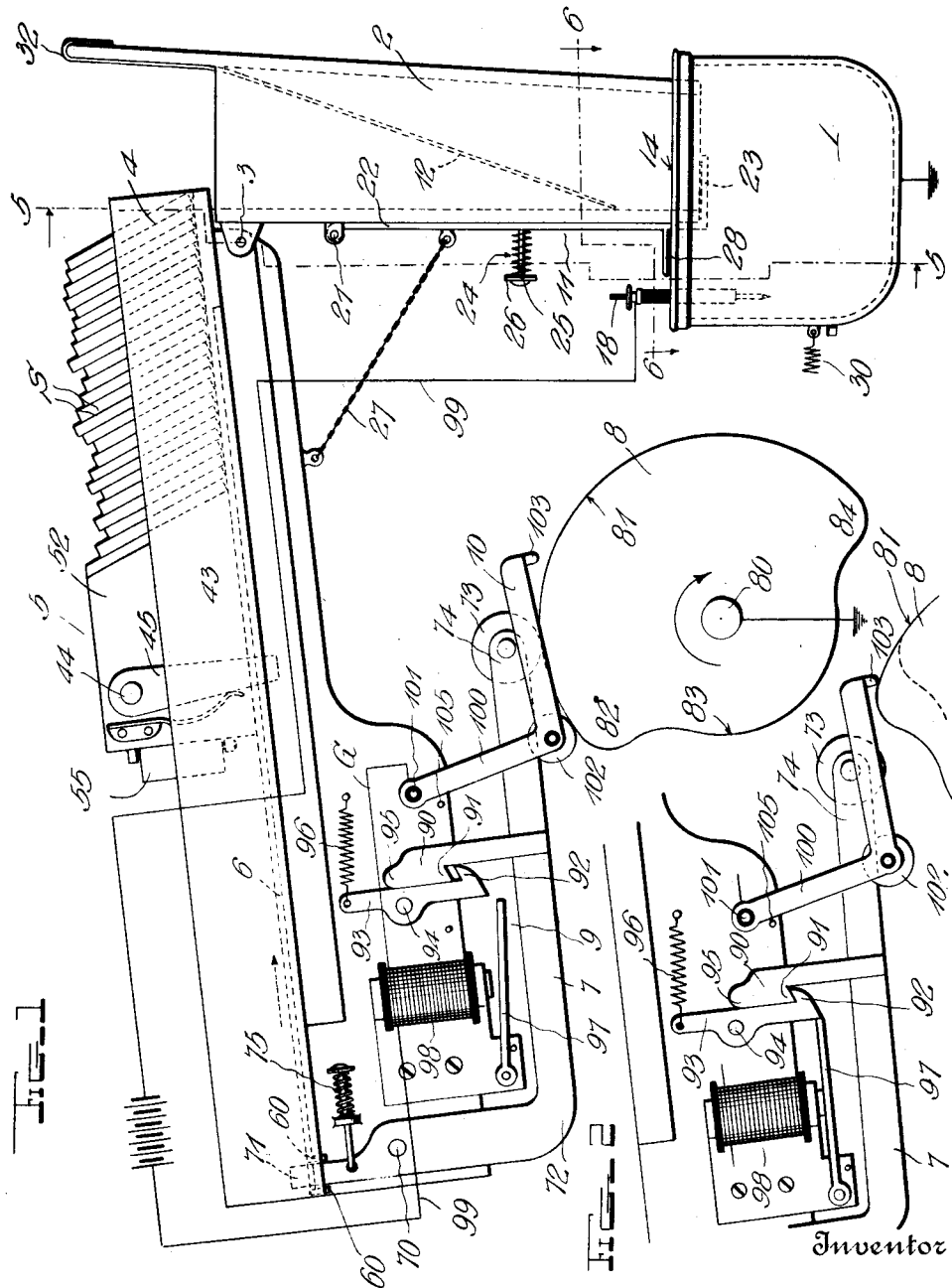


E. E. SPENCER.
 POT CHARGER FOR LINOTYPE MACHINES.
 APPLICATION FILED APR. 1, 1912.

1,032,306.

Patented July 9, 1912.

4 SHEETS—SHEET 1.



Witnesses

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W. L. Colclamer

Edward F. Spencer

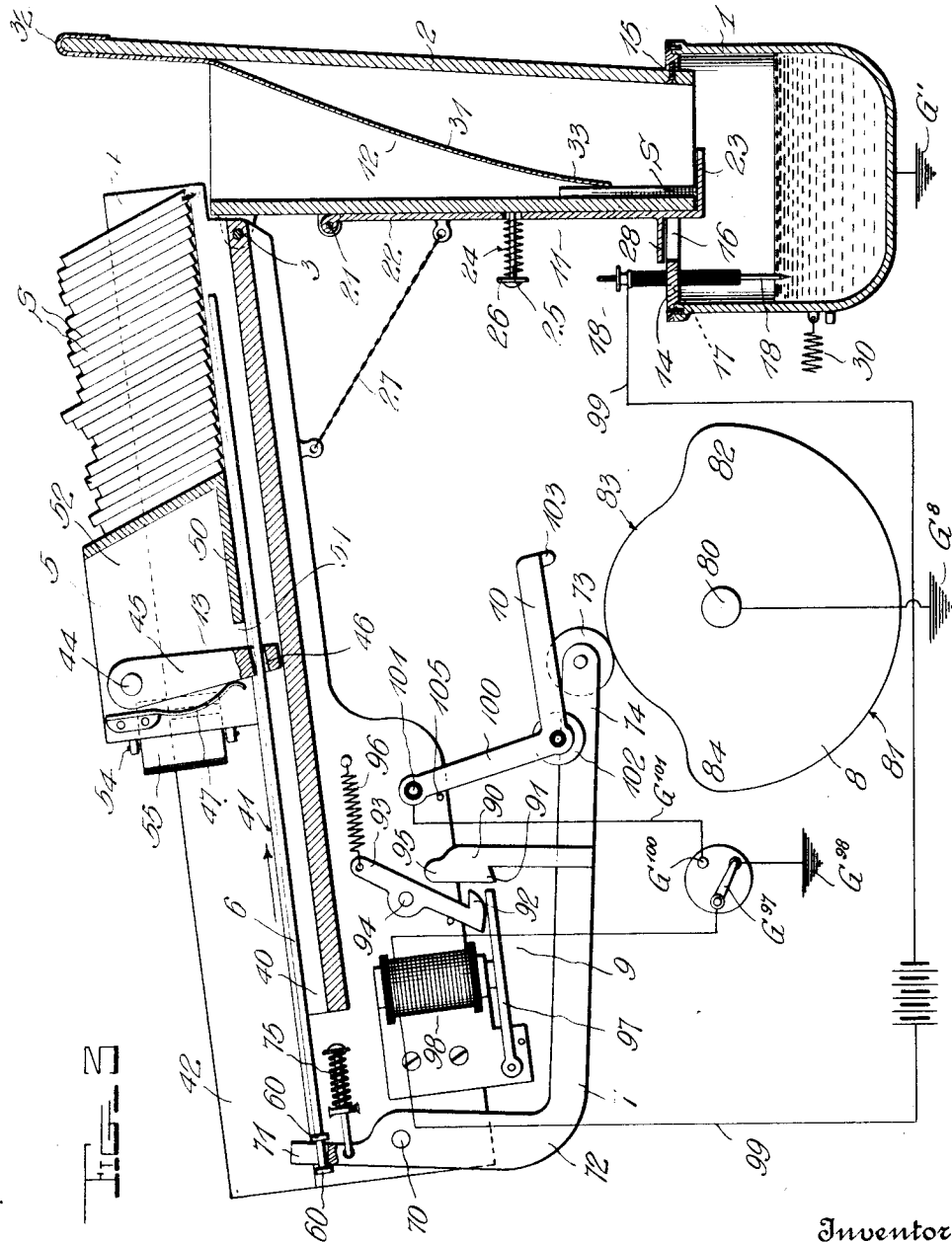
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4 SHEETS-SHEET 2



Inventor

Edward E. Spencer

Witnesses

E. E. Spencer

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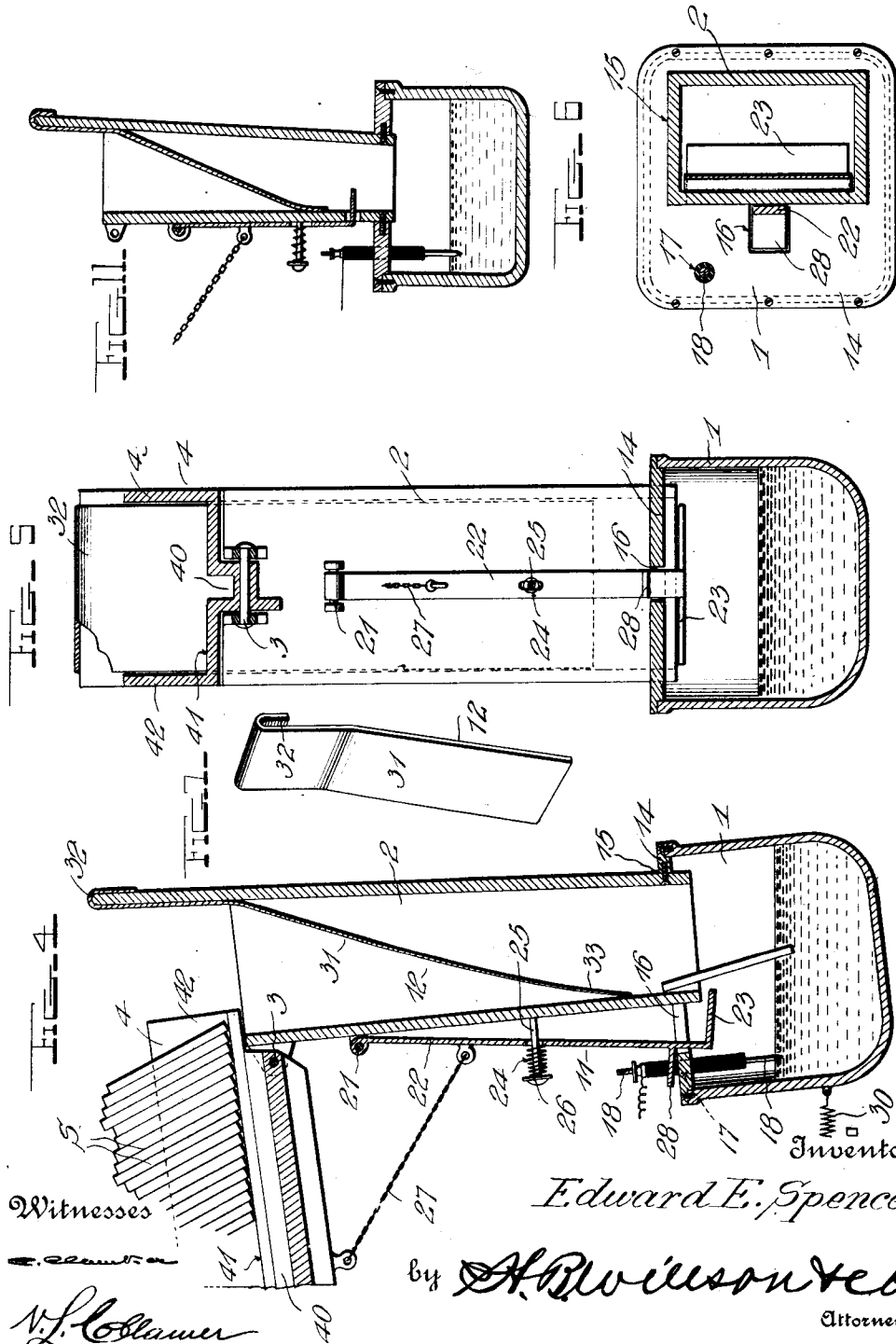
Attorneys

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4 SHEETS—SHEET 3.

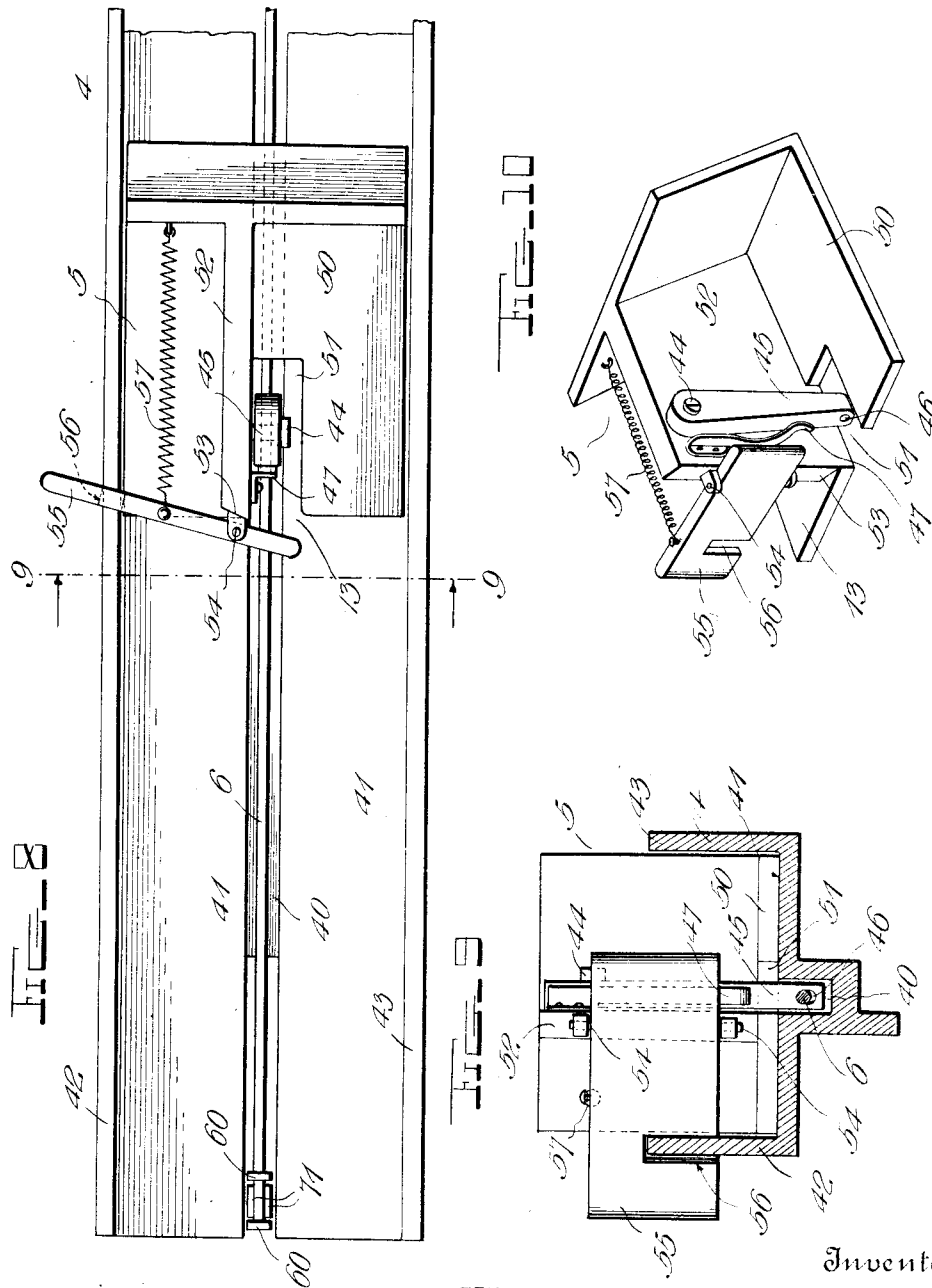


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4 SHEETS-SHEET 4.



Witnesses

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UNITED STATES PATENT OFFICE.

EDWARD EVERETT SPENCER, OF NEW YORK, N. Y.

POT-CHARGER FOR LINOTYPE-MACHINES.

1,032,306.

Specification of Letters Patent.

Patented July 9, 1912.

Application filed April 1, 1912. Serial No. 687,765.

To all whom it may concern:

Be it known that I, EDWARD EVERETT SPENCER, a citizen of the United States, residing in the city of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Pot-Chargers for Linotype-Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to casting apparatus used in metal founding, and more especially to pot charging devices; and the object of the same is to produce a machine whereby the melting pot of a linotype machine will be periodically charged or replenished with slugs or stock whenever the type metal therein becomes depleted, and wherein the charging of the pot will occur automatically and the operator is therefore relieved of the necessity of giving it his attention. It frequently happens that the operator forgets to charge the pot at frequent intervals as necessary, owing to the excessive demands on his time, and it follows that the molten metal becomes so much depleted that when he does charge it with several slugs they chill the metal in the pot which is not of sufficient volume to melt them up quickly, with the result that the operation of the machine must be interrupted until these added slugs melt and commingle with the molten metal already in the pot, or if work on the machine is continued too quickly the characters produced by it are not perfect. The present invention is designed to take this labor entirely off the operator and provide mechanical means whereby the pot is charged at frequent intervals as long as more metal is needed, but the charging is interrupted when the consumption of the molten metal ceases.

The primary features or essentials of this machine include the pot itself, a chute leading thereto, a magazine leading to the chute, a stock feeding device in the magazine, and an interrupter for throwing said mechanism out of action when the molten metal in the pot rises to a certain height.

The secondary features or refinements of this invention include the charge forming and feeding devices within the chute, one of which serves also as a heat retainer so that the pot will not become chilled, a peculiar

form of circuit breaker and its arrangement in conjunction with the electrical part of the machine so that much of the current is saved, and the specific step-by-step mechanism by means of which the follower behind the slugs is caused to advance slowly along the magazine but may be set back by hand at any time. These amplifications or refinements may be and by preference are employed in connection with the essential features of my invention, all as hereinafter more fully described and claimed, and as shown in the drawings wherein—

Figure 1 is a side elevation of the entire machine with the parts in one position, and Fig. 2 a similar elevation of the actuating mechanism and interrupter with the parts in a second position. Fig. 3 is an elevation similar to Fig. 1 excepting that the magazine is here in section, the parts being in a third position as will be explained in the following specification. Sheet 3 of the drawings is devoted mostly to details of the pot and the chute leading thereto. Fig. 4 is a vertical longitudinal section through the pot and chute and the outlet end of the magazine, the pot being swung forward from the position illustrated in Figs. 1 and 3; Fig. 5 is a section on the line 5—5 of Fig. 1; Fig. 6 is a horizontal section on the line 6—6 of Fig. 1; and Fig. 7 is a perspective detail of the heat retainer. Sheet 4 illustrates more particularly the follower which feeds the stock along the magazine. Fig. 8 is a plan view of the magazine with the follower therein; Fig. 9 is a section on the line 9—9 of Fig. 8; Fig. 10 is a perspective detail of the follower removed; and Fig. 11 is a vertical sectional view through the pot and lower end of the chute, showing a slight modification.

In the drawings the pot 1 is conventionally shown as suspended by a chute 2 which is pivoted at 3 to the delivery end of a magazine 4 from which the stock or slugs S are fed by means of a follower 5, and the latter is given a step-by-step movement through the instrumentality of a rod 6 extending along the magazine and reciprocated at intervals by actuating mechanism which includes a pivoted lever 7 connected at one end with the rod and moved around its pivot by a cam 8. Interrupting mechanism broadly designated by the reference numeral 9 is employed for temporarily checking the movements of the actuating mechanism by

holding the lever 7 raised while the cam 8 continues to rotate, and by preference such interrupter includes a specific form of circuit breaker 10 which saves much of the electrical energy that would otherwise be wasted. Charge forming and feeding mechanism 11 is preferably employed in conjunction with the chute to deliver the type metal or slugs in charges to the pot, and this mechanism includes a heat retainer 12 so that the pot will not become cold when it receives a new charge from the chute. Finally, a specific form of step-by-step mechanism 13 is by preference employed in conjunction with the follower 5 so that it progresses forward automatically as the rod 6 is reciprocated but may be set back by hand at any time. These various mechanisms will now be described severally in detail in the form in which I prefer to make them, and later their coaction will appear in the description of the operation of the entire machine.

The pot 1 is conventionally illustrated herein as having a top 14 which is closed except for the opening 15 through which the lower end of the chute 2 passes and in which it is secured, a slot 16 extending to the rear from said opening for a purpose to be set forth below, and a hole 17 through which passes an insulated plug 18 whose lower extremity is bared within the pot at a point above which it is not desired that the level of the molten type metal shall rise. I have not considered it necessary to show the means for heating the pot nor for delivering the molten metal therefrom, as the same forms no part of the present invention and are well known in linotype machines. Ordinarily this pot swings forward (or to the right as seen in Fig. 1) periodically, and the mechanism for imparting such movement thereto is also omitted as forming no part of the present invention.

The chute 2 in the simplest form of my invention rises from the large opening 15 in the top of the pot and is supported on a pivot 3 beneath the delivery end of a magazine 4, the chute and pot being held in their normal position by means of a contractile spring 30.

The magazine 4 is herein illustrated as a trough-like structure having its delivery end slightly elevated above a horizontal and provided along its bottom with a longitudinal groove 40 as best seen in Fig. 9, the rod 6 lying and reciprocating in this groove and tending to move the follower 5 forward or upward along the magazine by a step-by-step action so that the stock or slugs 8 may be pushed along the magazine and dropped one by one into and through the chute and by it delivered into the pot.

The actuating mechanism for causing the reciprocations of the rod 6 includes a lever

7 pivoted at 70 to the framework of the machine and having its upper end forked as at 71, with the arms of the fork standing astride the lower end of the rod 6 and between two stops 60 which are fastened thereto. A strong spring 75 moves this end of the lever and the rod in the direction of the arrow. Below its pivot 70 the lever is bent in an elbow 72 and its lower end 74 projects forward beneath the magazine 4 and this carries a roller 73 resting on a cam 8 which in turn is mounted on a shaft 80 driven by the linotype mechanism in the direction of the arrow and at a proper speed. This cam has a high face 81, dropping at its rear end 82 into a low face 83, and the latter rising again as at 84 into the other end of the high face as shown.

The interrupting mechanism essentially includes a hook 90 on the lever 7 whose bill 91 coacts with the bill 92 of a dog 93 pivoted at 94 to the frame and with its body standing parallel with that of the hook when the nose 95 at the upper end of the latter rises past the pivot 94 of the dog as seen in Fig. 1. When the hook descends as the lever falls, however, a spring 96 turns the dog on its pivot 94 so that its bill 92 is moved out from under the bill 91 of the hook 90, as seen in Fig. 3 and the interrupter is out of action. But for holding the dog to its work, the armature 97 of an electro-magnet 98 is employed, and this magnet is in circuit through wires 99 with a suitable source of electrical energy and the plug 18 in the pot 1, as diagrammatically illustrated on Sheet 2 of the drawings.

The operation of a machine which includes only the primary features of my invention thus briefly described, is as follows: As the cam 8 revolves its high face 81 raises the roller 73 and its low face 83 permits this roller to fall, thus raising and lowering the lower arm of the lever 7 and causing the fork 71 at its upper end to reciprocate the rod 6 within the groove in the bottom of the magazine and feed the follower 5 forward by a step-by-step motion. This causes the stock or slugs 8 to drop out the front end of the magazine through the chute 2 into the pot 1, and the molten metal therein is therefore charged by the addition of new material at intervals. As the lower arm of the lever 7 rises and falls its hook 90 first swings the dog to the position shown in Fig. 1 as it ascends, and then permits the dog to swing out of such position when the hook descends as shown in Fig. 3, and thus the interrupting mechanism is idle as long as there is no current flowing through the wire 99, and the feed of the slugs to the pot continues. But when the molten metal within the pot rises to a point where a circuit is closed through the tip of the plug 18, the electromagnet 98 is energized and

its armature 97 rises the next time the dog swings inward to the position shown in Fig. 1 so that the armature assumes the position shown in Fig. 2 and checks the disengagement of the bill 92 of the dog from beneath the bill 91 of the hook, and thereafter when the low face 83 of the cam comes under the roller 73 the lever cannot drop and the reciprocation of the rod 6 is interrupted. Continued use of the molten metal from within the pot will soon cause its level to fall again, however, and as soon as the circuit is broken the armature 97 falls to the position shown in Fig. 1 and the interrupter is out of action, so that the lever resumes its rocking movement around its pivot 70 and the feed of the slugs therefore again takes place. Thus it will be seen that the primary features above referred to will cause the machine to automatically feed more material to the pot when the level of the molten liquid therein falls, but when it rises the actuating mechanism will be interrupted through the completion of an electric circuit whereof the details of its wiring are not important and are diagrammatically illustrated on Sheet 2 for the purpose of better showing how one of the wires of such circuit may be led through a circuit breaker so as to automatically conserve the electrical energy which might otherwise soon become depleted. The details of this circuit breaker and of the other secondary features of my invention which are by preference employed to carry out the general idea will now be described.

The circuit breaker 100 consists essentially of an L-shaped lever 100 whose pivotal support 101 is insulated from the framework of the machine, whose angle carries an insulated shoe such as a fiber roller 102 adapted to travel on the face of the cam 8, and whose lower extremity carries a point 103 which is held off the high face of the cam when the roller 102 rests thereon as seen in Fig. 1 but which is adapted to drop into and make electrical contact with the face of the cam when the latter stands in the positions shown in Figs. 2 and 3. In the wiring shown diagrammatically in Fig. 3, the body of the pot is grounded or connected with the framework of the machine as at G', the axis of the cam is grounded as at G⁸, and one side of the electro-magnet 98 is capable of being grounded as at G⁹⁸ through a switch G⁹⁷. With the latter standing in the position here shown, a circuit is completed from the ground G⁹⁸ through the switch G⁹⁷ and electro-magnet 98, thence along the wire 99 and battery and through the plug 18 and metal in the pot to the ground at G', and the action first described above will take place. If the switch tongue G⁹⁷ is thrown onto the point G¹⁰⁰, however, the ground G⁹⁸ is cut out and the circuit is completed from

the electro-magnet 98 through the wire G¹⁰¹ and into the lever 100 of the circuit breaker. When the parts stand as seen in Fig. 1 the contact point 103 of the circuit breaker is raised above the face of the cam 8 and the circuit is broken; as the cam 8 turns to the position shown in Fig. 2 the insulated roller 102 passes down the drop 82 of the cam and the point 103 comes in contact with the high face 81 thereof so that the circuit is closed, and the armature 97 will rise behind the lower end of the dog and hold the bill of the latter engaged with that of the hook so as to interrupt the movement of the lever and the feed of the follower 5; the cam continues to turn until the drop 82 reaches the position shown in dotted lines in this view, when its face passes from under the contact point 103 and the circuit is again broken; the cam continues its movement with the lever 100 resting against a stop 105 on the frame and the lever 7 supported by the engagement of the bills 91 and 92; the cam continues to rotate until its rise 84 strikes under the insulated roller 102, when the lever 100 of the circuit breaker resumes the position shown in Fig. 1 and the circuit is broken; and next this rise passes under the roller 73, when the lever 7 resumes the position shown in Fig. 1 and the bills of the hook and dog are disengaged and the latter may swing because the armature 97 has not dropped out of the way. The parts are held in this position while the high face 81 of the cam travels around to the position shown in Fig. 1, where the operation is resumed and repeated in the manner just described. Thus it will be seen that the specific construction of the circuit breaker is such and the location of its operating roller 102 with relation to the cam is such that a circuit is completed only momentarily through this device and therefore very little of the electrical energy is used. The completion of the circuit occurs just before the lever 7 begins to descend and therefore while the interlocking bills 91 and 92 are yet in the position shown in Fig. 1 and the armature 97 may rise to interrupt the movement of the actuating mechanism. If at this time the molten metal in the pot is high enough to complete the circuit through the plug 18, the completion of the circuit through the circuit breaker will move the armature, and the interrupter works as described; but if at this time the molten metal in the pot is out of contact with the tip of the plug (or in fact if at any time it is out of contact with the plug) no circuit can be completed, the armature 97 cannot rise, and therefore the interrupter cannot work. While it will be obvious that one pole of the electro-magnet 98 could be connected directly with the circuit breaker lever 100 as indicated in dotted lines at G, in the diagrammatic wir-

ing on Sheet 2 I have connected these parts through a switch for the purpose of indicating a possible arrangement by means of which the operator could cut out the circuit breaker at will.

The charge forming and feeding mechanism best illustrated on Sheet 3 of the drawings will by preference be employed in connection with the chute described above. Pivoted at 21 to the rear wall of said chute is a depending arm 22 extending downward through the slot 16 in the top of the pot 1 and carrying a shelf 23 at its lower end projecting forwardly under the lower end or mouth of the chute so as to normally support several of the slugs as seen in Fig. 3, and said arm is held against the back of the chute by a spring 24 coiled around a rod 25 projecting from the chute and having a head 26 at its rear end. Beneath the pivot 21 a link of some kind, such as a short piece of chain 27, connects the arm 22 with a fixed support such as the framework of the machine. It follows from this construction that when the chute and pot swing forward as shown in Fig. 4 the link holds the arm 22 and its shelf 23 against such movement, and the rear wall of the chute moves over the shelf and drops the charge of slugs into the pot as there illustrated. In order to retain the heat within the pot as far as possible, the arm 22 is provided with a lip 28 which stands over and normally closes the slot 16; and within the chute is disposed a heat retaining plate 31 (see Fig. 9) whose upper end 32 is preferably hooked over the front wall of the chute as indicated in Fig. 1 and whose lower end 33 bears yieldingly against the rear wall thereof so that the falling slugs are guided onto the shelf 23 as shown in Fig. 3. The action of this charge-forming mechanism will be clearly understood without further amplification, and it will be seen that the lip 28 and plate 31 thereof serve the additional function of preventing the escape of heat from within the pot which might cool the latter to an undesirable extent.

The step-by-step mechanism by means of which the follower 5 is caused to travel progressively and intermittently along the magazine 4 is best illustrated in Sheet 4 of the drawings which shows my preferred construction thereof. The follower proper has a flat base 50 slidable upon the flat bottom 41 of the magazine between its upright side walls 42 and 43, and the base is notched at its rear end as shown at 51. From the base at one side of its notch rises a longitudinal web 52 which braces the face of the follower 5 as best seen in Fig. 8, and this web is beveled across its rear edge as at 53. Hinged to said rear edge as at 54 is a dog or retaining member consisting of a flat plate 55 having an upright notch 56 in its outer end

which is drawn into biting engagement with the left edge 42 of the magazine by means of a spring 57 and which thereby prevents the follower from moving backward down the magazine except when this dog is turned by pressure on its inner end as will be understood. Pivoted at 44 to one side of the web 52 is a pendant finger 45 having in its lower end an eye 46 loosely embracing the rod 6, but swung forward into biting engagement therewith by means of a spring 47. I have shown this finger as standing upright because the rod is located in a groove 40 which is here illustrated as in the bottom 41 of the magazine 4, but it is clear that if the groove were otherwise disposed the finger 45 would be correspondingly placed. The idea is that the eye in this finger has the same biting engagement with the reciprocating rod as the notch 56 in the dog possesses with respect to the upright wall 42 of the magazine. When now the rod is reciprocated, its movement in one direction causes its engagement with the finger 45 to feed this follower 5 upward along the magazine 4, and the movement of the rod in the opposite direction draws it idly through the eye in said finger while the notch 56 in said dog 55 at this time prevents a retrograde movement of the follower in a manner which will be clear. When it is desired to remove the follower from the magazine it is only necessary to press the outer or lower end of the finger to the rear and the inner end of the dog forward which can be done by grasping these two members between the finger and thumb, and then slip the entire device up the magazine so that the eye in the finger slides off the upper end of the rod; and when it is desired to set the follower back to its original position at the lower end of the magazine, this course is followed so as to throw both biting engagements out of action, and the follower simply moved backward down the magazine. Thereafter slugs S thrown into the latter in front of the follower 5 will be automatically fed into the chute and delivered to the pot in a manner described above.

Thus it will be seen that the addition of the secondary features or refinements enhance the value of the machine as a whole for the following reasons: A circuit breaker of the specific type described operates well in conjunction with a cam having high and low faces for moving a lever, and the location of the circuit breaker just at a point where it closes the circuit at a time immediately preceding the movement of the lever is essential where an interrupter of any character is used. If it were not for the interrupter, it is obvious that the machine might feed more stock to the pot than desirable, and if the operator were required to watch any feature of the device one object of this:

invention would be defeated. While the obvious purpose of the circuit breaker is to save the consumption of electrical energy, its construction and disposition is such that the electric current flows through the magnet exactly at the proper moment as has been described. Without the charge forming and feeding devices the slugs delivered off the outlet end of the magazine would drop into the pot, but with the use of the same the size of the charge may well be regulated by adjusting the length of the chain or other link which is shown at 27. Moreover this construction of charge forming and delivering device serves well as a vehicle for the lip 28 and plate 31 which close the outlet from the pot and therefore retain the heat therein. Finally the specific construction of the follower with its finger and dog permits its successful use with any magazine or a chute which stands nearly horizontal and in connection with a reciprocating rod, and still permits its adjustment thereon when desired or its removal when it becomes necessary. However, I do not wish to be limited to the precise details of construction, either in the primary or the secondary features of this invention, nor to the sizes, shapes, proportions and materials of parts or the use of all of them simultaneously. For instance, although I have shown and described the pivoted arm 22 as projecting through a slot 16 in the top of the pot and carrying a lip 28 normally closing said slot, it is not absolutely essential that this arm project into the pot as it might extend part way across the chute 2 at a point higher, as illustrated in Fig. 11; and if this construction were followed the slot 16 and lip 28 might be omitted.

What is claimed as new is:

1. In a pot charger, the combination with the melting pot, a substantially horizontal magazine delivering the stock thereto, a follower in the magazine, and a rod for feeding the follower forward; of a pivoted lever having one arm connected with said rod and its other arm standing substantially horizontal, a cam for raising the last-named arm periodically, yielding means for depressing it, and means actuated by the volume of molten metal within the pot for controlling the effective action of said cam.

2. In a pot charger, the combination with the melting pot, a magazine for delivering the stock thereto, a follower in the magazine, and actuating mechanism for moving the follower toward the outlet end of the magazine intermittently; of means for interrupting the movements of said mechanism, and means actuated by the volume of the molten metal within the pot for throwing the interrupter into action.

3. In a pot charger, the combination with the melting pot, a substantially horizontal

magazine delivering the stock thereto, a follower in the magazine, and actuating mechanism for feeding the follower forward intermittently; of means for interrupting the movements of said mechanism, and an electric circuit closed by the rise of the molten metal within the pot for throwing the interrupter into action.

4. In a pot charger, the combination with the melting pot, a substantially horizontal magazine delivering the stock thereto, a follower in the magazine, and a rod for feeding the follower forward; of actuating mechanism for moving said rod, means for interrupting the movements of said mechanism, and means actuated by the volume of the molten metal within the pot for throwing the interrupter into action.

5. In a pot charger, the combination with the melting pot, a substantially horizontal magazine delivering the stock thereto, a follower in the magazine, and a rod for feeding the follower forward; of actuating mechanism for moving said rod, means for interrupting the movements of said mechanism, and an electric circuit closed by the rise of the molten metal within the pot for throwing the interrupter into action.

6. In a pot charger, the combination with the melting pot, a trough-like magazine rising slightly toward its delivery end and adapted to deliver the stock to the pot, the magazine having an internal longitudinal groove, a rod extending along the groove, a follower slidably mounted within the magazine, and step-by-step mechanism connecting the follower with the magazine and rod; of actuating mechanism for reciprocating said rod so as to feed the follower forward intermittently, means for interrupting the movements of said mechanism, and means actuated by the rise of the molten metal within the pot for throwing the interrupter into action.

7. In a pot charger, the combination with the melting pot, a trough-like magazine rising slightly toward its delivery end and adapted to deliver the stock to the pot, a rod extending along the interior of said trough, a follower slidably mounted within the latter, and step-by-step mechanism connecting the follower with the magazine and rod; of actuating mechanism for reciprocating said rod so as to feed the follower forward intermittently, means for interrupting the movements of said mechanism, and an electric circuit closed by the rise of the molten metal within the pot for throwing the interrupter into action.

8. In a pot charger, the combination with the melting pot, a magazine for delivering the stock thereto, a follower in the magazine, a rod for feeding the follower forward intermittently, and spaced stops on said rod; of a pivoted lever having one end forked

and disposed astride the rod between its stops, a spring moving this end of the lever in one direction, means for swinging its other end in a direction opposed to the action of said spring, means for interrupting the swinging movements of said lever, and means actuated by the rise of the molten metal within the pot for throwing the interrupter into action.

9. In a pot charger, the combination with the melting pot, a magazine for delivering the stock thereto, a follower in the magazine, a rod for feeding the follower forward intermittently, and spaced stops on said rod; of a pivoted lever having one end disposed adjacent the rod between its stops, means for swinging its other end, means for interrupting the swinging movements of said lever, and an electric circuit closed by the rise of the molten metal within the pot for throwing the interrupter into action.

10. In a pot charger, the combination with the melting pot, a magazine for delivering the stock thereto, a follower in the magazine, a rod for feeding the follower forward, and actuating mechanism for reciprocating the rod including a pivoted lever and means for swinging it intermittently; of a hook fast on the lever, a pivoted dog turned into the path of the bill of said hook by the movement of the lever in one direction, a spring for retracting the dog as the lever moves in the other direction, and means controlled by the volume of molten metal within the pot for nullifying the action of said spring.

11. In a pot charger, the combination with the melting pot, a magazine for delivering the stock thereto, a follower in the magazine, a rod for feeding the follower forward, and actuating mechanism for reciprocating the rod including a pivoted lever and means for swinging it intermittently; of a hook fast on the lever, a pivoted dog turned into the path of the bill of said hook by the movement of the lever in one direction, a stop adapted to move behind the dog when the latter stands in the path of said bill, and means controlled by the rise of the molten metal within the pot for moving such stop into operative position.

12. In a pot charger, the combination with the melting pot, means for feeding the stock thereto, and actuating mechanism for the feeding means including a pivoted lever and a cam for swinging it intermittently; of a hook rising rigidly from the cam and having a nose above its bill, a dog pivoted alongside the path of the hook and having a bill at its lower end adapted to be moved under the bill of the hook when the nose of the latter rises above the pivot of the dog, a spring for moving the dog in the opposite direction as the lever descends, and means controlled by the volume of molten metal

within the pot for nullifying the action of said spring.

13. In a pot charger, the combination with the melting pot, means for feeding the stock thereto, and actuating mechanism for the feeding means including a pivoted lever and a cam for swinging it intermittently; of a hook rising rigidly from the cam and having a nose above its bill, a dog pivoted alongside the path of the hook and having a bill at its lower end adapted to be moved under the bill of the hook when the nose of the latter rises above the pivot of the dog, a spring for moving the dog in the opposite direction as the lever descends, an electro-magnet whose armature stands behind the dog, and an electric circuit closed by the rise of the molten metal within the pot for energizing said magnet and raising the armature into position to hold the dog with its bill engaged with that of the hook.

14. In a machine of the class described, the combination with a cam, a pivoted lever having a roller resting on such cam, and a hook rising rigidly from the lever and having a downwardly facing bill and an upwardly extending nose; of a dog pivoted between its extremities alongside the path of the hook and having a bill at its lower end adapted to pass under the bill of the hook and an arm at its upper end with which said nose contacts as the hook rises, a spring throwing the arm in a direction to disengage said bills, an electro-magnet behind the dog, and an armature therefor whose tip is adapted to rise behind the lower end of the dog when the armature is energized, all as and for the purpose set forth.

15. The combination with a substantially horizontal trough having a longitudinal groove in its bottom, a rod within said groove, and means for reciprocating it; of a follower whose body includes a notched base and an upright web, a finger pivoted to the latter and having an eye in its outer end, a spring turning the finger in a direction to throw the eye into biting engagement with the rod, a dog hinged to the web and having a notch engaging one edge of the trough, and a spring turning the dog in a direction to throw it into biting engagement therewith.

16. In a pot charger for linotype machines, the combination with the magazine, and means for feeding slugs out of the same intermittently; of a chute hinged under the delivery end of the magazine, a melting pot into which the chute delivers, and a spring-guiding plate secured at its upper end to one wall of the chute and having its body inclining across the interior of the latter and resting against the opposite wall thereof, for the purpose set forth.

17. In a pot charger for linotype machines, the combination with the magazine,

and means for feeding slugs out of the same intermittently; of a chute hinged under the delivery end of the magazine, a melting pot into which the chute delivers, a spring-guiding plate secured at its upper end to one wall of the chute and having its body inclining across the interior of the latter and resting against the opposite wall thereof, a charge forming and feeding device carried by the chute below the free end of said plate, and means for moving it periodically with relation to the chute, for the purpose set forth.

18. In a pot charger for linotype machines, the combination with the magazine, and means for feeding slugs out of the same intermittently; of a chute hinged under the delivery end of the magazine, a melting pot whose top has an opening through which said chute delivers, an arm pivoted to the rear wall of the chute, a shelf at the lower end of the arm projecting part way across the chute, yielding means for holding the arm normally in contact with the chute, and a link connecting said arm with a fixed support, for the purpose set forth.

19. In a pot charger for linotype machines, the combination with a chute hinged to a fixed support and its lower end adapted to swing aside, and a melting pot whose top has an opening through which said chute delivers; of an arm pivoted to the rear wall of the chute and carrying a shelf project-

ing partway across the chute, yielding means holding the arm normally in contact with the rear wall of the chute, a link connecting this arm with a fixed member, and a yielding guiding plate carried inside the chute with its free end normally contacting with the inner wall thereof above said shelf, as and for the purpose set forth.

20. The combination with a cam having high and low faces, a lever having a roller resting on the cam face, mechanism actuated by the rise and fall of said lever, and an interrupter adapted to hold the lever raised when the high face of the cam moves out from under its roller; of electrically-actuated mechanism for throwing the interrupter into action, the circuit of said mechanism leading through the cam, and a circuit breaker consisting of a lever whereof one end is mounted on an insulated support and is included in such circuit, the other end is adapted to contact with the cam face, and between said ends the lever carries a shoe of insulating material which said cam face engages before it engages the roller on said other lever.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

EDWARD EVERETT SPENCER.

Witnesses:

CHARLES A. URNER,
ALPHEUS F. COPPINS.