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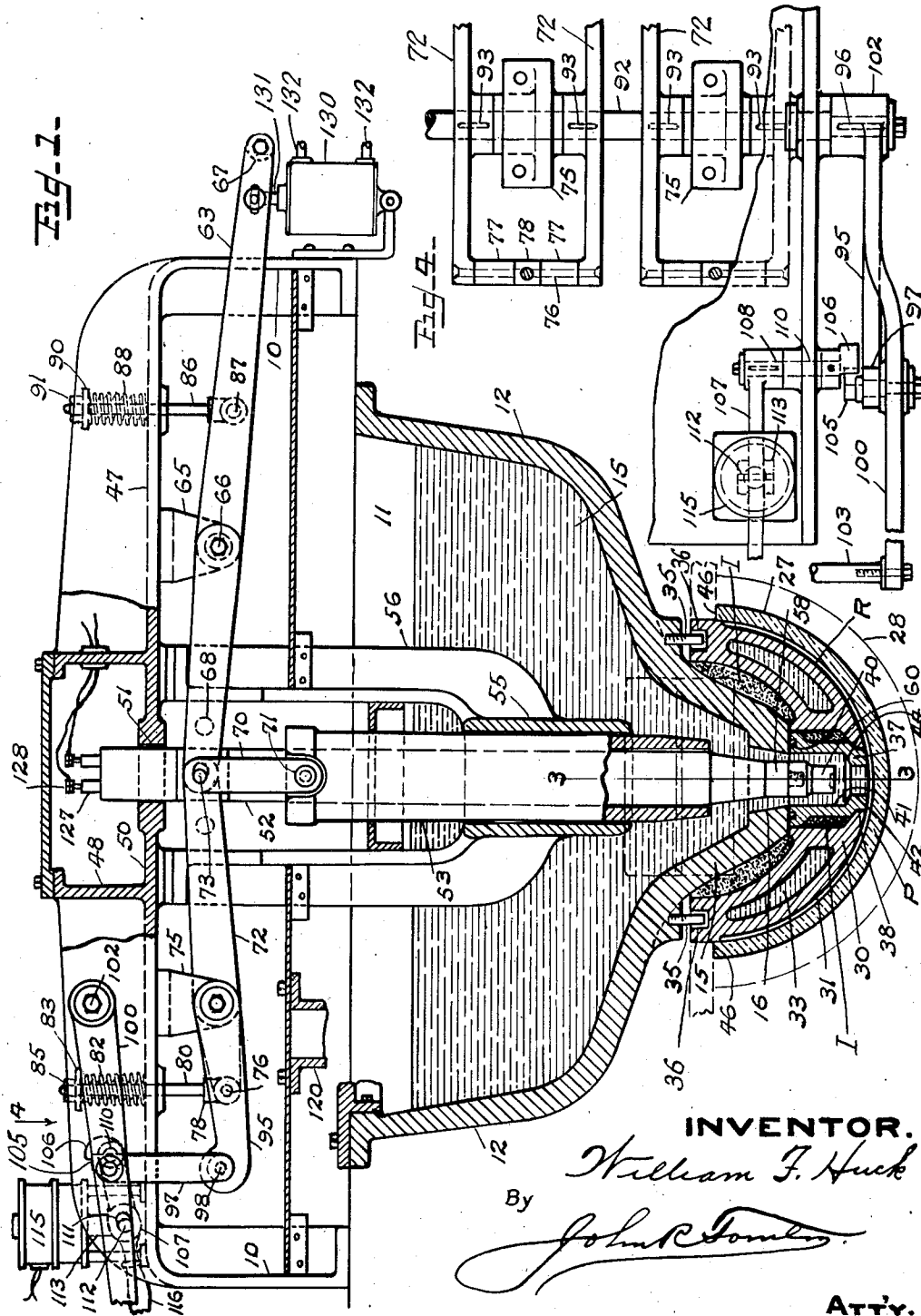
W. F. HUCK

2,136,383

PRINTING PLATE CASTING MACHINE

Filed Dec. 31, 1935

3 Sheets-Sheet 1



Nov. 15, 1938.

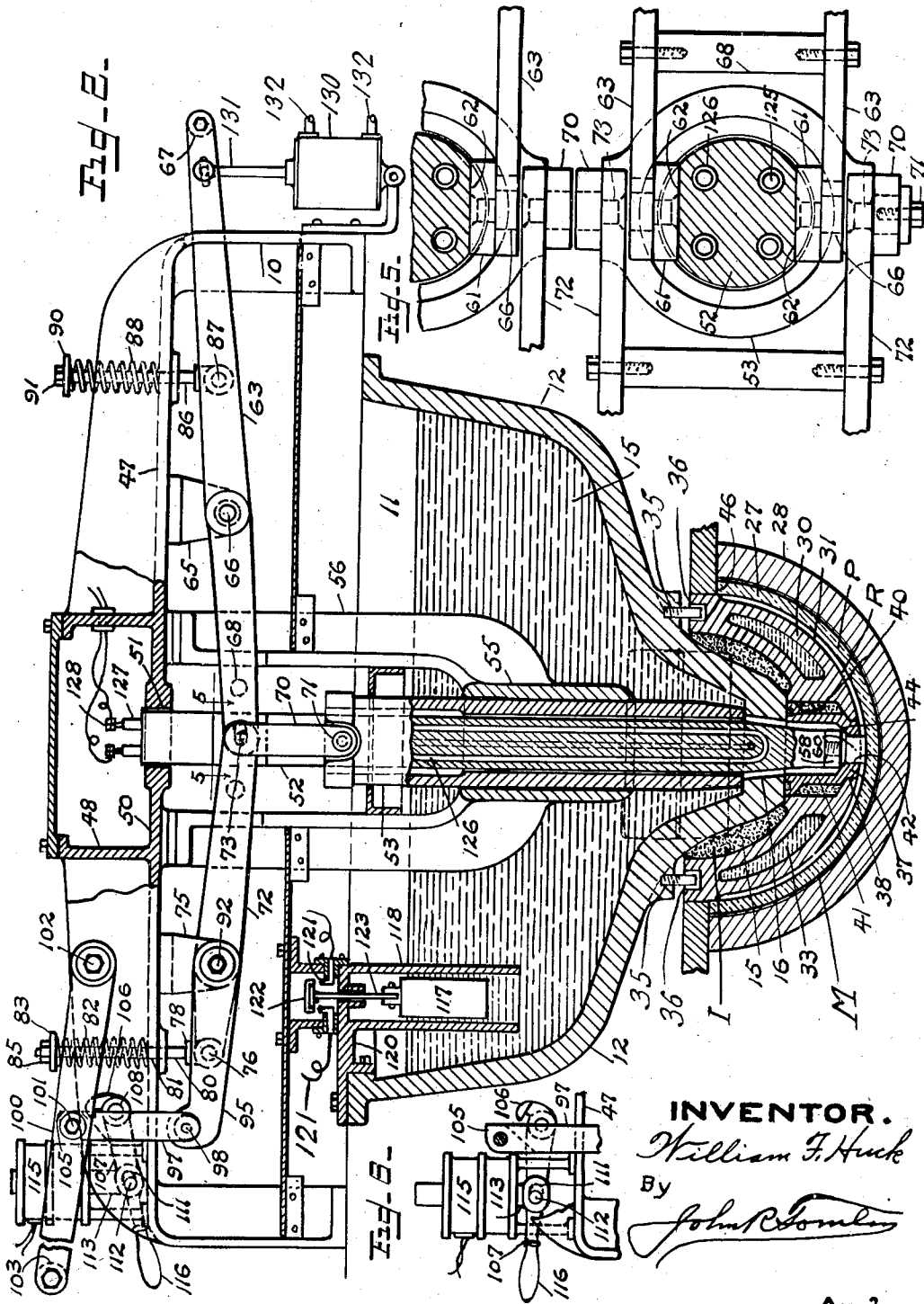
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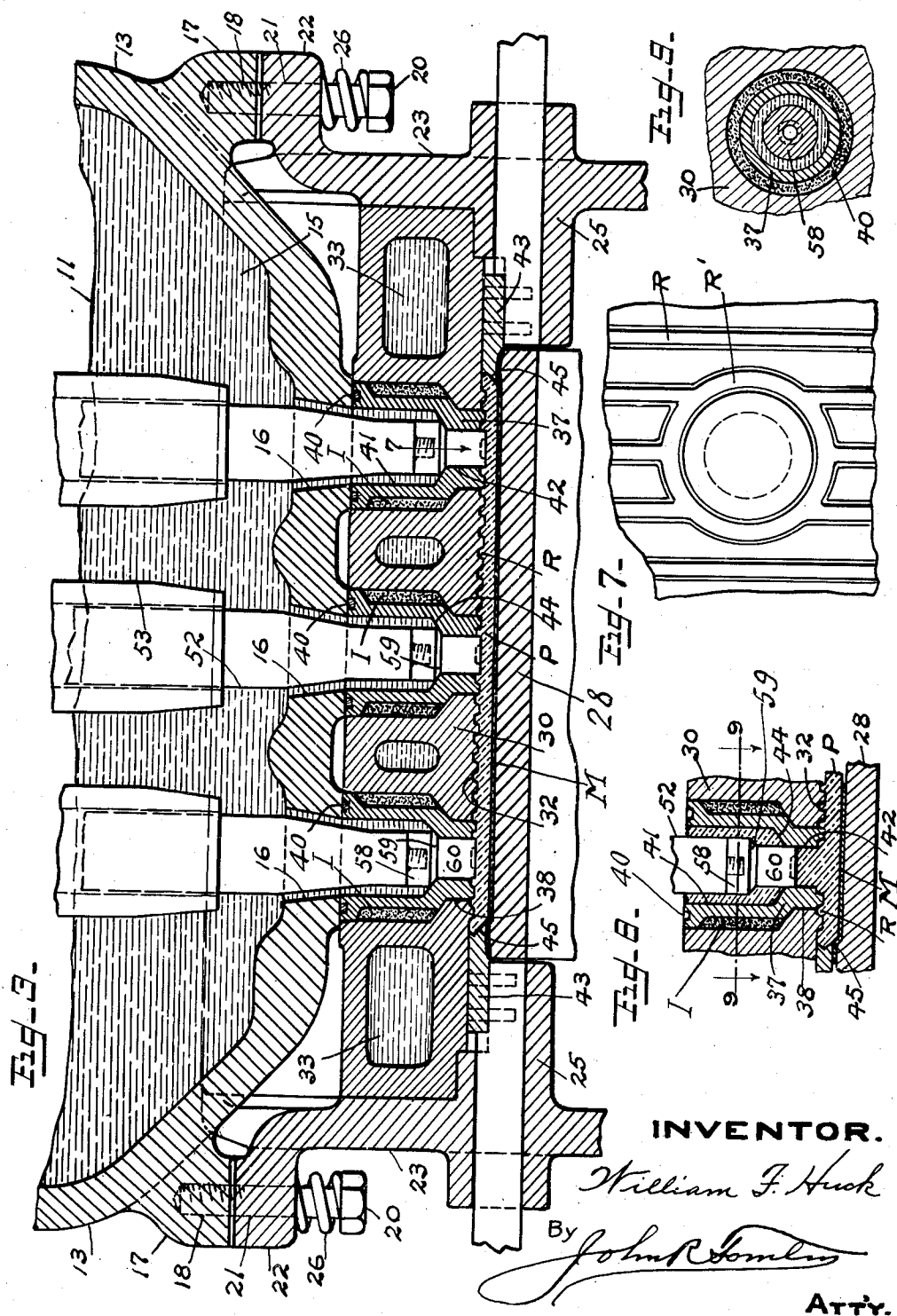
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PRINTING PLATE CASTING MACHINE

Filed Dec. 31, 1935

3 Sheets-Sheet 3



UNITED STATES PATENT OFFICE

2,136,383

PRINTING PLATE CASTING MACHINE

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Application December 31, 1935, Serial No. 57,053

10 Claims. (Cl. 22—2)

This invention relates to printing plate casting machines and particularly to the mechanism and method for casting improved curved stereotype printing plates to be employed in rotary printing machines.

The known demand for high grade printing and the existing and progressively increasing demand for higher operating speeds in modern rotary printing machines necessitates the provision of improved means and method for casting strong homogeneous plates which are free from cavities, air pockets or other surface or body imperfections. Heretofore the plates were cast in molds in which molten metal was supplied under hydrostatic pressure through valve controlled ports. After the casting chamber of the mold had been filled with the molten metal the valves closed the supply ports of the casting chamber and the metal was permitted to solidify in the mold. During the period of its solidification the metal shrinks and consequently tends to produce "blow-holes" or cavities on the surface of the cast plate or in the body thereof. Modern requirements demand stereotype printing plates free from surface imperfections and body weakness, and if cavities or pits appear on the printing surface of the plate, the image-producing portion of the plate is interrupted and consequently broken or faulty printing results. Furthermore if "blow-holes" or cavities are formed in the body of the printing plate it is thereby weakened so that the plate may be crushed by the printing impression stresses, or it may be broken or thrown from the printing cylinder during the printing operations, therefore an object of this invention is to provide means for casting a homogeneous stereotype printing plate free from surface interruptions or pits and body cavities, "blow-holes" or other imperfections.

Another object of my present invention is to provide in a stereotype printing plate casting machine means for controlling the supply of molten metal into the casting chamber of the machine and for exerting pressure on the metal while in the casting chamber to thereby increase the hydrostatic pressure within the chamber.

A specific object of this invention is the provision of novel and improved valve mechanism to be employed in a stereotype printing plate casting machine for controlling the flow of molten metal from the melting pot of the machine through suitable ports or sprues into its casting chamber, and to exert mechanical pressure on the metal in the ports to thereby produce

relatively great hydrostatic pressure within the casting chamber to cast homogeneous stereotype printing plates.

Another object of this invention is to provide, in a stereotype printing plate casting machine, having a melting pot and a casting chamber, positively-actuated means for controlling the flow of the molten metal from the melting pot into the casting chamber and for producing hydrostatic pressure in the casting chamber greater than the normal hydrostatic pressure produced by the metal head in the pot.

A further object of this invention is the provision, in a stereotype printing plate casting machine having a melting pot and a casting chamber, of a composite valve mechanism for controlling the supply of molten metal from the melting pot into the casting chamber by the independent movement of separate components of the valve mechanism.

Another specific object of this invention is to provide a stereotype printing plate casting machine having a melting pot, a casting chamber, a port leading from the melting pot to the casting chamber, separate valves for controlling the supply of molten metal through the port from the melting pot into the casting chamber, the valves operating independently and constructed and arranged so that one of the valves may be removed from the machine for repairs, cleaning, or for other reasons, while the other valve remains to function under normal operating conditions, but preferably to close the port to thereby cut off the metal supply from the melting pot into the casting chamber during the absence of the removed valve.

A more specific object of this invention is to provide a stereotype printing plate casting machine having a melting pot, a casting chamber, a port leading from the melting pot to the casting chamber, and a composite valve mechanism having separate valve members for controlling the port to supply molten metal through the port from the melting pot into the casting chamber, one of the valve members being constructed and arranged to be operated manually and independently, and the other valve member being constructed and arranged for independent manual and automatic operation, so that the valve members may simultaneously engage and close the port, or each valve member may be moved into operable engagement with the port independently of the other valve member.

It is also an object of this invention to provide a stereotype printing plate casting ma-

chine of generally improved construction, whereby the device will be simple, durable and inexpensive in construction, as well as convenient, practical, serviceable and efficient in its use.

5 With the foregoing and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that various changes in form, proportion and minor details of construction may be made within the scope of the claims without departing from the spirit or sacrificing any advantages of the invention.

15 For a complete disclosure of the invention a detailed description of an improved stereotype printing plate casting machine will now be given in connection with the accompanying drawings forming a part of the specification wherein:

20 Figure 1 is a transverse sectional view taken through the improved stereotype printing plate casting machine, parts being broken away and parts appearing in elevation;

Figure 2 is a similar view but showing the 25 controlling valves in different operating positions;

Figure 3 is a fragmental longitudinal sectional view of the improved stereotype printing plate casting machine taken on the line 3—3 of Figure 1;

Figure 4 is a fragmental plan view taken at the point indicated by arrow 4 in Figure 1 and showing the valve operating levers and coacting instrumentalities;

Figure 5 is a fragmental horizontal sectional view taken on the line 5—5 of Figure 2, parts appearing in elevation;

Figure 6 is a detailed view disclosing the solenoid-actuated trip mechanism, the trip being depicted in a different operating position from that shown in Figure 1;

Figure 7 is a fragmental plan view of the rib side of the improved stereotype printing plate, the view being taken at the point indicated by the arrow 7 in Figure 3;

Figure 8 is a fragmental detailed vertical sectional view taken through the casting chamber and lower portion of the improved valve mechanism, and;

Figure 9 is a detailed horizontal sectional view taken on the line 9—9 of Figure 8.

Referring to the drawings in which similar reference characters designate corresponding parts, there is depicted an improved stereotype printing plate casting machine having a supporting frame 10 of conventional structure and arranged to conveniently support the components of the machine. Inasmuch as no novelty resides in the machine frame, portions of it have been omitted in order to simplify the drawings. A trough shaped melting pot 11 is suitably supported by the machine frame 10, the immediate supporting components not being illustrated, and this pot includes converging side and end walls 12 and 13 respectively which unite at their lower terminals to define an elongated trough shaped bottom 15 having spaced apertures 16 formed therein, for the reasons to be hereinafter disclosed. Lugs or bosses 17 extend from the end walls 13 of the melting pot 11, and threaded apertures 18 are formed in the lugs 17 for the reception of machine screws or other securing devices 20, which extend through apertures 21 formed in ears 22 extending from the end members 23 of a supporting member or housing 25

of a mold structure to be hereinafter disclosed. Helical springs 26 surround the screws 20 and are interposed between the heads of the screws and the lower face of the ears 22 to thereby yieldingly secure the supporting member or housing 25 to the melting pot 11. A semi-cylindrical casting chamber 27 has its outer wall formed by the supporting member or housing 25 of the mold, and in order to gain access to the casting chamber, a portion of the lower arcuate wall of the housing 25 is removably secured to the housing to provide a removable back or drag 28 for the casting chamber of the mold. The back or drag 28 may be operably supported for automatic movement to and from the casting chamber 27 of the mold by any preferred instrumentalities and especially the type of mechanism disclosed in my copending application, Serial No. 616,653, but inasmuch as the means for removably supporting and operating the back or drag 28 of the mold structure does not form any part of this invention, such mechanism is not disclosed in this application. A separate semi-cylindrical casting forming the cope or core 30 of the mold is supported by the housing 25, and the outer arcuate wall 31 of the core 30 defines the inner wall of the semi-cylindrical casting chamber 27, in which plates P are cast, and is provided with arcuate grooves 32 to define the usual reinforcing or supporting ribs R to be cast as an integral part of each stereotype printing plate P. The ribs R, which in the conventional plate extend circumferentially around the back thereof, are arranged in this mechanism so that circular ribs R' surround the portion of each plate immediately adjacent the metal inlet ports which extend between the melting pot and the casting chamber and which ports will be hereinafter more fully disclosed. Channels or recesses 33 are formed in the core 30, and water or other suitable cooling fluid may be circulated through these channels to cool the mold to thereby facilitate the solidification of the cast printing plate P. Inasmuch as the housing or supporting member 25 surrounds the core 30 of the mold, the securing screws 20 and springs 26 securely but yieldingly clamp the core to the melting pot, and suitable guide or alignment pins 35 are secured to and extend downwardly from the bottom 15 of the melting pot 11, the pins 35 being preferably located at opposed sides of the melting pot and intermediate its ends. Slots 36 are formed in the top portion of the core 30 and positioned to receive the lower terminals of the pins 35 to thus insure the correct positioning or alining of the melting pot 11 and core 30 relative to each other. The width of each slot 36 is chosen to accurately receive its pin 35, but each slot is elongated transversely to permit a slight play of the pins therein to allow for expansion and contraction of the melting pot and core. Although the cope or core 30 has been shown as a separate casting, it is to be understood that this may be formed as an integral part of the housing 25 if such structure is desirable. Tubular throat members 37 have their lower terminals received in apertures 38 formed in the core of the mold, and the upper terminal of each tubular throat member engages the lower surface of the bottom member 15 of the melting pot, and 70 in order to insure a tight joint between the upper surface of each throat member 37 and the bottom surface of the casting chamber, suitable packing material 40 is interposed therebetween. A cylindrical aperture or bore 41 is formed in 75

each throat member 37 and aligns with an aperture 16 formed in the bottom 15 of the melting pot 11, and the lower portion of the cylindrical bore 41 of each throat member 37 is restricted to define a reduced cylindrical bore 42 and a surrounding frusto-conical valve seat 44. The bores 41, 42 and apertures 16 align to define a port or sprue leading from the bottom of the melting pot 11 into the casting chamber 27 through which port molten metal is supplied from the melting pot into the casting chamber, as will be hereinafter fully disclosed. The arcuate beveled ends or terminals of the casting chamber 27 are defined by slidable semi-cylindrical head or end gauges 43 having beveled inner edges 45 to form the usual beveled arcuate ends of the stereotype plate P. The head or end gauges 43 are moved to and from engagement with the printing plate, in order to permit the removal of the plate, by any preferred instrumentalities, such as those disclosed in my co-pending application, Serial No. 616,653, and since the means for actuating these head gauges form no part of the present invention such mechanism is not disclosed in this application. The straight longitudinal edges of the printing plate P are formed by side gauges 46 of usual construction, which gauges form portions of the casting chamber housing in conformity with the usual practice.

The machine frame includes transversely extending supporting rails 47 having an intermediate closure or housing 48 to receive electrical terminals, to be hereinafter disclosed, and the bottom wall 50 of the housing 48 is provided with bearing apertures 51 in which the upper terminals of cylindrical valves or plungers 52 are slidably mounted.

Each cylindrical valve 52 extends through and axially slides within a sleeve valve 53, and each sleeve valve 53 is mounted for axial sliding movement in a tubular bearing 55 supported by spaced arms 56 which are suitably secured to the supporting rail 47. The lower portion of each cylindrical valve member 52 extends through one of the apertures 16 of the bottom wall of the casting chamber and the aligned bores 41 and 42 of the throat member 37, and a valve head 58 is detachably secured to the lower terminal of the valve 52, as best shown in Figures 2, 3 and 8, and the valve head 58 has a reduced cylindrical portion 60 which cooperates with and accurately interfits within the reduced bore 42 of the tubular throat member 37 to control the supply of molten metal from the melting pot 11 to the casting chamber, as will be more fully disclosed hereinafter. Each cylindrical sleeve valve 53 has its lower terminal ground or otherwise shaped to interfit with the portion of the melting pot bottom wall which immediately surrounds each aperture 16, so that when the sleeve valve 53 is in engagement with the bottom wall of the melting pot it cuts off the flow of molten metal from the melting pot through the port into the casting chamber, which operation will be described more fully hereinafter.

In order to move each cylindrical valve 52 and its sleeve valve 53 independently into cooperative engagement with the port which extends between the melting pot and the casting chamber, operating instrumentalities are provided which include links 61 pivotally secured at diametrically opposed points to the upper portion of each valve or plunger 52, as indicated at 62 in Figure 5, and the opposed or upper terminal of each link 61 is pivotally secured to a lever arm 63 which is ful-

crumed to a bracket 65, as indicated at 66, and a suitable manipulating handle 67 unites the outer terminals of the spaced lever arm 63 for operating each valve 52. A spacing member or spreader 68 is positioned between and secured to the spaced lever arms 63, as best shown in Figure 5, to unite these arms so that they move in unison as a composite lever. Similar spaced links 70 are pivotally secured at diametrically opposed points to the upper portion of each sleeve valve 53, as indicated at 71, and the upper or outer terminal of each link 70 is pivotally secured to a lever arm 72, as indicated at 73, and the intermediate portions of these spaced lever arms 72 are fulcrumed to brackets 75, and the outer portions of each pair of these spaced arms 72 are united by a suitable rod or securing device 76, which extends through spacers or spreaders 77 and the lower terminal 78 of a rod 80, thereby uniting the lever arm 72 to produce a composite lever and to pivotally secure the rod 80 to this lever. Each rod 80 extends through a bearing aperture 81 formed in the supporting rail 47, and a helical spring 82 surrounds the rod and has one terminal in engagement with the supporting rail and its opposed terminal engaging a washer 83 which is secured against outward movement relative to the rod 81 by means of a nut or other suitable securing device 85. By this arrangement each helical spring 82 imparts an upward stress to the outer portion of the operably connected lever arms 72, thus tending to thrust the sleeve valve 53 downwardly into engagement with the valve surface of the bottom wall 15 of the melting pot. A similar rod 86 is pivotally secured to each pair of operably-connected lever arms 63, as indicated at 87, and each rod 86 is stressed upwardly by a spring 88 which surrounds the rod, and one terminal of the spring engages the supporting rail 47 and its opposed terminal engages a washer 90 which is secured against outward movement on the rod by a nut or suitable securing device 91, so that each spring 88 tends to force the outer portion of the operably-connected lever arms 63 upwardly and their valve 52 downwardly. A shaft 92 extends through the spaced fulcrum bracket 75 and is secured against rotary motion to each lever arm 72 by a key or other suitable securing device 93, and a terminal of the shaft 92 has an arm 95 rigidly secured thereto by keys or other suitable securing devices 96, and the outer terminal of the arm is pivotally secured to a link 97, as indicated at 98. The upper terminal of the link 97 is pivotally secured to a lever arm 100, as indicated at 101, and the arm 100 is pivotally secured to the supporting rail 47, as indicated at 102. The outer terminal of the lever arm 100 has a manipulating handle 103 secured thereto, and this handle preferably extends across the machine and is secured to a similar arm positioned at the opposed side of the machine, thus defining a composite lever arrangement. Inasmuch as the arm and connecting link which are positioned at the opposed side of the machine are of similar construction to those disclosed, they are not here illustrated. One of the links 97 has a lug extending laterally from its upper portion to define a trip nose 105 which is adapted to cooperate with a trip finger 106 secured to and operably supported by a shaft 108 mounted in a bearing 110 carried by the supporting rail 47. An arm 107 is keyed or otherwise rigidly secured to the shaft 108, and a slot 111 is formed in this arm for the reception of a pin 112 which extends from an armature 113 of

a solenoid 115 of conventional construction, and the purpose and operation of this mechanism will be fully disclosed hereinafter. A manipulating handle 116 extends outwardly from the arm 107 so that the trip finger 106 may be manually moved from engagement with the trip nose 105, as will be more fully explained hereinafter.

It is preferred that the "head" of molten metal in the melting pot be maintained at or above a predetermined level, and to this end a float member 117 is slidably positioned within a sleeve or casing 118 positioned in the melting pot and secured thereto, as indicated at 120. Suitable spaced and insulated electrical terminals 121 are supported by the casing 118, and a contact member 122 is positioned to cooperate with these terminals and is operably secured to the float 117 by an interposed link 123. Suitable electrical wires or conductors lead from the electrical terminals 121 to the solenoid 115 to form an electrical circuit which includes a conventional push button, and inasmuch as this push-button-control electric circuit is of conventional type, the push button and complete electric circuit is not here illustrated, but it is to be understood that by manipulating the push button an electric circuit is established to the solenoid 115 to energize it and actuate the trip mechanism, which operation will be more fully disclosed hereinafter.

Any suitable means may be utilized for heating the metal in the melting pot such as the conventional immersion heaters, but inasmuch as these heaters are well known to those skilled in the art, they are not shown in this application. A preferred arrangement is here illustrated in which part of the required heat is supplied through the instrumentality of electrical heating units 125 of high resistance which extend through longitudinal bores 126 formed in the cylindrical valves or plungers 52, and these heating units are electrically connected with suitable electrical conductors 127, as indicated at 128, which conductors lead to any suitable or preferred source of electrical excitation. By this arrangement the heating units 126, in addition to heating the metal in the melting pot, also heats the valve 52 so that the metal in the port which extends from the melting pot to the casting chamber is always maintained in molten condition, thereby preventing clogging of this port during the operation of the mechanism.

In operation, at the beginning of the press run or operating period of the plate casting machine, assuming that the plunger valves 52 and the sleeve valves 53 are in closed position, the manipulating handle 103 is pressed downwardly by the operator thus moving the sleeve valve 53 away from the port which communicates the melting pot 15 with the casting chamber, thus permitting the molten metal to flow into the port until it is checked by the valve head portion of the valve 52. When it is desired to cast a printing plate the manipulating handle 67 is pressed downwardly, thereby raising the valve 52 and withdrawing the valve head 58 and its cylindrical portion 60 from engagement with the bore 42 and the surrounding frusto-conical valve surface 44, thus permitting the molten metal to flow from the melting pot into the casting chamber until it is filled. After the casting chamber has been filled, the manipulating handle 67 is released and the spring 88 forces the outer portion of the lever 63 to move upwardly about its fulcrum point 66, thereby causing the cylindrical portion 60 of the valve head to move back into the bore 42 of the

communicating port. As the cylindrical valve portion 60 initially enters the bore 42 it cuts off the supply of metal from the melting pot 11 into the casting chamber, but the valve portion 60 continues to exert pressure on the molten metal in the casting chamber, thus tending to force out any air that may be present in the casting chamber, and, as the metal in the casting chamber solidifies, the valve continues to exert pressure thereon to force out air from the casting chamber and also compensate for the shrinkage of the metal during its solidification period. Although any desired stress may be exerted on the plunger valve 52 and its valve portion 60 by the helical spring 88, it is preferable that this stress be of such degree as to cause the valve to exert a pressure on the metal in the casting chamber in excess of the hydrostatic pressure that is produced by the molten metal head in the melting pot, thus producing a device capable of casting a strong homogeneous plate which is free of all surface and body imperfections. As the metal solidifies in the casting chamber, the portion 60 of the valve head continues to move downwardly into the bore 42 and finally reaches the limit of its motion where the frusto conical portion 59 of the valve head 58 engages the frusto conical surface 44 surrounding the bore 42, thus further sealing the melting pot so that the cast plate may be removed through the intervention of any preferred instrumentalities, not illustrated, and the components of the mold reassembled preparatory to casting another plate. In casting additional plates, the operation above described is repeated until a sufficient number have been produced.

If it is desired to lift the plunger valve 52 by power this may be accomplished by employing a fluid operated cylinder 130 as shown in Figures 1 and 2, and this cylinder is provided with the usual piston, not shown, which is connected to the outer terminal of the arm 63 by the usual piston rod 131. Suitable fluid may be supplied to and conveyed from the cylinder 130 through the conduits 132 and this fluid may be supplied from any suitable source, not shown. As the fluid is supplied to the upper end of the cylinder 130 it forces the piston and piston rod 131 downwardly thereby raising the plunger valve 52 against the tension of the spring 88, and when it is desired to close the piston valve 52 the fluid pressure is released so that the piston and piston rod 131 return to their lower position thus permitting the spring 88 to lift the valve 52. Inasmuch as the control for fluid operated cylinders employed in connection with plate casting machines is well understood by those skilled in the art the control mechanism is not here illustrated.

When it is desired to close the sleeve valve 53, the electric circuit is completed to the solenoid 115 by manipulating the hereinbefore mentioned push button, not shown, so that the solenoid 115 is energized, thereby removing the trip finger 106 from engagement with the trip nose 105 of the link 97, thus permitting the spring 82 to lift the outer portion of the lever arms 72 and force the lower terminal of the sleeve valve 53 into engagement with the bottom wall of the melting pot at a point surrounding the aperture 16 to sever communication between the melting pot and the casting chamber.

Now if it is desired to remove the valve 52 from the machine for repairs, cleaning or other purposes, this may be readily done while the metal in the melting pot is still in molten condition, because the sleeve valve 53 prevents the

flow of molten metal from the melting pot. The components remain in this position until the cylindrical valve or plunger 52 is reinserted in operating position, and then this valve is moved so that its components interrupt the communication between the melting pot and the casting chamber, and then the sleeve valve may be raised preparatory to the resumption of normal printing casting operations. If at any time it should be desirable to manually release the bell crank trip 108, this can be readily done by moving the manipulating handle 116 upwardly, thus moving the trip finger 106 from engagement with the trip nose 105, thereby liberating the valve-controlling components for movement so that the sleeve valve 53 may be forced into closed position by its spring 82. Furthermore, if, at any time during the operation of the device, the supply of molten metal in the melting pot should drop below a predetermined level, the float 117 drops until its contact member 122 makes electrical contact with the electrical terminals 121, thereby establishing an electric circuit to the solenoid to release the trip mechanism so that the sleeve valve 53 returns to its closed position.

In order to conserve the heat imparted to the molten metal and melting pot, suitable heat insulating material I is positioned between the tubular throat members 37 and the water cooled core 30 of the mold and also between the lower portion 15 of the melting pot and the mold core. The conventional matrix M is supported by the removable mold back and this matrix may be secured to the back by any preferred instrumentalities, and, since these instrumentalities form no part of the present invention they are not shown.

It will be understood that the invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof, and it is therefore desired that the present embodiment be considered in all respect as illustrative and not restriction, and it will be further understood that each and every novel feature and combination present in or possessed by the mechanism herein disclosed forms a part of the invention included in this application.

Having thus described my invention, what I claim as new and useful is:

1. In a stereotype printing plate casting machine, a melting pot containing molten metal, a casting chamber, a port extending from the melting pot to the casting chamber, a valve constructed and arranged to accurately interfit in a portion of the port and movable to open and close the port to control the supply of molten metal from the melting pot through the port into the casting chamber and movable in the port after it is closed, and means operably connected with the valve to bias it for movement further into the port whereby the valve exerts pressure on the metal in the casting chamber after the port is closed.

2. In a stereotype printing plate casting machine, a melting pot containing molten metal, a casting chamber immediately below the melting pot, a port leading from the melting pot directly to the casting chamber through which molten metal is supplied from the melting pot into the casting chamber, a valve constructed and arranged to accurately interfit in a portion of the port and movable to open and close the port to control the supply of molten metal from the melting pot through the port to the casting chamber and movable in the port after it is closed,

and means operably connected with the valve to bias it for movement further into the port whereby the valve exerts pressure on the metal in the casting chamber after the port is closed.

3. In a stereotype printing plate casting machine, a melting pot, a casting chamber, a port leading from the melting pot to the casting chamber, a valve operably positioned in the melting pot to open and close the port to control the supply of molten metal from the melting pot to the casting chamber, and means independent of the molten metal for heating the valve, the heated valve maintaining the metal in molten state as it passes through the port.

4. In a stereotype printing plate casting machine, a melting pot, a casting chamber, a port leading from the melting pot to the casting chamber, a valve positioned in the melting pot and operable to open and close the port to control the supply of molten metal from the melting pot to the casting chamber, and a heating unit positioned in the valve and functioning to melt the metal in the melting pot.

5. In a stereotype printing plate casting machine, a melting pot containing molten metal, a casting chamber, a port extending from the melting pot to the casting chamber through which molten metal is supplied from the melting pot to the casting chamber, separate valve seats for the port, and separate valve members positioned at the side of the port which is disposed towards the melting pot to engage the valve seats to independently open and close the port to thereby independently control the supply of molten metal passing in the same direction through the port from the melting pot into the casting chamber.

6. In a stereotype printing plate casting machine, a melting pot, a casting chamber, a port extending from the melting pot to the casting chamber through which molten metal is supplied from the melting pot to the casting chamber, and separate independently actuated valve members movable independently relative to each other to open and close the port to independently control the supply of molten metal passing in the same direction through the port from the melting pot into the casting chamber, one of the valve members being slidably mounted within the other.

7. In a stereotype printing plate casting machine, a melting pot containing molten metal, a casting chamber, a port extending from the melting pot to the casting chamber through which molten metal is supplied from the melting pot to the casting chamber, a plunger valve accurately interfitting within the port and operable to open and close the port to supply molten metal through the port from the melting pot into the casting chamber and to exert continuous pressure on the metal in the casting chamber, and a sleeve valve engaging and surrounding the plunger valve and operably movable independently of the plunger valve to open and close the port to independently control the supply of molten metal through the port from the melting pot into the casting chamber.

8. In a stereotype printing plate casting machine, a melting pot containing molten metal, a casting chamber, a port extending from the melting pot into the casting chamber through which molten metal is supplied from the melting pot to the casting chamber, separate independent valve seats for the port, separate valve members positioned at the side of the port which is disposed towards the melting pot to engage the valve seats to open and close the port to inde-

pendently control the supply of molten metal passing in the same direction through the port from the melting pot into the casting chamber, manually operable means for controlling the operation of one valve independently of the other, and automatically operable means for independently operating the other valve.

9. In a stereotype printing plate casting machine, a melting pot, a casting chamber, a plunger valve operable to open and close the port to control the supply of molten metal through the port from the melting pot into the casting chamber, and a sleeve valve surrounding the plunger valve and operable independently of the plunger valve to open and close the port to control the supply of molten metal through the port from the melting pot into the casting chamber, and manually operable means for operating the plunger valve independently of the sleeve valve,

and automatically operable means for operating the sleeve valve independently of the plunger valve.

10. In a stereotype printing plate casting machine, a melting pot, a casting chamber, a port extending from the melting pot to the casting chamber through which molten metal is supplied from the melting pot to the casting chamber, and separate valve members operable to open and close the port to independently control the supply of molten metal through the port from the melting pot into the casting chamber, and means for operating one valve independently of the other, and float-control means automatically operable responsive to the molten metal level in the melting pot for independently closing the other valve.

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