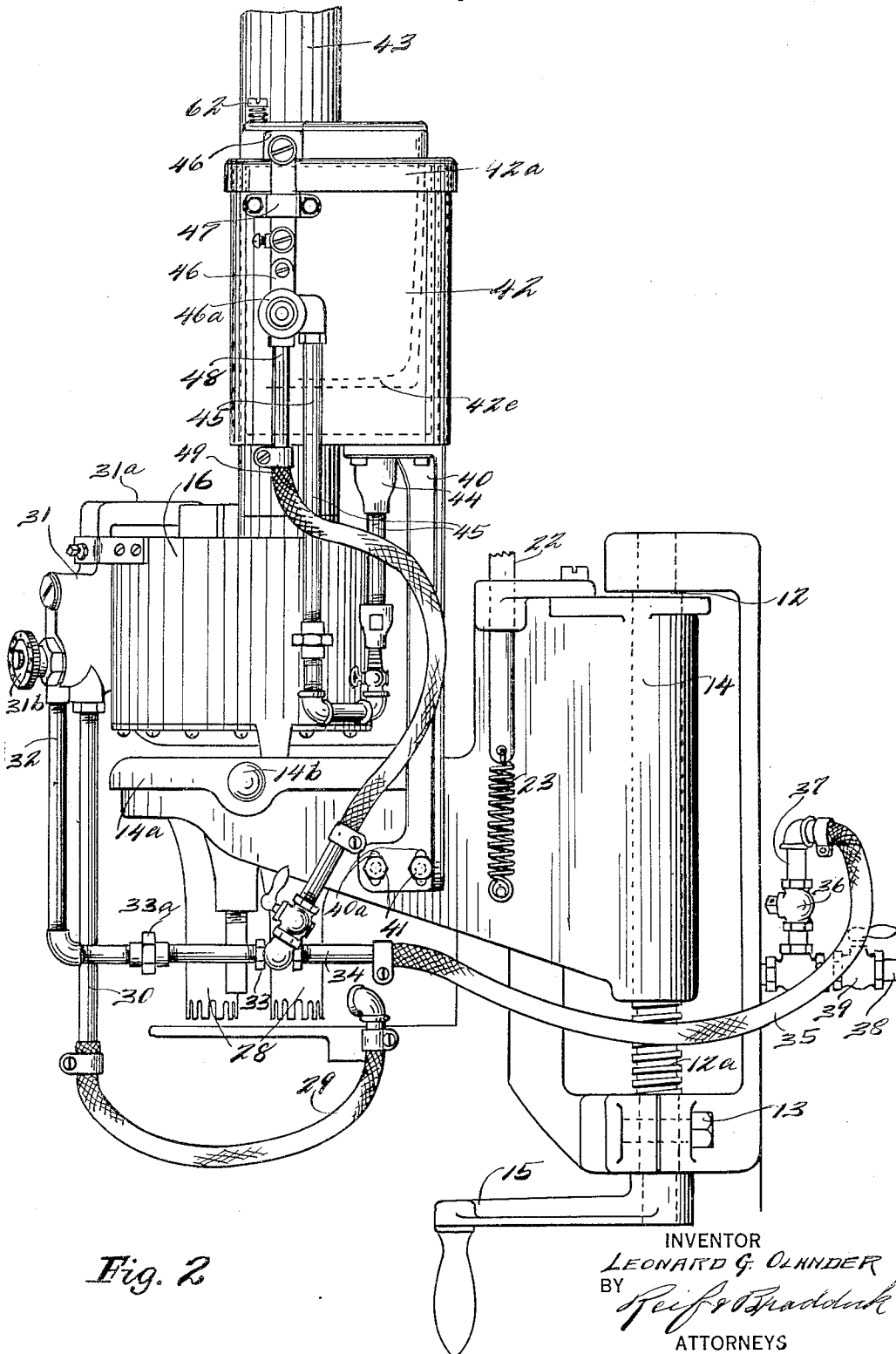
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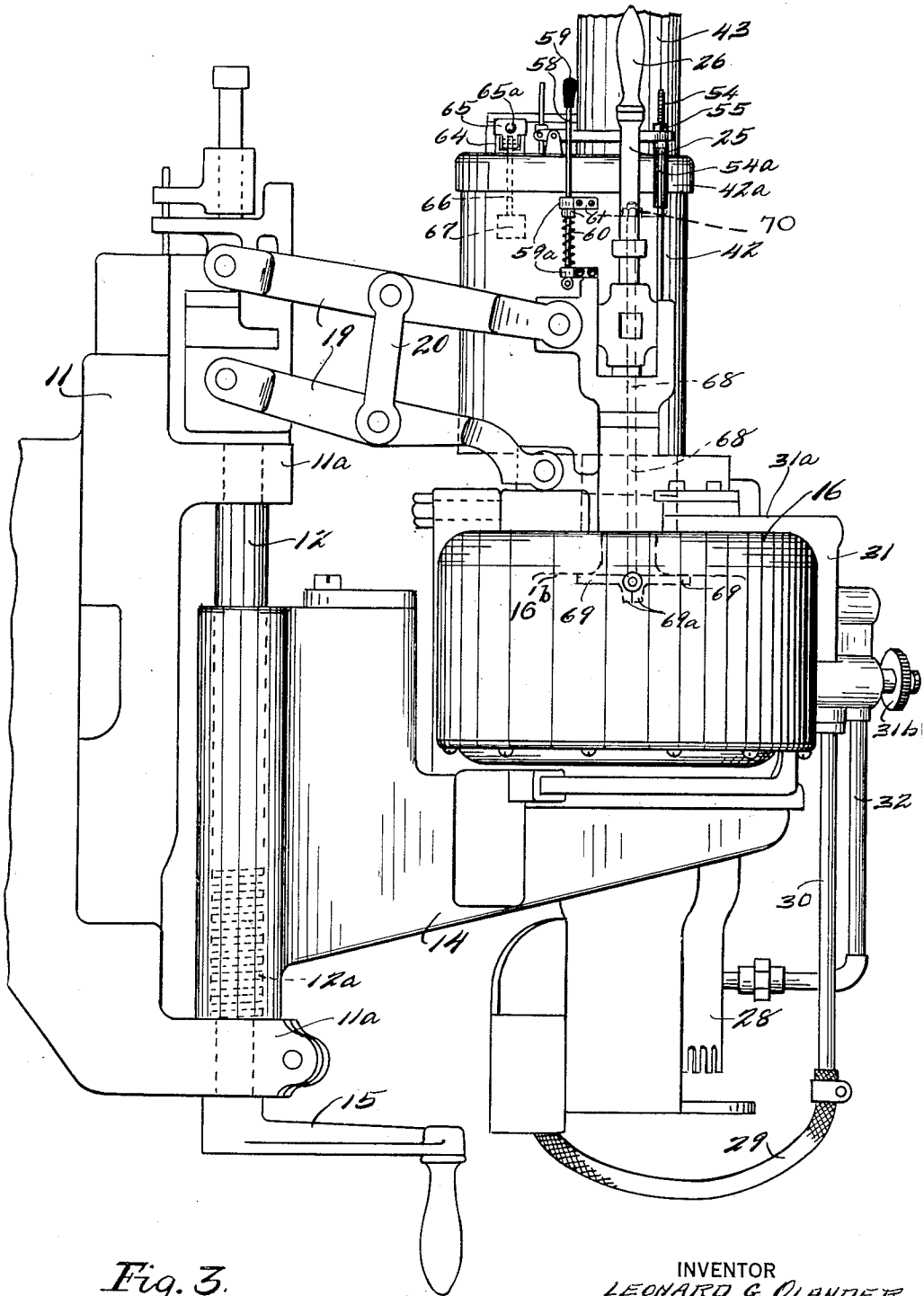


Fig. 3.

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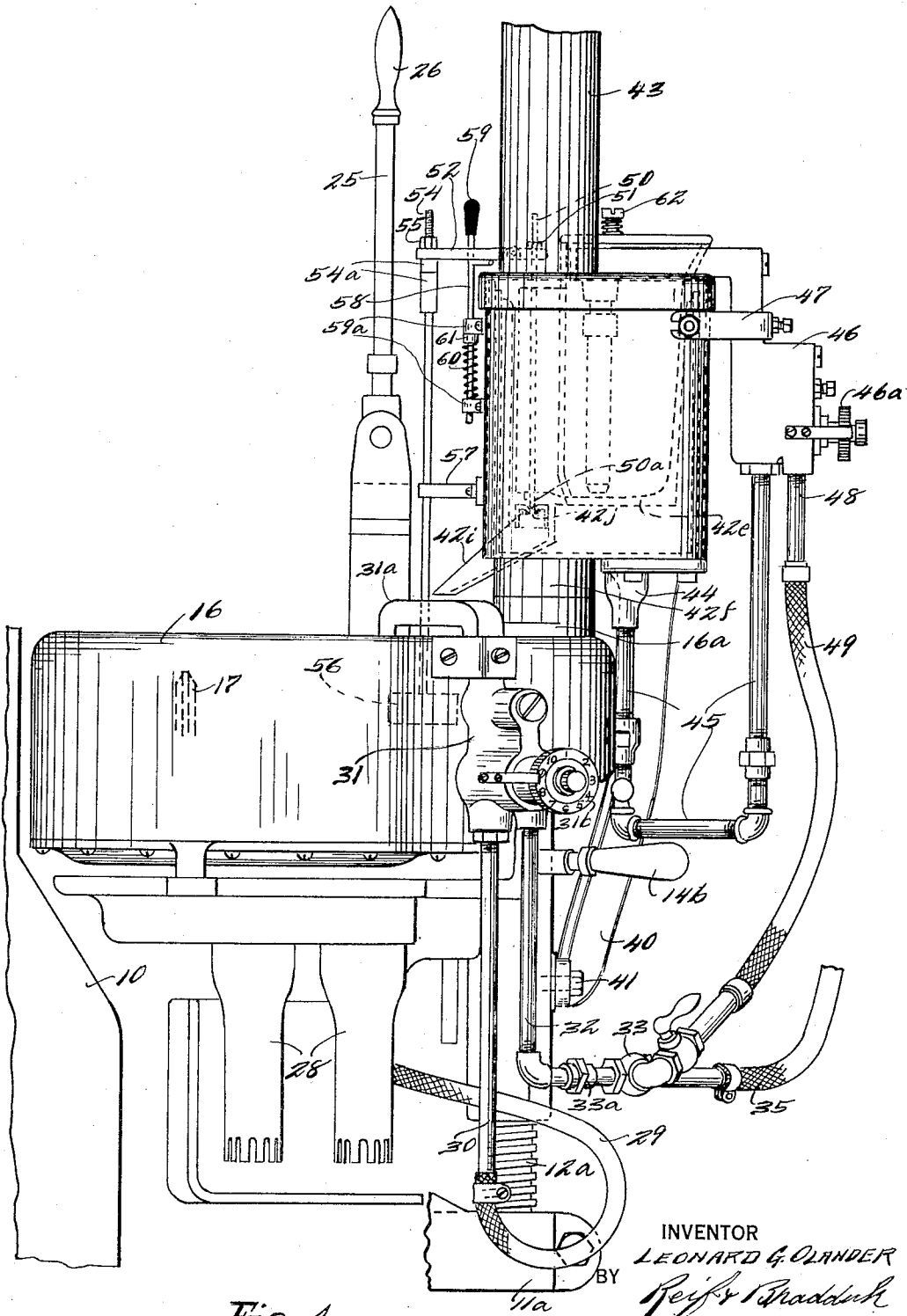


Fig. 4

UNITED STATES PATENT OFFICE

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AUXILIARY MELTING POT

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This invention relates to a type casting machine, and particularly to the construction of the main melting pot and an auxiliary melting pot therefor. Machines of the line-
5 type have heretofore been provided with main and auxiliary melting pots, but the present invention is more particularly directed to the type of machine known as the monotype machine. Certain of such machines are provided with a main melting pot
10 having a metal delivering nozzle co-operating with a fixed portion of the machine to deliver molten metal thereto. The main melting pot is mounted for swinging movement toward and from the machine or the
15 machine frame, and for this purpose is mounted to swing about a vertical axis adjacent said frame. The pot must also be raised to bring said nozzle into delivering
20 position. Such machines are frequently used for what are known as short runs, and small type casting jobs. With such runs, the melting pot must be lowered and raised and swung outwardly quite frequently by
25 the operator. It is impractical to have any very large auxiliary melting pot used in connection with such a machine, as it is objectionably in the way, and the auxiliary melting pot must be located in position to
30 give the best results and not interfere with the function of the main pot.

It is an object of the present invention, therefore, to provide a simple, efficient and easily operated machine of the type mentioned, provided with an auxiliary melting
35 pot.

It is a further object of the invention to provide such a machine with a main and auxiliary melting pot, both of which are
40 swingable as a unit about a vertical axis to swing the same away from the machine.

It is another object of the invention to provide a machine such as set forth in the above paragraph, in which the main and
45 auxiliary melting pots may both be raised as a unit.

It is still another object of the invention to provide a type casting machine having a main melting pot with the front end adapted
50 to be disposed in cooperative relationship

with the machine and swingable toward and away from the machine, together with an auxiliary melting pot which is mounted over the main melting pot and at the rear end thereof and adapted to swing with the main
55 melting pot.

It is still further an object of the invention to provide a type casting machine, a main melting pot, and an auxiliary melting pot with a common vent means for said pots.
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It is still another object of the invention to provide a type casting machine having a frame, a bracket mounted for swinging movement toward and from said frame
65 about a vertical axis, a main melting pot carried on said bracket, a second bracket carried by said bracket, an auxiliary melting pot supported on said second bracket, and additional means for securing said main and auxiliary melting pots together.
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These and other objects and advantages of the invention will be fully set forth in the following description made in connection with the accompanying drawings, in which like reference characters refer to similar parts throughout the several views and in which:—
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Fig. 1 is a plan view of a portion of the machine showing the main and auxiliary melting pots, the main pot being shown in a different position in dotted lines;
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Fig. 2 is a view in side elevation of the machine with the main melting pot in operative position;
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Fig. 3 is a view as seen from the left of Fig. 2 with the main melting pot swung to inoperative position; and
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Fig. 4 is a view as seen from the right of Fig. 3.

Referring to the drawings, a type casting machine is shown, comprising a frame of which parts 10 are shown, said frame having a bracket 11 secured thereto having vertically spaced bearings 11a in which is mounted the shaft or spindle 12, the lower
95 portion of said bracket being shown as split and having portions connected by the headed bolt 13. The bracket 14 has a hub mounted on shaft 12 for swinging movement about said shaft, said shaft 12 having
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a projection extending through bearing 11a on which is secured a hand crank 15. Shaft 12 is threaded as shown at 12a for a portion of its length adjacent lower bearing 11a and the hub of bracket 14 is formed as a nut adjacent its lower end cooperating with the screw portion 12a. Bracket 14 can thus swing about shaft 12 and can be raised vertically by rotation of crank 15. Bracket 14 has a plate-like extension 14a at its end disposed some distance below the top of its hub portion, and a main melting pot 16 is mounted on this portion. Portion 14a has projecting outwardly therefrom a handle 14b adapted to be grasped by the operator for swinging pot 16 and bracket 14. The pot 16 as clearly shown in Fig. 1, is of oblong shape, being smaller at its front end or the end which is nearest the machine proper, the larger end of said pot being directed or disposed away from the machine and frame 10. The pot 16 has a discharge nozzle 17 adjacent its front end, which nozzle when the pot is in operative position, cooperates with another stationary portion of the machine to discharge the molten metal for a casting operation. The pot 16 also has therein a cylinder or chamber forming member 18 in which a plunger operates for forcing the molten metal from the pot through nozzle 17. This plunger is operated in the operation of the machine by a pair of levers 19 shown as connected by a link 20, said levers being connected to a vertically moving rod 21 mounted in the frame of the machine. A rod 22, connected to bracket 14 by a spring 23, is shown in Fig. 2, said parts operating in the forcing of the metal from pot 16. These portions of the machine form no part of the present invention, and need not be further considered. The plunger rod 24 has connected thereto a manually operable rod 25 having a handle 26 at its upper end for manual operation by the operator. This rod 25 and handle 26 are operated at various times in the operation of the machine. The melting pot 16 has a pair of burners 28 disposed beneath said pot through a flexible conduit or tube 29 shown as secured to a vertically extending pipe 30 depending from a gas governor 31 having a portion 31a extending down into the metal of pot 16. Said governor per se forms no part of the present invention, and may be of the type shown in the patent to Boker, No. 1,724,252, granted August 13, 1929. Said governor 31 is shown as having adjusting and indicating means 31b thereon. Pipe 32 supplies gas to governor 31, said pipe 32 comprising a coupling 33 and being connected to a fitting 33a with which pipe 34 is connected. Pipe 34 has secured thereto a flexible tube 35 which extends to the cock 36 carried in a ver-

tical pipe 37 which communicates through a suitable T with the main gas supply line 38 having a shut-off valve 39 therein.

A bracket 40 is secured to bracket 14 by a pair of bolts 41. Bracket 40 has a pair of elongated slots 40a therein providing for vertical adjustment of the bracket 40. An auxiliary melting pot designated generally as 42 is carried on the top of the bracket 40 and secured thereto. Pot 42 as shown in Fig. 1 is generally square or rectangular in horizontal cross section and comprises a top member 42a having a flange surrounding the top of said pot. Said pot also comprises a shell 42b and an inner wall 42d, a layer of insulating material 42c being disposed between shell 42b and the inner wall 42d. The pot proper or crucible comprises a wall 42e. The main pot 16 has a vent passage extending vertically through a hub 16a and pot 42 has a downwardly extending hub 42f resting on hub 16a. Pot 42 has a passage 42g extending therethrough, aligned with the hubs 16a and 42f, and has secured thereto at its upper end an upwardly extending stack 43 leading from the passage 42g, said stack 43 fitting around an annular hub or projection 43a on member 42a. A burner 44 is disposed beneath pot 42 and is supplied with gas by a pipe 45 extending to a gas governor 46 secured to the pot 42 by a bracket 47, said governor having a portion extending over and downwardly into the pot 42. Said governor 46 may be similar to the governor 31 and is also shown as provided with an adjusting and indicating means 46a. Governor 46 is supplied with gas by a pipe 48 to which is connected a flexible conduit 49 which extends to the fitting 33 already described. Pot 42 and particularly the inner portion 42e thereof has leading therefrom a trough 42i adapted to discharge into the main pot 16 at the rear end thereof and at the outer side of the cylinder 18 and levers 19. Pot 42e has a valve seat 42j formed in the bottom thereof, with which co-operates a valve 50a carried at the bottom of the rod 50 extending vertically through pot 42 and having a nut 51 at its upper end resting on the top of the inner end of lever 52, said lever being pivoted in a small bracket projecting from the top of member 42a by the headed and nutted bolt 53. Lever 52 has a pair of resilient members 52a at its outer end formed to embrace a rod 54, which rod is threaded at its upper end to receive a nut 55 resting on top of the lever 52. Collars 54a are secured to rod 54 below lever 52 and engage the under side thereof. Rod 54 extends downwardly into the rear end of the pot 16 and has secured thereto a float member 56. Rod 54 passes through and is guided in a bracket 57 secured to the side of the pot 42. The rod 58 is slidable in vertically spaced brackets 59 secured to the side of the

pot 42, which rod is surrounded by a compression coil spring 60 bearing at its upper end against a collar 61 secured to rod 58 so that said rod is elevated by said spring.

5 Rod 58 has a lateral extension 58a thereon and has a handle 59 at its upper end. It will be seen, as shown in Fig. 4, that rod 58 can be oscillated to swing portion 58a under the lever 52, elevate the outer end of said

10 lever, and hold float 56 in elevated and inoperative position. The pot 42 has a lid 42k thereon pivoted about a pivot 62, said lid being held down into place by a plate-spring 63 secured in place by pivot screw

15 62. Lid 42k is laterally slidable to give access to the top of pot 42. Member 42a also has a small channel shaped bracket 64 secured thereto, having its sides projecting upwardly, on which rests the platelike member 65 having an indication (not shown) on one side such as the word "empty". Plate

20 65 has a weighted portion 65a at one side, and has projections at its other side pivoted to the top of rod 66 extending down into portion 42e of pot 42 and carrying a float member 67. The pot 42 has a hub portion 42m disposed centrally of the passage 42h which terminates some distance below the top of the pot and is bored to receive a rod

25 68 extending down through passage 42h and hubs 42f and 16a into the vent passage of pot 16. Said rod has pivoted to its lower end a pair of oppositely extending arms 69 having engaging depending portions 69a

30 which portions engage beneath shoulders or ledges 16b at the sides of the vent passage of pot 16. Rod 68 is threaded at its upper end and has a nut 70 resting on top of a hub in a pot 42 so that when rod 68 is elevated

35 by rotation of said nut arms 69 will be brought into substantially horizontal positions with the portion 69a in engagement. Arms 69 will engage said shoulders or ledges 16b and when nut 70 is tightened, pot

40 42 will be drawn down tightly and secured to pot 16.

In operation, when the type are to be cast, the melting pot 16 is swung inwardly to the position shown in Figs. 1, 2 and 4. The

50 operator swings the pot by taking hold of the handle 14b. After the pot 16 is swung inward to position, the operator rotates crank handle 15, turning screw 12a and elevating bracket 14 and pot 16 so that the nozzle 17 is brought into operative position. The machine can then be operated to cast when desired, the metal being forced through nozzle 17 by operation of the plunger in cylinder 18 operated by the levers 19.

55 When it is necessary to again move the pot to inoperative position, the operator again operates the crank 15 thus lowering the pot 16 and bracket 14 and the pot is then swung outwardly with the bracket about the axis

60 of shaft 12. By the present construction of

main and auxiliary melting pots and the arrangement of bracket 14, it will be seen that the auxiliary pot 42 is swung outwardly with the main pot and is raised and lowered therewith. The auxiliary melting pot is at

70 all times maintained in proper relation to the main pot and the gas supply lines and gas governors are also moved with the main pot. The flexible conduit 35 accommodates this movement. With the present construction,

75 therefore, the operator is put to no additional operation in order to get both pots out of the way between the runs made on the machine. The auxiliary pot is disposed at the outer end of the main pot and does not interfere in any way with the operations of levers 19, and yet can deliver molten metal through the trough 42i to the main pot. This delivery of metal is automatically controlled by the float 56. When

80 the level of molten metal gets low in the main pot, float 56 will descend, thus lowering the outer end of lever 52, raising the inner end thereof, lifting the rod 50 and thus opening valve 50a. This will permit metal to flow out through trough 42i into the main pot to replenish the metal therein. When the desired level is attained in pot 16,

85 float 56 will raise the outer end of lever 52, thus lowering the inner end thereof and moving valve rod 50 down to close valve 50a and shut off the supply of metal from the auxiliary pot. The regulating mechanism for the metal, including the rod 54 and float 56 can be held out of operation by oscillating the rod 58 by handle 59 and moving the projection 58a under the outer end of lever 52. Spring 60 then lifts the outer end of lever 52 and holds the float 56 elevated so that valve 50a will remain closed.

90 The main pot is heated by the burners 28 and the auxiliary pot by the burners 44. Both burners are automatically regulated to give the desired temperature, by the governors 31 and 46 respectively. The plate 65 rocks on the sides of the channel bracket 64 and when the level of metal in pot 42 becomes sufficiently low, it drops below the float 67 and the weight of the float pulls

95 on rod 66, rocking plate 65 to its vertical position as shown in Fig. 3, so that the word "empty" is displayed thereon. When the auxiliary pot is replenished, float 67 is raised and the weighted portion 65a causes the plate 65 to rock on bracket 64 to a horizontal position so that the indication "empty" is not displayed to the operator. The pot 42 as stated is so disposed that it does not interfere with any of the operations of the machine. The operator sometimes operates the plunger 25 by means of the handle 26. The rod 25 is extended so that handle 26 is disposed above pot 42 and can thus be readily manipulated by the operator. It will be seen that the vent pas-

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sage from pot 16 passes through the hub 16a and this passage is continued in the passage 42h. Stack 43 therefore, which is secured to the top of pot 42, forms a vent stack for both pots.

From the above description it is seen that applicant has provided a simple and much improved type setting machine. An auxiliary melting pot is provided, which is swingable about a vertical axis with and is also movable vertically with the main pot. The auxiliary melting pot is disposed where it is not in the way and yet can function efficiently. Both pots are conveniently equipped with the gas governors for determining the temperature to which they are heated. The operator can thus manipulate both pots with a single means and the advantages of the auxiliary melting pot are secured without adding any labor to the operation of the machine. The device has been amply demonstrated in actual practice and found to be very successful and efficient.

It will, of course, be understood that various changes may be made in the form, details, arrangement and proportions of the parts without departing from the scope of applicant's invention, which, generally stated, consists in a device capable of carrying out the objects above set forth, in the novel parts and combinations of parts disclosed and defined in the appended claims.

What is claimed is:—

1. A type casting machine having in combination, a frame, a bracket mounted on said frame for swinging movement about a vertical axis toward and from said frame, a main melting pot carried by said bracket, and an auxiliary melting pot carried by said bracket for swinging movement therewith, said auxiliary pot being mounted at the end of said main melting pot remote from said frame when said main melting pot is in operative position.

2. A type casting machine having in combination, a frame, a bracket mounted on said frame for swinging movement about a vertical axis toward and from said frame, means for raising said bracket vertically, and main and auxiliary melting pots carried by said bracket and movable therewith about said axis and vertically.

3. A type casting machine having in combination, a frame, a main melting pot having a metal delivery means movable vertically with said pot to delivering position and located adjacent one end of said pot, and an auxiliary melting pot adjacent the other end of said pot arranged to deliver metal into said main pot.

4. A type casting machine having in combination, a frame, a bracket mounted on said frame to swing about a vertical axis toward and from said frame, a main melting pot carried on said bracket and swingable with

said bracket through angle of substantially 90 degrees, an auxiliary melting pot mounted over said main pot and secured rigidly thereto, the same being disposed at the end of said pot remote from said frame, and a common means for swinging said main and auxiliary pots about said axis.

5. A type casting machine having in combination, a main melting pot, an auxiliary melting pot having fixed relation to said main melting pot and arranged to deliver metal thereinto, and manually actuated means for swinging said melting pots about a vertical axis and for moving said pots vertically to and from an operative position.

6. A type casting machine having in combination, a main melting pot, means at the front of said pot for discharging metal to said machine, an auxiliary melting pot adjacent the other end of said pot and arranged to deliver molten metal to said main pot, an oscillating member on which said pots are mounted, and a single means for swinging said member and moving both of said pots.

7. A type casting machine having in combination, a frame, a main melting pot mounted for swinging movement toward and away from said frame, means extending into said pot for forcing metal therefrom including an upstanding rod having a handle thereon, an auxiliary melting pot mounted to swing with said main pot and to discharge molten metal thereinto, said handle being disposed above the top of said auxiliary pot.

8. A type casting machine having in combination, a frame, a main melting pot mounted for swinging movement toward and from said frame, means for forcing molten metal from said pot, including a plunger, a lever for operating said plunger, said lever being swingable with said pot and about a member fixed on said frame, and an auxiliary melting pot mounted above said main melting pot for swinging movement therewith and at the rear side of said lever.

9. A type casting machine having in combination, a main melting pot having a vent passage leading upward therefrom, an auxiliary melting pot mounted on said main pot and surrounding said passage, and a vent conduit leading upward from said auxiliary pot forming a vent passage for both pots, said conduit being vertically aligned with said passage.

10. A type casting machine having in combination, a bracket mounted on said frame for swinging movement about a vertical axis, a main melting pot carried on said bracket, a second bracket secured to said bracket, and an auxiliary melting pot supported on said second bracket to be swingable with said first mentioned bracket.

11. The structure set forth in claim 10,

and means securing said auxiliary melting pot to said main melting pot.

12. A type casting machine having in combination, a main melting pot having a vent passage adjacent one end thereof, an auxiliary melting pot mounted over said main pot and having a passage extending vertically therethrough alined with said first mentioned passage, and means extending through said passage and said auxiliary pot and secured to said main pot for holding said auxiliary pot in position.

13. A type casting machine having in combination, a main melting pot swingable toward and from said machine about a vertical axis, and an auxiliary melting pot mounted over said main melting pot movable with said main melting pot about said axis, said auxiliary melting pot being arranged to deliver metal to said main melting pot, and manual means for swinging said main melting pot and said auxiliary melting pot to and from operative position.

14. A type casting machine having in combination, a frame, a bracket mounted thereon for swinging movement about a vertical axis, a main melting pot, an auxiliary melting pot mounted on said bracket and arranged to deliver metal to said main melting pot, and manual means for swinging said bracket and auxiliary pot, to and from operative position.

15. A type casting machine having in combination, a main melting pot and an auxiliary melting pot arranged to deliver molten metal thereinto, and means for swinging both pots about a vertical axis and for moving said pots vertically to and from an operative position.

16. A type casting machine having in combination, a main melting pot swingable toward and from said machine about a vertical axis, and an auxiliary melting pot arranged to deliver molten metal into said main melting pot, said auxiliary melting pot also being swingable toward and from said machine upon a vertical axis.

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