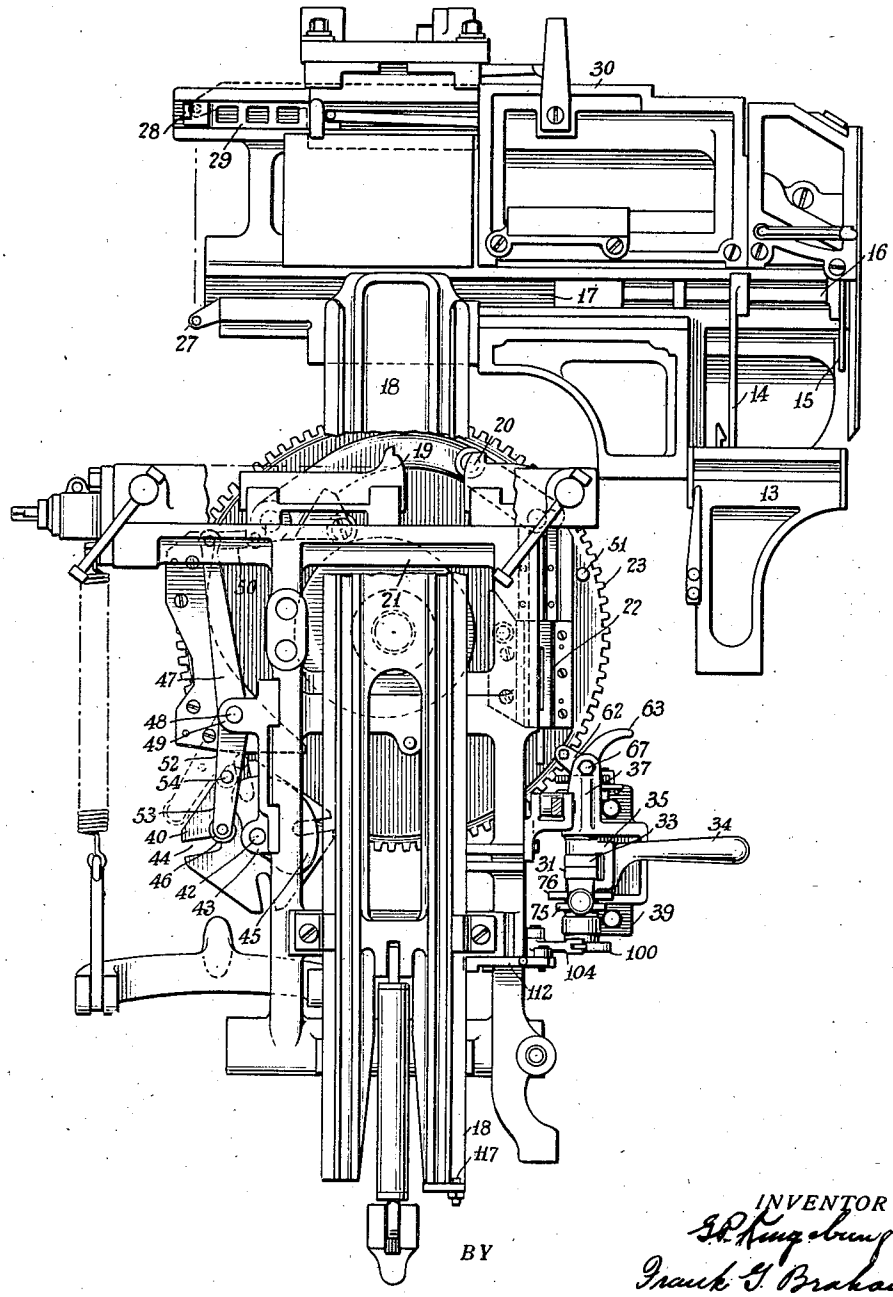
May 31, 1938. G. P. KINGSBURY 2,118,927

SLUG CASTING MACHINE

Filed May 9, 1934 6 Sheets-Sheet 1

Fig. 1.




INVENTOR

G. P. Kingsbury

BY

Frank G. Braham

ATTORNEY

May 31, 1938. G. P. KINGSBURY 2,118,927

SLUG CASTING MACHINE

Filed May 9, 1934 6 Sheets-Sheet 2

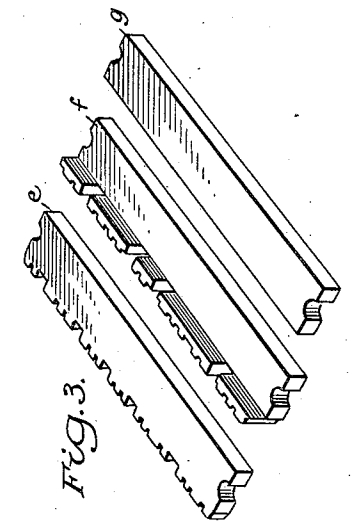



Fig. 3.




Fig. 2.



Fig. 4.

INVENTOR
G. P. Kingsbury
Frank G. Braham
ATTORNEY

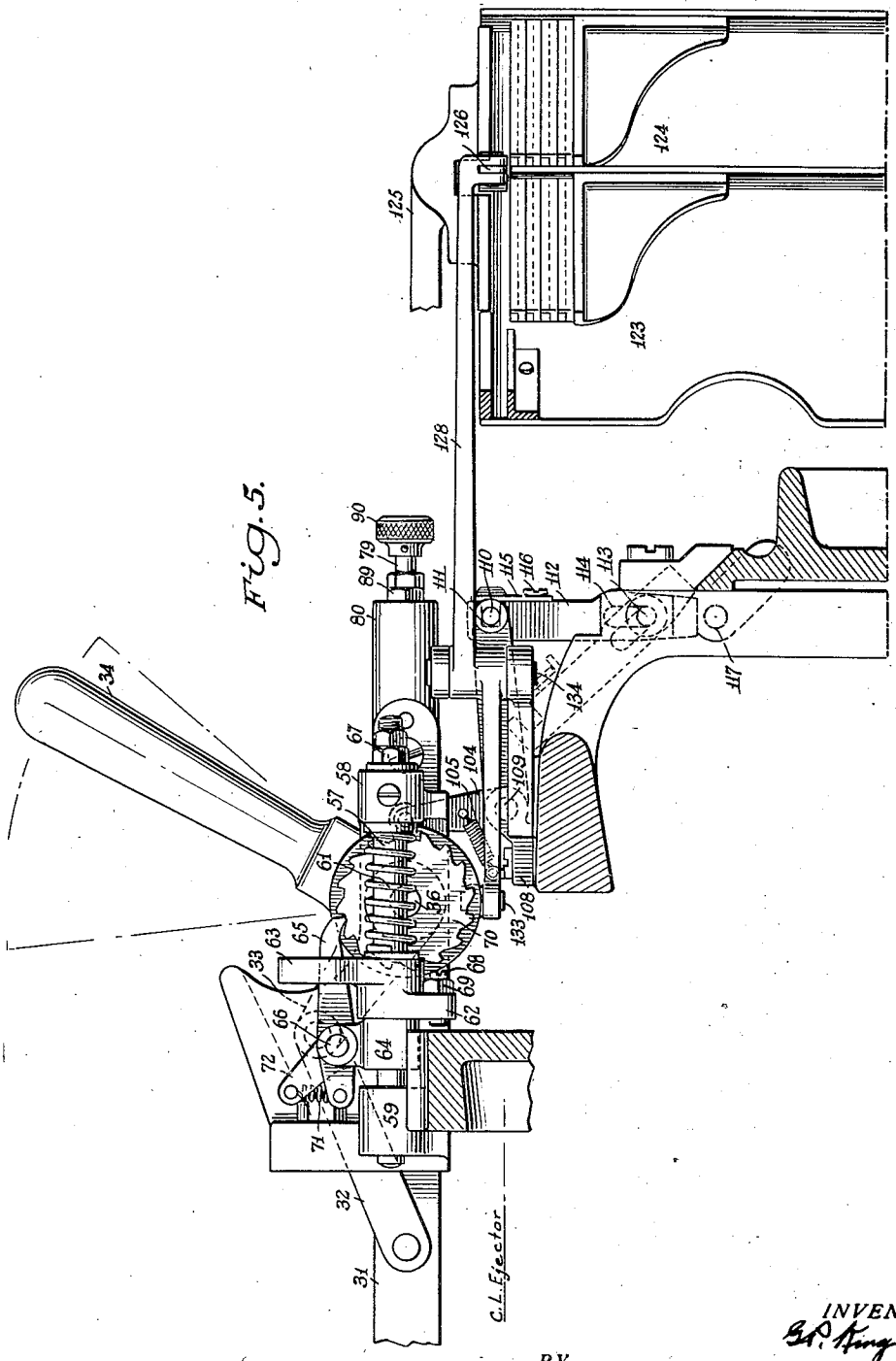
BY

May 31, 1938. G. P. KINGSBURY 2,118,927

SLUG CASTING MACHINE

Filed May 9, 1934 6 Sheets-Sheet 3

Fig. 5.




INVENTOR
G. P. Kingsbury
BY Frank G. Braham
ATTORNEY

May 31, 1938. G. P. KINGSBURY 2,118,927

SLUG CASTING MACHINE

Filed May 9, 1934 6 Sheets-Sheet 4

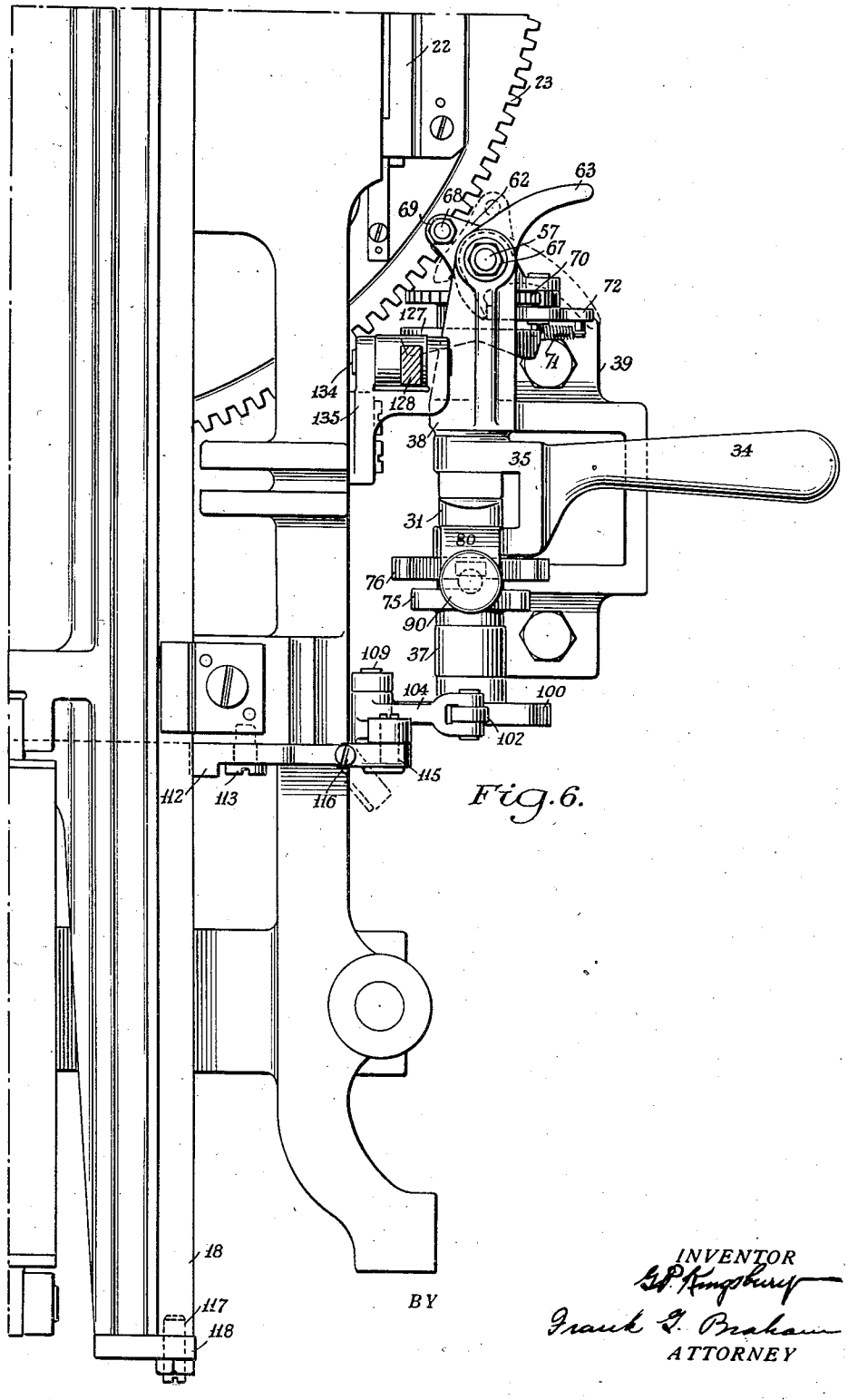



Fig. 6.

INVENTOR
G. P. Kingsbury
BY
Frank G. Braham
ATTORNEY

May 31, 1938. G. P. KINGSBURY 2,118,927

SLUG CASTING MACHINE

Filed May 9, 1934 6 Sheets-Sheet 5

Fig. 7.

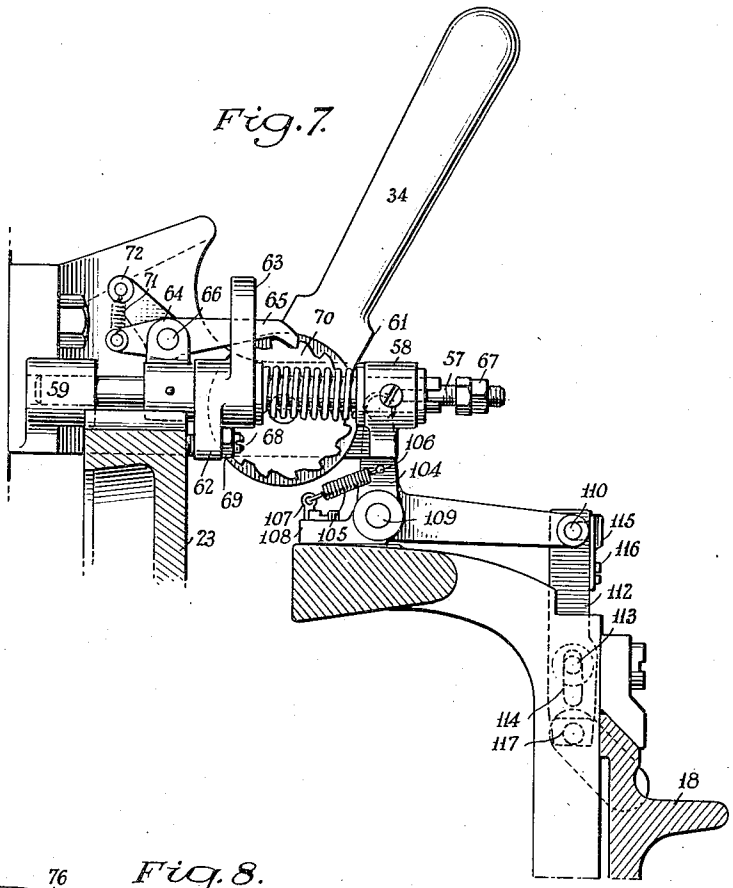



Fig. 8.

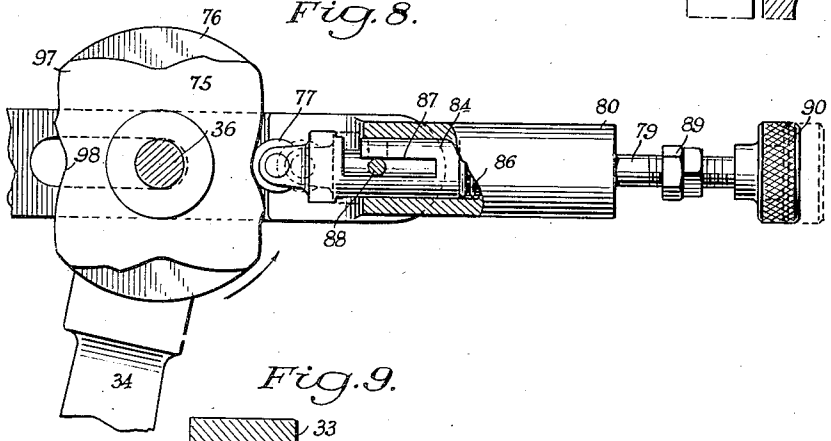
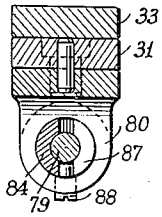



Fig. 9.




INVENTOR
G. P. Kingsbury
BY
Frank G. Braham
ATTORNEY

May 31, 1938. G. P. KINGSBURY 2,118,927

SLUG CASTING MACHINE

Filed May 9, 1934 6 Sheets-Sheet 6

Fig. 10.

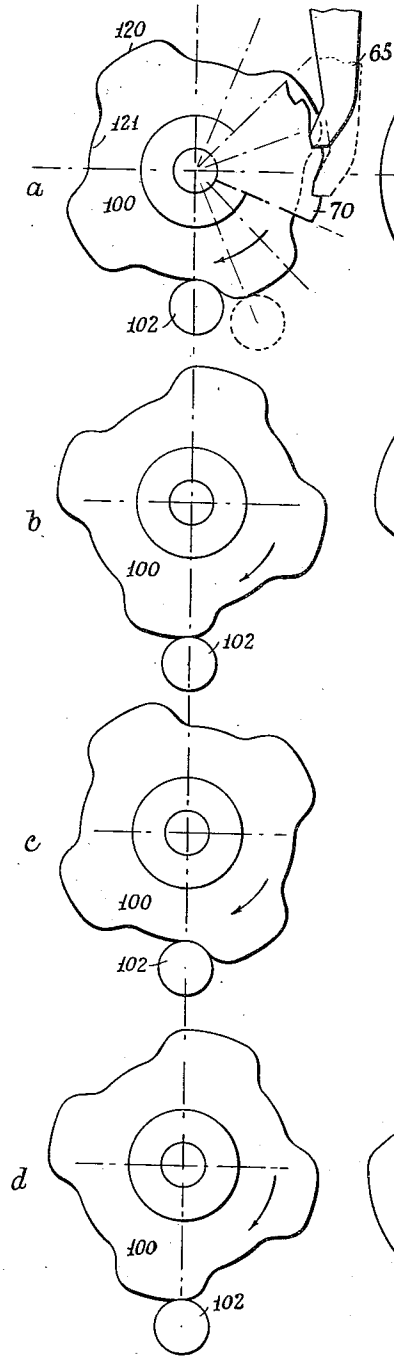



Fig. 11.

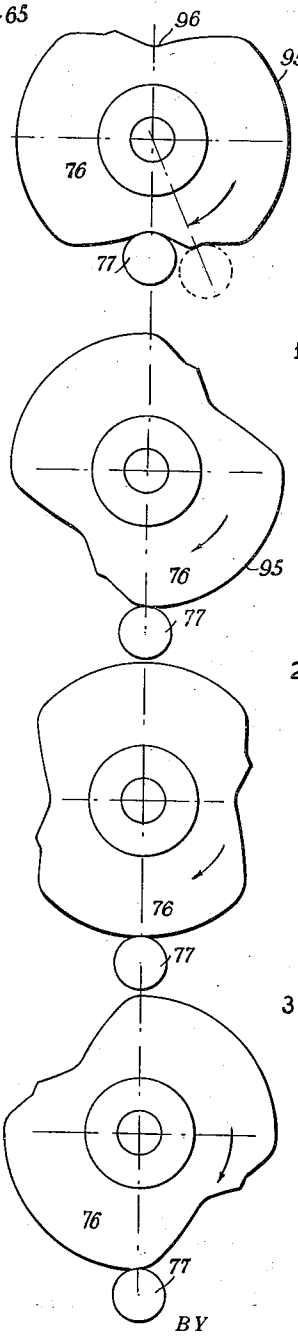
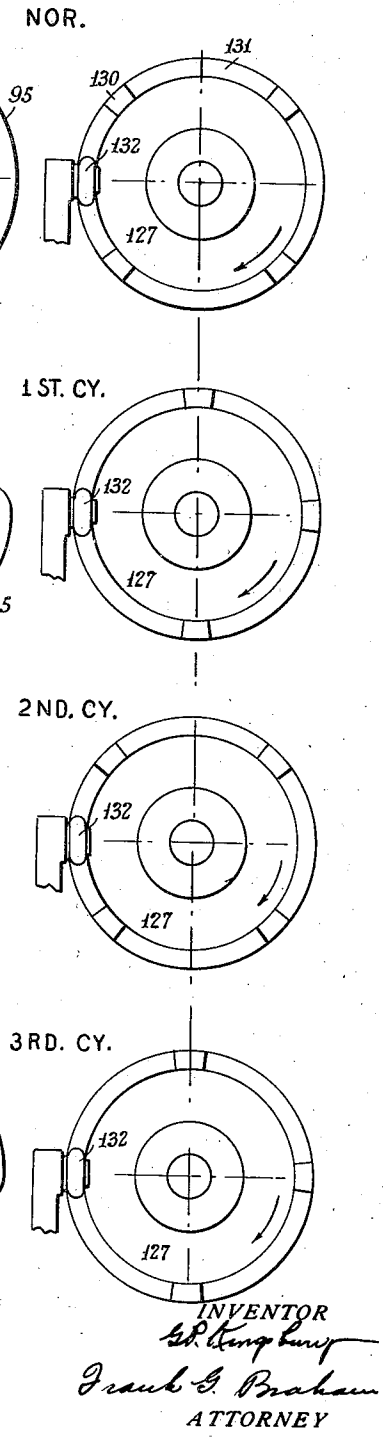



Fig. 12.




INVENTOR

G. P. Kingsbury

BY

Frank G. Braham

ATTORNEY

Patented May 31, 1938

2,118,927

# UNITED STATES PATENT OFFICE

2,118,927

## SLUG CASTING MACHINE

George Peyton Kingsbury, Hollis, N. Y., assignor to Mergenthaler Linotype Company, a corporation of New York

Application May 9, 1934, Serial No. 724,717

20 Claims. (Cl. 199—47)

This invention relates to typographical or slug casting machines such as those of the general class shown and described in U. S. Letters Patent No. 436,532 granted to O. Mergenthaler on September 16, 1890, wherein circulating matrices are released from a magazine in the order in which their characters are to appear in print and then composed in line, the composed line presented to the face of a mold, the mold filled with molten metal to form a printing slug against the matrices which produce the type characters thereon, and the matrices thereafter returned through distributing mechanism to the magazine from whence they started. More particularly, the invention is directed to certain improvements which adapt these machines, when so desired, automatically to cast a predetermined plurality of desired slugs, such improvements being herein presented in the nature of an attachment which can be applied substantially to all commercial machines with practically little or no alteration.

As is well known, the means for presenting the composed line to the mold includes a transporter or so-called first elevator which descends to position the line between a pair of clamping jaws for line justification, and after the casting operation ascends to permit transfer of the line to the second elevator from which the matrices pass to the distributing mechanism. Also as is well known, one of the clamping jaws is fixed (except for a limited movement to operate the customary pump stop) and the other (usually the left-hand jaw) is adjustable to different positions to accord with the length of the mold slot or the length of the composed line in its justified condition, the position of such adjustable jaw being determined by an adjustable banking stop which, however, does not interfere with the free movement of the jaw against the relatively fixed jaw in the absence of a matrix line between them.

In carrying out the present invention in its preferred embodiment (although the invention is not limited to such embodiment as will later appear), mechanism is provided operating automatically to inaugurate a predetermined number of cycles of operation; to prevent the transfer of the line from the first elevator during a predetermined number of cycles of operation so that the same line is presented a plurality of times to the mold to cast a corresponding plurality of duplicate printing slugs, and other mechanism provided likewise operating automatically during other predetermined cycles of operation of the machine for moving the left-hand clamping jaw into contact with the right-hand clamping jaw to close the mold completely at one side so that blank slugs may be cast in the mold against the face of the left-hand clamping jaw during such cycles.

The invention also contemplates the provision of an improved galley associated with the casting mechanism and formed with a plurality of compartments for holding the slugs delivered from the casting mechanism in separate columns, the galley also having mechanism associated therewith for automatically separating and stacking duplicate slugs as they are delivered therein.

Among other uses, the invention is of special utility in the production of slugs employed in advertising or telephone book work, wherein it is frequently desirable to use duplicate printing slugs alone or in combination with blank slugs, the blank slugs being used to support overhanging portions of the printing slugs.

For a clear understanding of the invention, reference may be made to the accompanying drawings wherein the invention is shown merely by way of example and in preferred form. Obviously, however, many variations and modifications may be made therein which will still be comprised within its spirit and it is to be understood, therefore, that the invention is not limited to any specific form or embodiment, except in so far as such limitations are specified in the appended claims.

Referring to the drawings:

Fig. 1 is a front elevational view, with parts broken away, of a portion of a typographical machine, showing applied thereto the attachments for casting duplicate slugs in accordance with the present invention;

Fig. 2 is a side view partially in section, showing the control mechanism for automatically inaugurating a predetermined number of machine cycles of operation; for preventing the transfer of the line from the transporter and for separating and storing duplicate slugs;

Fig. 3 is a view of a slug having an overhanging printing face and blank slugs for supporting the overhanging portion of the printing slug;

Fig. 4 is a detailed view, partially in section, of a slug storing galley, the view being taken along the line 4—4 of Fig. 2;

Fig. 5 is a top view of the recasting mechanism in operative position, and of the mechanism for separating and storing the slugs in the galley;

Fig. 6 is an enlarged front elevational view of the recasting mechanism;

Fig. 7 is a top plan view of the recasting mechanism in operative position;

Fig. 8 is an enlarged detailed view, partially in section, of the clutch control mechanism, the view being taken along line 8—8 of Fig. 2;

Fig. 9 is an enlarged detailed view, in section, of the clutch control actuating mechanism, the view being taken along line 9—9 of Fig. 2;

Fig. 10 is a view showing the first elevator control cam and the position it assumes with relation to the roller during the various cycles of operation;

Fig. 11 is a view showing the upper clutch control cam and the position it assumes with respect to the roller during the various cycles of operation; and

Fig. 12 is a view showing the slug separating control cam and the position it assumes with respect to the roller during various cycles of operation.

In the operation of the machine in the customary manner, that is to say, to produce a single printing slug from each composed line, the matrices are released from their storage magazine by a keyboard mechanism and are delivered to and composed in line in the assembling elevator 13 which is then manually elevated to raise the composed line between the depending fingers 14 and 15 of the line delivery slide 16 which thereupon transfers the line from the assembling elevator 13 through the intermediate channel 17 to the line transporter or first elevator 18. Upon receiving the line, the line transporter 18 descends to position the line between the left-hand clamping jaw 19 and the right-hand clamping jaw 20 (both jaws being mounted on and carried by the vise frame 21) in front of the then horizontally positioned slotted mold 22 on the mold carrying movable element or mold wheel 23 (the latter having previously been given a one-quarter turn to carry the mold in use from its vertical ejecting position to its horizontal casting position). The line is then justified, and the mold wheel 23 advanced from its rotating position to press the mold 22 into contact with the matrix line and the two clamping jaws 19 and 20 which constitute a closure for the front face of the mold against which the slug is cast in the usual manner. After the slug has been cast the mold wheel 23 is carried back to its rotating position and rotated through the remaining three-quarter revolution necessary to restore the mold to its vertical position. The mold wheel 23 is then advanced again from its rotating position to carry the mold 22 against the knife block 24 (Fig. 2), after which the ejector 25 is advanced to force the slug out of the mold, through the knife block and into the galley 26; and finally, at the completion of a machine cycle of operation the mold wheel 23 is again carried back to its rotating position.

After the slug has been cast the line transporter 18 carrying the justified line ascends to its uppermost or line transfer position in which position the stop member 27 carried by the line transporter is above the transverse stop member 28 carried by the line transfer slide 29, thereby permitting the line to be shifted therefrom through the upper transfer channel 30 onto the second elevator bar (not shown) which delivers them to the distributing mechanism, whereby they are returned to their proper channels in the storage magazine from whence they started.

As is well understood in the art, the various parts referred to, with the exception of the assembler 13 which is under manual control, are operated from the main drive shaft of the machine which is caused to make one complete revolution for each cycle of operation, the main drive shaft being driven by an electric motor through a spring actuated clutch which is thrown into action by a trip dog carried by a cam fast to the main drive shaft.

While in the normal operation of the machine the clutch is automatically thrown into action on the release of the delivery slide it is also under manual control, there being provided for this purpose a train of connections leading from the trip dog and including a forwardly and backwardly reciprocating clutch control bar 31, the forward end of which is pivotally connected by links 32 and 33 to a hand lever 34. The hand lever 34 is provided with a bifurcated hub portion 35 rotatably mounted on a vertical shaft 36 which normally is fixed in lugs 37 and 38 carried by a bracket 39 secured to the main frame of the machine. By this arrangement, when the hand lever 31 is swung backwardly from its neutral position, the spring actuated clutch is locked in its inactive position and when the hand lever is swung forwardly from its neutral position the clutch control mechanism operates the clutch and the machine is started. The details of the clutch control mechanism are fully shown and described in U. S. Letters Patent No. 661,386, granted to J. R. Rogers on November 6, 1900, and being so well known, they do not require any further description here.

While the above briefly describes the various parts and their mode of operation in producing a printing slug during a machine cycle of operation, such machines are sometimes provided with means which permit blank slugs to be cast during other cycles of operation, and in such cases the left-hand clamping jaw 19 is utilized to close the front face of the mold 22 during the machine cycles of operation it is desired to cast such blank slugs. Normally, the left-hand clamping jaw 19 banks against a manually adjustable stop on the vise frame 21 and thus determines the length of the justified matrix line but it is movable from this adjusted position up against the right-hand clamping jaw 20 when no matrix line is present, and in the embodiment illustrated such movement is effected by mechanism actuated automatically by the mold wheel 23 as it rotates during a machine cycle of operation. The particular mechanism illustrated for actuating the left-hand clamping jaw 19 comprises a Geneva stop motion device consisting of a Geneva disk or plate 40 rotatably mounted on the vise frame by means of a horizontal stud 42 carried by a bracket 43 which is screwed or otherwise secured to the vise frame. The disk 40 is formed at four equi-distant points at its peripheral edge with radial slots 44; and fixed to the face of this disk is a cam plate 45 which, in the rotation of the disk, is adapted to engage a roller 46 mounted on the lower end of a vertically arranged jaw actuating lever 47 pivoted between its ends by a pin 48 to a lug 49 projecting from the bracket 43, the upper arm of the lever being pivoted to a horizontal link 50 which is, in turn, pivotally connected to the left-hand clamping jaw 19. The Geneva disk 40 is rotated by means of a pin 51 carried by the mold wheel 23 and projecting forwardly from the same near its peripheral edge, the pin 51 in the successive rotation of the mold wheel 23 entering and leaving slots 44 in the Geneva disk 40 in succession and thereby imparting one-quarter rotation to the disk at each complete rotation of the mold wheel 23. In such rotary movements of the Geneva disk

46, the cam 45 by engaging the roller 46 on the lower arm of the jaw actuating lever 47, will shift the jaw 19 to the right until it contacts with the right-hand clamping jaw 20 and thus form a closure for the mold 22, so that molten metal ejected into the mold will form a blank slug. The cam 45 is removable and in the present case it is so formed that during the first and second cycle of operation the left-hand clamping jaw 19 remains in its normal position to the left and during the third and fourth cycle of operation the left-hand clamping jaw is maintained against the right-hand clamping jaw 20 to form a closure for the mold.

To permit the left-hand clamping jaw 19 to be free of the influence of the Geneva movement so that the machine will operate to produce printing slugs alone, the lower arm of the jaw actuating lever 47 is formed in two sections, the upper section 52 forming a continuation of the upper arm of the jaw actuating lever, and the lower section 53 being pivoted co-axially of the lever on a pin 54 and carrying the aforementioned roller 46. The two sections 52 and 53 are coupled together by means of a retractable spring pressed plunger (not shown) carried by the lower section 53 and engaging in a socket in the upper section 52. When the left-hand clamping jaw 19 is to be subjected to the action of the cam 45, the plunger is seated in the socket but when the jaw 19 is to be freed from the influence of the cam, the plunger is withdrawn from the socket. When the lever is thus disconnected from the cam, the lower roller carrying section will be in the position shown by the dotted lines (Fig. 1) and will be free to vibrate idly about the axis without imparting motion to the lever itself. The details of the casting of printing slugs and blank slugs are fully shown and described in U. S. Patent No. 1,955,621, and further explanation thereof is not deemed necessary. The improved equipment is intended to adapt such machines to automatically cast a plurality of duplicate printing slugs, such as shown by (e) Fig. 3, or a plurality of duplicate printing slugs and a plurality of blank slugs, such as shown by (f) and (g) respectively in Fig. 3; and to separate and stack the duplicate slugs as they are delivered into the storage galley.

All the mechanism necessary for the control of the elements involved in the casting of duplicate printing slugs or duplicate printing slugs and blank slugs are as well as the separating and stacking of the duplicate slugs, in accordance with the preferred embodiment of the present invention, actuated by an element of the machine which moves periodically during a machine cycle of operation through the medium of control mechanism which is capable of being set selectively to cause the machine to operate continuously through any predetermined or desired number of casting cycles.

As stated heretofore, the mechanism, among other uses, is of particular value in the production of duplicate printing slugs or duplicate printing slugs and blank slugs such as those used in advertising or telephone book work, and for this reason in describing the arrangement for maintaining the machine in continuous operation throughout a plurality of cycles, a condition has been selected, by way of illustration, wherein the machine is operated continuously for two cycles without interruption to produce duplicate printing slugs or for four cycles without interruption to produce duplicate printing slugs and two blank slugs. In either case the machine cycles are inaugurated when the operator raises the assembler 13 wherein a line has been composed to permit the line to be transferred to the first elevator or line transporter 18 which thereupon descends to present the line to the mold 22 to cast a printing slug. The transporter 18 thereafter ascends in the usual manner, but at this phase of the cycle when the control mechanism is set to complete two cycles of operation means are rendered active to automatically inaugurate a second cycle of operation; to prevent the transfer of the composed line from the transporter 18 so that the same line is again presented to the mold 22 during the second cycle to produce a duplicate printing slug, and to effect the operation of a slug separating gate which acts to separate the duplicate printing slugs as they descend into the galley 26. At this phase of the cycle when the control mechanism is set to complete four cycles of operation means are rendered active to automatically inaugurate a second, third and fourth cycle of operation; to prevent the transfer of the composed line from the transporter 18 so that the same line is again presented to the mold during the second cycle to produce a duplicate printing slug; to render the line transfer preventing means inactive to permit the line to be transferred from the transporter 18 after the duplicate slug has been cast during the second cycle so that blank slugs may be cast during the third and fourth cycles, and to effect the operation of the slug separating gate so that duplicate slugs are separated as they descend into the galley.

The control mechanism is adapted and arranged to be operated by the mold wheel 23 and, as shown more clearly in Figs. 2 and 5, it includes a fore and aft slide rod 57 which is journaled in bearings 58 and 59 carried by a bracket 60 secured to the main frame of the machine. The slide rod 57 is provided with a finger 62 having an adjusting screw 68 positioned therein and with an operating handle 63 by means of which the rod may be rocked to carry the adjusting screw into and out of the path traveled by the mold wheel 23 as it advances from its rotating position. The slide rod 57 is also provided with an arm 64 on which a pawl 65 is pivotally connected as by a pin 66. The pawl 65 is maintained in engagement with a ratchet wheel 70 by means of a spring 71, one end of which is secured to the inner end of the pawl 65 and the other end of which is secured to a link 72 carried by the pin 66 on which the pawl 65 is pivotally mounted. The ratchet wheel is mounted on the upper end of the shaft 36 which is rotatably mounted in the lugs or bearings 37 and 38 instead of being fixedly mounted therein as it usually is. When the mold wheel 23 advances preparatory to the slug casting operation it engages the adjusting screw 68 carried by the finger 62 and so forces the slide rod 57 and the pawl 65 outwardly against the action of a spring 61 positioned about the slide rod between the handle and the front bearing. As the pawl 65 moves outwardly it rotates the ratchet wheel 70 and the vertical shaft 36 through a partial turn. As the mold wheel 23 is carried back to its rotating position after the casting operation the slide rod 57 and the pawl 65 are forced back to their initial position by the action of the spring 61. In like manner when the mold wheel 23 advances preparatory to the slug ejecting operation the shaft 36 is given a second partial turn. The extent of the partial turn which the shaft 36 makes each time the mold wheel 23

moves forward from its rotating position depends on the stroke of the pawl 65, and that may be adjusted by varying the position of the adjusting screw 68 and its lock nut 69 in the finger 62 and the position of the lock nut 67 on the threaded outer end of the slide rod.

In the present embodiment of the invention, the ratchet wheel is provided with sixteen teeth and the stroke of the fore and aft slide rod 57 is adjusted so that the pawl 65 engages successive teeth on the ratchet wheel as it is carried forward during the slug casting and the slug ejecting operations. Under such conditions, the shaft 36 is rotated one-sixteenth of a revolution each time the mold wheel 23 advances from its rotating position.

The means desirably employed for automatically inaugurating the second cycle of operation necessary to produce duplicate printing slugs and the second, third and fourth cycles of operation necessary to produce duplicate printing slugs and two blank slugs comprises the clutch control bar 31 which normally is operated manually by the operator. When this clutch control bar is in its neutral or inoperative position the clutch is disengaged from the main drive shaft and the machine is idle. When, however, the clutch control bar is swung forward the clutch, through mechanism heretofore described, is rendered active and a machine cycle of operation is inaugurated. The actuation of the clutch control bar to automatically inaugurate the second cycle of operation to produce a duplicate printing slug is effected by the control mechanism through the medium of a lower clutch control cam 75 which is secured to the shaft 36 and the actuation of the clutch control bar to automatically inaugurate a second, third and fourth cycle of operation to produce a duplicate printing slug and two blank slugs is effected by the control mechanism through the medium of an upper clutch control cam 76 which is also secured to the shaft 36, and to render either of these control cams effective a selector mechanism is provided. As shown more clearly in Figs. 2 and 8, the selector mechanism comprises a roller 77 which is adapted and arranged to be maintained in contact with the lower cam 75 when two continuous machine cycles of operation are desired and with the upper cam 76 when four continuous machine cycles of operation are desired.

To permit the roller 77 to be switched from engagement with one cam to engagement with the other cam as well as to provide means for locking the roller 77 in engagement with either of the cams, it is mounted on a pin journaled in the offset bifurcated inner end of a fore and aft slide rod 79. The outer end of the slide rod 79 is journaled in the outer wall of a housing member 80 which is secured as by a screw 81 and dowel pins 82 and 83 to the lower side of the clutch control bar 31, and the inner end of the slide rod 79 has a bearing bushing 84 which is journaled in the inner wall of the housing member 80. A spring 86 which is relatively strong as compared to the usual clutch control bar retractive spring is positioned about the fore and aft slide rod 79 within the housing member 80, and the bearing bushing 84 is provided with a groove 87 which engages a guiding pin 88 extending inwardly from the housing member and which extends radially around one-half of the rear end of the bushing 84 and then forwardly along opposite sides thereof. A pair of lock nuts 89 are in threaded engagement with the outer end of the fore and aft slide rod 79 and are so positioned thereon as to prevent the relatively strong spring 86 from forcing the roller 77 into excessive frictional engagement with the cams. Normally, when the clutch control bar 31 is in its neutral or inoperative position the roller 77 is positioned adjacent a low segment on a cam. Under such conditions when a high segment is carried in front of the roller, the roller, the fore and aft slide rod 79, housing member 80 and the clutch control bar 31 are forced outwardly as a unit against the action of the usual clutch control bar retractive spring rather than the slide rod 79 being forced outwardly through the housing member 80 against the action of the relatively strong spring 86. To aid in the manipulation of the fore and aft slide rod 79 when transferring the roller 77 from one cam to the other a knob 90 is secured, as by a pin 91, to the outer end thereof. When making the transfer of the roller 77 from one clutch control cam to the other, as for example, when transferring from the upper clutch control cam 76 to the lower clutch control cam 75, the slide rod 79 is pulled outwardly against the action of the spring 86 until one end of the radial portion of the groove 87 is against the pin 88, then it is rotated a half turn or until the other end of the radial portion of the groove is against the pin and then it is released. When released the slide rod 79 is forced inwardly by the action of the spring 86 until the lock nuts 89 are against the outer wall of the housing member 80 and as a result the pin 88 is now positioned in the oppositely disposed forwardly extending portion of the groove 87 thus locking the roller 77 in front of the lower clutch control cam 75. When making this transfer from the upper to the lower control cam it is obvious that the hand lever 34 must be locked back otherwise the clutch control bar 31 would be pulled forward into operative position instead of the slide rod 79 being pulled outwardly against the action of the spring 86. In this connection, it is also to be noted that the spring operated slide rod 79 permits the machine to be stopped or restarted at will by the manipulation of the hand lever 34 in the usual manner.

As clearly shown in Fig. 11, the upper clutch control cam 76 which is utilized to automatically inaugurate the three additional cycles of operations necessary to produce duplicate printing slugs and two blank slugs is divided into two alternate operative or high segments 95 and two alternate inoperative or low segments 96. Prior to the beginning of the recasting operation the position of the upper clutch control cam 76 is as shown in (a) of Fig. 11, that is, the roller 77 engages a low segment 96 of the cam. Under such conditions, the clutch control bar 31 is held in its neutral inoperative position by the usual control clutch bar retracting spring. As the mold wheel 23 moves forward prior to the line casting operation, the shaft 36, as heretofore explained, is rotated through one-sixteenth of a revolution by the action of the pawl 65 and ratchet wheel 76. As the shaft 36 rotates through one-sixteenth of a revolution the clutch control cam 76 is rotated accordingly and as a result the cam is carried in front of the roller 77 half way between a low segment 96 and the next adjacent high segment 95. Under such conditions, the clutch control bar 31 is forced outwardly against the action of the clutch control bar retracting spring one-half the distance necessary to actuate the clutch, this portion of the cam being

shaped to provide a seat for the roller 77 when in this position. When the mold wheel 23 again advances during the first cycle to eject the slug, the shaft 36 is again rotated through one-sixteenth of a revolution and as a result the front end of the next high segment 95 of the cam is carried in front of the roller 77 as shown in (b) Fig. 11, thereby forcing the clutch control bar 31 outwardly to its operative position to actuate the clutch and thus automatically inaugurate a second cycle of operation. In like manner, the two forward movements of the mold wheel 23 to cast and eject the slug during the second cycle of operation rotates the shaft 36 and the associated clutch control cam 75 through one-eighth of a revolution, thereby carrying the center of a high segment 95 of the cam in front of the roller 77 as shown in (c) Fig. 11, and as a result the clutch control bar 31 is maintained in its operative position and a third cycle of operation is automatically inaugurated. The two forward movements of the mold wheel 23 during the third cycle of operations carry the rear end of a high segment 95 of the cam in front of the roller 77 as shown in (d) Fig. 11, thereby maintaining the clutch control bar 31 outwardly in its operative position to automatically inaugurate a fourth cycle of operation. The two forward movements of the mold wheel 23 during the fourth cycle of operation, however, restores the cam to its initial position as shown in (a) Fig. 11, that is, a low segment 96 of the cam is in front of the roller 77, thereby permitting the clutch control bar 31 to return to its inoperative position under the influence of the usual clutch control lever retractive spring to automatically stop the machine at the end of the fourth cycle of operation.

As shown more clearly in Fig. 8, the lower clutch control cam 75 which is utilized to automatically inaugurate the second cycle of operation necessary to produce duplicate printing slugs alone comprises four alternate high or operative segments 97 and four alternate low or inoperative segments 98. At the beginning of the recasting operation when it is desired to produce a single duplicate printing slug, the roller 77 is maintained against the low segment 98 of the lower clutch control cam 75. Under such conditions, the clutch control bar 31 is held in its neutral inactive position by the usual clutch control bar retractive spring. As the mold wheel 23 moves forward prior to the line casting operation during the first cycle of operation the shaft 36 and the lower clutch control cam 75 associated therewith are rotated through one-sixteenth of a revolution, as explained heretofore, thereby carrying the lower clutch control cam 75 mid-way between a low segment 98 and the next adjacent high segment 97 in front of the roller 77, and, as a result, the clutch control bar 31 is forced outwardly one-half the distance necessary to put it in operative position. As the mold wheel 23 again advances during the first cycle to eject the slug, the shaft 36 and the lower clutch control cam 75 are again rotated through one-sixteenth of a revolution, thereby carrying a high or operative segment 97 of the cam in front of the roller 77, thus forcing the clutch control bar 31 outwardly to its operative position to automatically inaugurate a second cycle of operation to produce a duplicate printing slug. In like manner, the two forward movements of the mold wheel 23 during the second cycle of operation carry the next low segment 98 of the cam 75 in front of the roller 77, thus permitting the clutch control bar 31 to be retracted to its inoperative position to automatically stop the machine at the end of the second cycle of operation.

While clutch control cams which permit two or four cycles of operation to be automatically started are shown and described, it is obvious that by changing the shape of the cams and the length of the stroke of the fore and aft slide rod 57 any desired number of cycles of operation may be automatically inaugurated.

When the machine is set to automatically inaugurate the second machine cycle of operation to produce a duplicate printing slug it is essential that the usual transfer of the composed line from the line transporter be prevented during the first machine cycle of operation and permitted during the second machine cycle of operation, and when the machine is set to automatically inaugurate a second, third and fourth machine cycle of operation it is also essential that the usual transfer of the composed line from the line transporter be prevented during the first machine cycle of operation and permitted during the second machine cycle of operation so that a duplicate printing slug may be cast during the second cycle and blank slugs may be cast during the third and fourth cycles of operation. In the present embodiment of the invention the transfer of the line from the line transporter during the first of a series of machine cycles of operation is prevented by arresting the ascent of the line transporter 18 so that the stop member 27 carried by the transporter 18 is in the path of the stop member 28 carried by the slide 29. The ascent of the line transporter is arrested in this position by the control mechanism through the medium of a line transporter control cam 100 which is secured as by a pin 101, to the lower end of the shaft 36. A roller 102 mounted on a pin in the bifurcated inner end of a bell crank lever 104 is maintained in contact with the line transporter control cam 100 by a spring 105, one end of the spring being secured to the lever 104, as by a pin 106, and the other end of the lever being secured, as by an eye bolt 107, to a bracket 108 which is secured to the main frame of the machine. The bell crank lever 104 is pivotally mounted on a pin 109 which is also carried by the bracket 108, and the outer end of the lever is provided with a pin 110 which extends downwardly from the lower face thereof and engages a slot 111 in the right-hand end of the stop plate 112. The left-hand end of the stop plate 112 is loosely secured to the main frame of the machine by a stud 113, the opening 114 through which the stud 113 passes being elongated to permit lateral movement of the stop plate 112 under the influence of the bell crank lever 104. The pin 110 carried by the outer end of the bell crank lever 104 is maintained in the slot 111 in the right-hand end of the stop plate 112 when recasting is desired by means of a face plate 115 which is secured to the stop plate 112 by a screw 116. As shown more fully in Fig. 10, the line transporter control cam 100 is provided with four alternate high or operative segments 120 and four alternate low or inoperative segments 121, and as shown in (a) Fig. 10, the cam is so positioned on the shaft 36 that at the beginning of the first of a series of machine cycles of operation the roller 102 is against a low segment 121 and at the beginning of the rise leading to an adjacent high segment 120. Under such conditions when the mold wheel 23 advances preparatory to the slug casting operation during the first machine cycle of operation the shaft 32

is rotated through one-sixteenth of a revolution and a high segment 120 of the cam 100 is rotated in front of the roller 102, the roller under such circumstances bearing the relation to the cam indicated by the dotted lines in (a) Fig. 10. When a high part of the cam 100 is rotated in front of the roller 102, the inner end of the bell crank lever 104 is forced outwardly against the action of the spring 105 and as a result the lever 104 is rotated about the pivot pin 109, thereby forcing the outer end of the bell crank lever 104 to the left. As the outer end of the bell crank lever 104 is forced to the left the stop plate 112 which is connected thereto is likewise forced to the left into the path of an adjusting screw 117 carried by a projecting lug 118 on the lower end of the line transporter 18. The position of the adjusting screw 117 is such that when it engages the stop plate 112 in its upward travel, the stop member 27 carried by the line transporter 18 is positioned in the path of the stop member 28 carried by the transverse slide 29, thereby preventing the normal operation of the slide 29 to transfer the line from the transporter 18. As the mold wheel 23 again advances during the first cycle to eject the slug, the shaft 36 and line transporter control cam 100 are again rotated through one-sixteenth of a revolution so that after the completion of the first cycle of operation the roller 102 bears the relation to the cam 100 as shown in (b) Fig. 10, that is, the rear end of a high segment 120 of the cam is in front of the roller, consequently the stop plate 112 is maintained in its operative position. As the mold wheel 23 advances prior to the slug casting operation during the second cycle of operation, the shaft 36 and the line transporter control cam 100 are again rotated through one-sixteenth of a revolution, thereby carrying the beginning of a low segment 121 in front of the roller 102 and as a result the stop plate 112 is forced to the right to its inactive position by the bell crank lever 104 under the influence of the spring 105, thus permitting the line transporter 18 to ascend to its uppermost or line transfer position after the duplicate slug has been cast. As the mold wheel 23 advances to eject the slug during the second cycle of operation, the shaft 36 and the line transporter control cam 100 are again rotated through one-sixteenth of a revolution, thereby carrying the rear end of a low segment 121 against the roller 102 so that at the end of the second cycle of operation the cam 100 bears the relation to the roller 102 as shown in (c) Fig. 10, that is, the rear end of a low segment 121 of the cam is in front of the roller, consequently the stop plate 112 is maintained in its inoperative position. Then as the mold wheel 23 moves forward prior to the line casting operation during the third cycle of operation the shaft 36 and the line transporter control cam 100 are again moved through one-sixteenth of a revolution and the front part of the next adjacent high segment 120 of the cam is carried in front of the roller 102. As explained heretofore, the movement of a high segment 120 of the cam 100 in front of the roller 102 forces the stop plate 112 to the left to prevent the ascent of the line transporter 18 to its uppermost or line transfer position. As the mold wheel 23 again advances during the third cycle to eject the slug, the shaft 36 and the line transporter control cam 100 are again rotated through one-sixteenth of a revolution, thereby carrying the rear portion of this high segment 120 in front of the roller 102 so that at the end of the third cycle of operation the cam 100 bears the relation to the roller 102 as shown in (d) Fig. 10, that is, the rear end of a high segment 120 is against the roller 102, consequently the stop plate 112 is maintained in its operative position. As a result of the first forward movement of the mold wheel 23 during the fourth cycle of operation the shaft 36 and the line transporter control cam 100 are again rotated through one-sixteenth of a revolution thereby carrying the beginning of a low or inoperative segment 121 in front of the roller and as a result the stop plate 112 is retracted to the right to its inoperative position. The second forward movement of the mold wheel 23 during the fourth cycle of operation rotates the shaft 36 and the line transporter control cam 100 through another one-sixteenth of a revolution so that at the end of the fourth cycle of operation the cam bears its initial relation to the roller 102 such as shown by (a) Fig. 10, that is, the rear end of a low segment 121 is in front of the roller, consequently the stop plate 112 is maintained to the right in its inoperative position. It is thus seen that the transporter 18 is prevented from ascending to its uppermost or line transfer position after each alternate cycle of operation, thereby permitting duplicate printing slugs to be produced when the machine is set to complete two machine cycles of operation or duplicate printing slugs and duplicate blank slugs to be produced when the machine is set to complete four machine cycles of operation.

The improved galley 26 is inclined and is provided with a plurality of compartments for holding the slugs in separate columns in order that duplicate slugs may be kept apart, and thus obviate the necessity of sorting them out by hand later on. In the present embodiment, as shown in Figs. 2, 4 and 5, the galley 26 is divided by a partition into upper and lower compartments 123 and 124 respectively, into which the slugs are selectively delivered as they are ejected from the knife block 24, and in which they are progressively advanced by the stacking lever 125. The means for determining the column into which the slugs are to be stacked, comprises a movable gate 126 positioned in line with the discharge end of the chute into which the slugs are ejected from the mold. When the gate 126 is in the lower position as shown in full lines in Fig. 2, the ejected slug will, of course, be stacked in the upper compartment 123, whereas when the gate is swung upwardly as shown in dotted lines, the ejected slug is stacked in the lower galley 124.

The operation of the gate 126 to separate duplicate slugs is effected by the control mechanism through the medium of a slug separating cam 127 which is secured to the upper end of the shaft 36. Since it is desired to separate alternate slugs, it is essential that the gate 126 be operated at the end of each complete cycle of operation and for this reason, the cam 127 as fully shown in Fig. 12 is provided with four alternate high or operative segments 130 and four alternate low or inoperative segments 131. The cam 127 engages a roller 132 which is journaled on a horizontal shaft 133 mounted in the bifurcated inner end of a rocker arm 128, the rocker arm being pivoted on a shaft 134 mounted in the bifurcated upper end of a bracket 135 carried by the main frame of the machine. The gate 126 is detachably mounted as by a stud 129 to the outer end of the rocker arm 128, and the rocker arm is pivotally mounted off center so that the weight of the outer end of the rocker

arm maintains the roller 132 in contact with the face of the cam 127. As shown more fully in (a) Fig. 12, prior to the beginning of the recasting operation, the roller 132 engages a low segment 131 of the cam 127 and the gate 126 is lowered. The two forward movements of the mold wheel 23 during the first cycle of operation rotates the shaft 36 and the associated slug separating control cam 127 through one-eighth of a revolution thereby carrying a high or operative segment 130 of the cam 127 above the roller 132 as shown in (b) Fig. 12, and as a result the inner end of the rocker arm 128 is depressed and the outer end of the rocker arm carrying the gate 126 is raised thus permitting the slug cast during the first cycle to descend to the lower compartment 124 wherein it is stacked by the stacking lever 125. The two forward movements of the mold wheel 23 during the second cycle of operation rotates the shaft 36 and the associated slug separating cam 127 through another one-eighth revolution, thereby carrying a low or inoperative segment 131 above the roller 132 as shown in (c) Fig. 12, and as a result the inner end of the rocker arm 127 is raised and the outer end of the rocker arm carrying the gate 126 is lowered so that the slug cast during the second cycle is stopped adjacent the upper compartment 123 and is stored therein by the stacking lever 125. In like manner, the two forward movements of the mold wheel 23 during the third cycle of operation carry a high or operative segment 130 of the cam 127 above the roller 132 as shown in (d) Fig. 12, so that the slug cast during the third cycle descends to the lower compartment 124 and is stacked therein by the stacking lever 125. The two forward movements of the mold wheel 23 during the fourth cycle carry the cam 127 back to its initial position as shown in (a) Fig. 12, that is, a low or inoperative segment 131 of the cam 127 is carried above the roller 132 so that the slug cast during the fourth cycle is stacked in the upper compartment 123.

In the operation of the machine, when it is desired to cast duplicate slugs, the recasting control mechanism is first adjusted to cast the desired number of slugs, that is, if one duplicate printing slug and two blank slugs are to be cast, the roller 77 is rotated into engagement with the upper clutch control cam 76, the slotted right-hand end of the stop plate 112 is brought into engagement with the pin 113 carried by the outer end of the bell crank lever 104 and the finger 62 is rotated into operative position in front of the mold wheel 23. The composed line is then delivered to the line transporter 18 and the machine started in the usual manner. At the beginning of the cycle of operation, the line transporter control cam 100, the upper clutch control cam 76 and the slug separating control cam 127 are in their normal position as shown in (a) Figs. 10, 11 and 12 respectively, that is, low or inoperative segments are in front of the rollers 102, 77 and 132 respectively and the stop plate 112 is to the right or inoperative position, the clutch control bar 31 is in its neutral inoperative position and the slug separating gate 126 is in its lowered position.

As a result of the two forward movements of the mold wheel 23 during the first cycle of operations, the stop plate 112 is moved to its active position, thus preventing the line being transferred from the first elevator or line transporter 18 during the first cycle of operations so that the same line is again presented to the mold 22 during the next cycle of operations to produce a duplicate printing slug, the clutch control bar 31 is forced outwardly to its active position, thus automatically inaugurating a second cycle of operation and the gate 126 is raised thus permitting the printing slug cast during the first cycle to be stored in the lower compartment 124. As a result of the two forward movements of the mold wheel 23 during the second cycle of operation, the stop plate 112 is returned to its inoperative position thus permitting the line transporter 18 to ascend to its uppermost or line transfer position; the clutch control bar 31 is maintained in its operative position to automatically inaugurate a third cycle of operation and the gate 126 is lowered, thus permitting the duplicate printing slug cast during the second cycle to be stored in the upper compartment 123. Since the first elevator or line transporter 18 is permitted to ascend to its uppermost or line transfer position, during the second cycle of operation, the line is transferred therefrom by the slide 29 into the upper transfer channel 30 from which the matrices are returned to their respective magazines. At the end of the second cycle the left-hand vise jaw 19 is automatically moved to the right into engagement with the right-hand vise jaw 20 to form a closure for the mold 22 by the Geneva movement, as explained heretofore, so that a blank slug is cast during the third cycle. As a result of the two forward movements of the mold wheel 23 during the third cycle of operation, the stop plate 112 is again moved to its operative position, the clutch control bar 31 is maintained in its operative position to automatically inaugurate a fourth cycle of operation and the gate 126 is lowered to permit the blank slug cast during the third cycle to be stacked in the lower compartment 124 adjacent the printing slug cast during the first cycle of operation. In the present case, of course, the movement of the stop plate 112 to its operative position is immaterial since a blank slug is cast. At the beginning of the fourth cycle of operation the left-hand vise jaw 19 is again moved to the right into engagement with the right-hand vise jaw 20 to form a closure for the mold 22 so that a blank slug is also cast during the fourth cycle of operation. As a result of the two forward movements of the mold wheel 23 during the fourth cycle of operation, the stop plate 112 is returned to its normal inactive position, the clutch control bar 31 is returned to its neutral inoperative position to automatically stop the machine at the end of the fourth cycle of operation and the gate 126 is lowered, thus permitting the blank slug cast during the fourth cycle of operation to be stacked in the upper compartment 123 adjacent the printing slug cast during the second cycle of operation.

In the event two duplicate printing slugs are required the lower roller carrying section of the jaw actuating lever 47 is moved out of contact with the cam 45, as explained heretofore, to render the Geneva movement inoperative and the slide rod 57 is rotated a half turn to bring the roller 77 adjacent the face of the lower clutch control cam 75. The composed line is transferred to the first elevator or line transporter 18 and the first cycle of operations started in the usual manner. As a result of the two forward movements of the mold wheel 23 during the first cycle of operation, the stop plate 112 is moved to the left to its active position, thereby preventing the line transporter 18 from ascending to its uppermost or line transfer position so that the

same line is again presented to the mold during the next cycle of operation to produce a duplicate printing slug; the clutch control bar 31 is forced outwardly to its operative position, thereby automatically inaugurating a second cycle of operation and the gate 126 is raised thereby permitting the printing slug cast during the first cycle to be stacked in the lower compartment 124. As a result of the two forward movements of the mold wheel 23 during the second cycle of operation the stop plate 112 is retracted to the right to its inoperative position thus permitting the line transporter 18 to ascend to its uppermost or line transfer position; the clutch control bar 31 is moved to its neutral inoperative position to permit the machine to automatically stop after the completion of the second cycle of operation and the gate 126 is lowered, thereby permitting the slug cast during the second cycle to be stacked in the upper compartment 123.

If one printing slug and one blank slug is desired the roller 77 is rotated into engagement with the lower clutch control cam 75 so as to permit the machine to complete two cycles of operation before automatically coming to rest, the cam 45 on the Geneva plate 40 is changed so that the left-hand vise jaw 19 is moved to the right to close the mold during alternate cycles of operation and the stop plate 112 is disengaged from the outer end of the bell crank lever 104 and is rotated to the position indicated by the dotted lines in Fig. 5, so that it is not carried into the path of the adjusting screw 117 on the projecting lug 118 by the action of the first elevator control cam 100. Under such conditions, a printing slug is cast during the first cycle of operation and a blank slug is cast during the second cycle of operation. In this case it is not necessary to separate the slugs as they are cast, consequently the stud 129 which secures the gate 122 to the outer end of the rocker arm 124 is loosened and the gate is rotated into inactive position, thereby permitting the printing slugs and blank slugs to be stacked adjacent one another in the lower compartment 124.

Having thus described the invention, I claim:

1. In a slug casting machine, the combination of means for casting a slug during a machine cycle of operation, and a selector associated with said machine and adapted when in one position to automatically inaugurate a predetermined number of machine cycles of operation and when in another position to automatically inaugurate a different predetermined number of machine cycles of operation.

2. In a slug casting machine, the combination of a mold, a transporter for presenting a composed line of matrices to said mold to produce a printing slug, means for transferring the line from the transporter, a selector associated with the machine and adapted when in one position to automatically inaugurate a predetermined number of machine cycles of operation and when in another position to automatically inaugurate a different predetermined number of machine cycles of operation, and means for preventing the transfer of the line during certain of said cycles to produce printing slugs.

3. In a slug casting machine, the combination of a mold, a transporter for presenting a composed line of matrices to said mold to produce a printing slug, means for transferring the line from the transporter, a selector associated with said machine and adapted when in one position to automatically inaugurate a predetermined number of machine cycles of operation and when in another position to automatically inaugurate a different predetermined number of machine cycles of operation, means for preventing the transfer of the line from the transporter during certain of said cycles to produce duplicate printing slugs, and means for closing the mold during other of said cycles to produce blank slugs.

4. In a slug casting machine, the combination of a mold, a transporter for presenting a composed line of matrices to said mold to produce a printing slug, means for transferring the line from the transporter, a selector associated with said machine and adapted when in one position to automatically inaugurate a predetermined number of machine cycles of operation and when in a different position to automatically inaugurate a different predetermined number of machine cycles of operation, means for preventing the transfer of the line from the transporter during certain of said cycles to produce duplicate printing slugs, means for closing the mold during other of said cycles to produce blank slugs, a galley, and means for stacking the printing and blank slugs alternately in said galley.

5. In a slug casting machine, the combination of a mold, means for closing said mold during a machine cycle of operation to produce a slug, means for automatically stopping said machine after a cycle of operation, and a plurality of means for rendering said machine stopping means inoperative during different predetermined machine cycles of operation.

6. In a slug casting machine, the combination of a mold, means for closing said mold during a machine cycle of operation to produce a slug, means for automatically stopping said machine after a machine cycle of operation, means adapted to render said machine stopping means inoperative during a predetermined number of machine cycles of operation, means adapted to render said machine stopping means inoperative during a different predetermined number of machine cycles of operation, and means for operatively connecting said machine stopping means with either of the means that is adapted to render it inoperative.

7. In a slug casting machine, the combination of a mold, a transporter for presenting a line of matrices to said mold to produce a printing slug during a machine cycle of operation, means for automatically stopping said machine after a cycle of operation, a plurality of means adapted to render said machine stopping means inoperative during different predetermined cycles of operation, and means for operatively connecting any one of said plurality to said machine stopping means.

8. In a slug casting machine, the combination of a mold, a transporter for presenting a line of matrices to said mold to produce a printing slug, means for preventing the transfer of said line from said transporter, means for automatically stopping said machine after a cycle of operation, a plurality of means adapted to render said machine stopping means inoperative during different predetermined cycles of operation, and means for operatively connecting any one of said plurality to said machine stopping means.

9. In a slug casting machine, the combination of a mold, a transporter for presenting a line of matrices to said mold to produce a printing slug, means for transferring the line from said transporter, means for automatically stopping said machine after a cycle of operation, a plurality of

means adapted to render said machine stopping means inoperative during different predetermined machine cycles of operation, means for operatively connecting any one of said plurality to said machine stopping means, and means for rendering said line transfer means inoperative during certain of said cycles to produce duplicate printing slugs.

10. In a slug casting machine the combination of a mold, a transporter for presenting a line of matrices to said mold to produce a printing slug, means for transferring the line from said transporter, means for automatically stopping said machine after a cycle of operation, a plurality of means adapted to render said machine stopping means inoperative during different predetermined machine cycles of operation, means for operatively connecting any one of said plurality to said machine stopping means, means for rendering said line transfer means inoperative during certain of said cycles to produce duplicate printing slugs, and means for closing said mold during other of said cycles to produce blank slugs.

11. In a slug casting machine, the combination of a mold, a transporter for presenting a line of matrices to said mold to produce a printing slug, means for transferring the line from the transporter, means for automatically stopping said machine after a cycle of operation, a plurality of means adapted to render said machine stopping means inoperative during different predetermined machine cycles of operation, means for operatively connecting any one of said plurality to said machine stopping means, means for rendering said line transfer means inoperative during certain of said cycles to produce duplicate printing slugs, means for closing said mold during other of said cycles to produce blank slugs, a galley, and means for stacking the printing and blank slugs alternately in said galley.

12. In a slug casting machine, the combination of a mold, a transporter for presenting a composed line of matrices to the mold during a machine cycle of operation, a shaft adapted to be rotated by an element of the machine which moves periodically during a machine cycle of operation, means controlled by the rotation of said shaft for automatically inaugurating a predetermined number of machine cycles of operation and for causing the transporter to present the line to the mold during certain of said cycles to produce duplicate printing slugs, and means for closing the mold during other cycles to produce blank slugs.

13. In a slug casting machine, the combination of a mold, a transporter for presenting a composed line of matrices to the mold, means for transferring the composed line from the transporter, a shaft adapted to be rotated by an element of the machine which moves periodically during a machine cycle of operation, means for automatically inaugurating a predetermined number of machine cycles of operation, means for preventing the transfer of the line from the transporter during certain of said machine cycles of operation for the casting of duplicate type slugs, means for closing the mold during other of said cycles of operation for the casting of blank slugs, a galley, and means for stacking the type and blank slugs alternately in said galley, said machine cycle inaugurating means, said line transfer preventing means and said slug stacking means being responsive to the rotation of the shaft.

14. In a slug casting machine, the combination of a main clutch control rod, a plurality of fixed cam elements rotatable in response to the actuation of a periodically moving element of the machine, means controlled by said cam elements for operating said rod, and means for operatively connecting said last mentioned means to any one of said cam elements.

15. In a slug casting machine, the combination of a transporter for presenting a composed line of matrices to a mold during a machine cycle of operation, a clutch control rod for inaugurating a machine cycle of operation, a shaft responsive to an element of the machine which moves periodically during a machine cycle of operation, and a plurality of cam elements mounted on said shaft, one of said cam elements being adapted to arrest said transporter to prevent the removal of the line therefrom during a predetermined number of machine cycles of operation and another of said cam elements being adapted to operate said rod to automatically inaugurate a predetermined number of machine cycles of operation.

16. In a slug casting machine, the combination of a transporter for presenting a composed line of matrices to a mold, a clutch control bar for inaugurating a machine cycle of operation, a galley for receiving slugs, a gate for separating duplicate slugs as they are delivered into said galley, a shaft adapted to be rotated by a periodically moving element of the machine, and a plurality of cam elements mounted on said shaft and adapted by their rotation to prevent the transfer of said line from said transporter during a predetermined number of machine cycles of operation, to operate said control bar to automatically inaugurate a predetermined number of machine cycles of operation and to operate said gate.

17. In a slug casting machine, the combination of a mold, a transporter for presenting a composed line of matrices to the mold, means for arresting the transporter in a position to prevent transfer of the line whereby the line may be presented a plurality of times to the mold to cast a corresponding plurality of duplicate type slugs in predetermined cycles of operation of the machine, means actuated automatically for closing the mold during other predetermined cycles of operation to cast a plurality of blank slugs, a galley having a pair of compartments for holding slugs in separate columns, a movable gate associated with the galley and adapted, when in one position, to effect the delivery of slugs into one compartment and when in another position to effect the delivery of slugs into the other compartment, and means controlled by a periodically moving element of the machine for rendering said transporter arresting means operative, for operating said gate and for rendering the machine continuously operative during the casting of both the type slugs and the blank slugs.

18. In a slug casting machine, the combination of means for automatically inaugurating a predetermined number of machine cycles of operation, a transporter for presenting a composed line of matrices to the mold to produce a printing slug during a machine cycle of operation, means for preventing the transfer of said line from said transporter during certain of said predetermined number of machine cycles of operation, and means for closing said mold to produce blank slugs during other of said predetermined number of machine cycles of operation, said ma-

chine cycle inaugurating means and said line transfer preventing means being operated by a periodically movable element of the machine.

19. In a slug casting machine, the combination of a mold, a transporter for presenting a composed line of matrices to the mold, means for transferring the composed line from the transporter, means for automatically inaugurating a predetermined number of machine cycles of operation, means for preventing the transfer of the line from the transporter during certain of said cycles for the casting of duplicate type slugs, and means for closing the mold during other of said cycles for the casting of blank slugs, said machine cycle inaugurating means, said line transfer preventing means and said mold closing means being actuated by a periodically moving element of the machine.

20. In a slug casting machine, the combination of a mold, a transporter for presenting a composed line of matrices to the mold, means for transferring the composed line from the transporter, means for automatically inaugurating a predetermined number of machine cycles of operation, means for preventing the transfer of the line from the transporter during certain of said cycles for the casting of duplicate type slugs, means for closing the mold during other of said cycles for the casting of blank slugs, a galley, and means for stacking the type and blank slugs alternately therein, said machine cycle inaugurating means, said line transfer preventing means, said mold closing means and said slug stacking means being actuated by a periodically moving element of the machine.

GEORGE PEYTON KINGSBURY.