J. S. THOMPSON.

TYPE CASTING MACHINE.

APPLICATION FILED MAY 18, 1904.

917,975.

Patented Apr. 13, 1909.

5 SHEETS—SHEET 1.

Fig. 2.

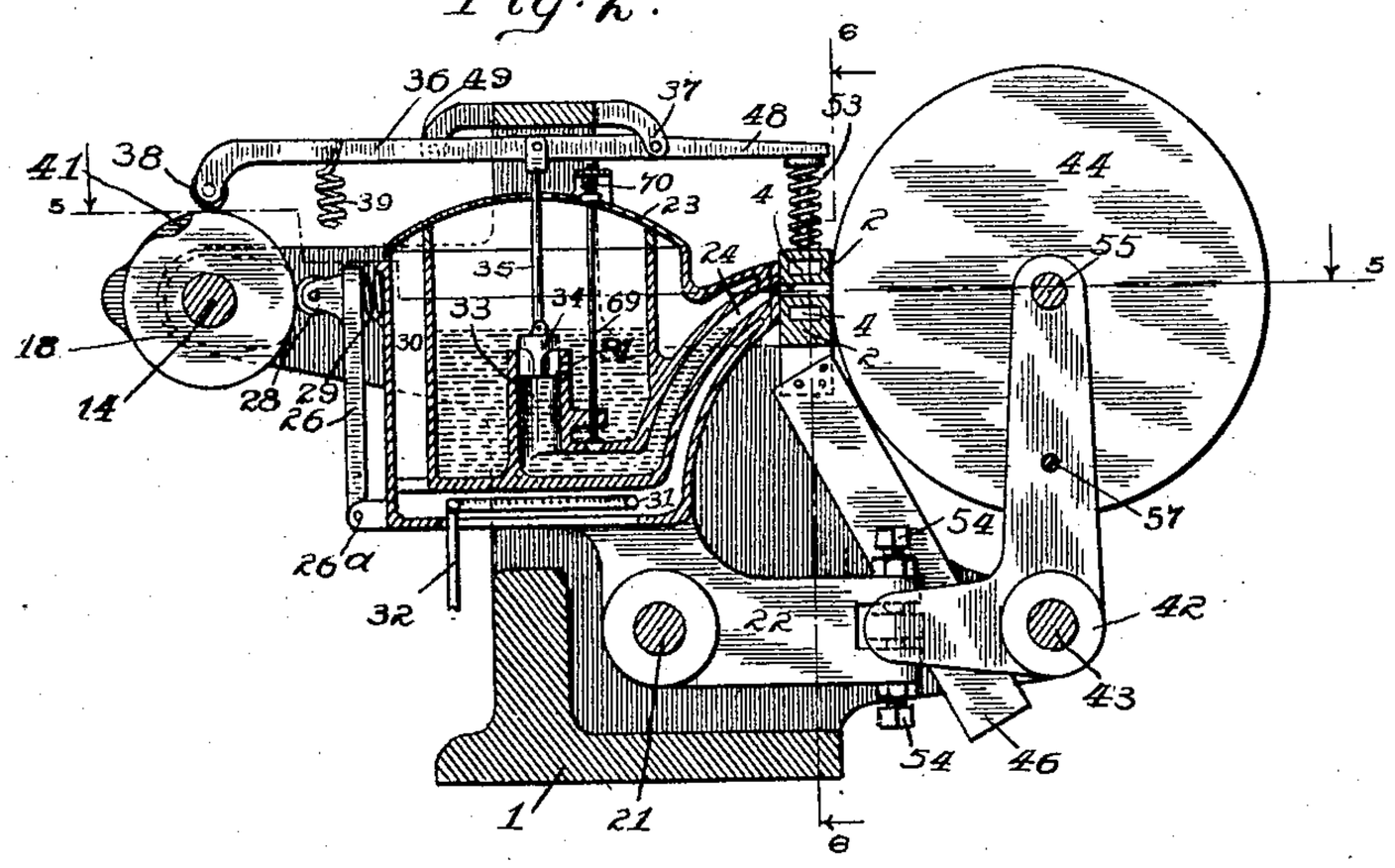


Fig. 1.

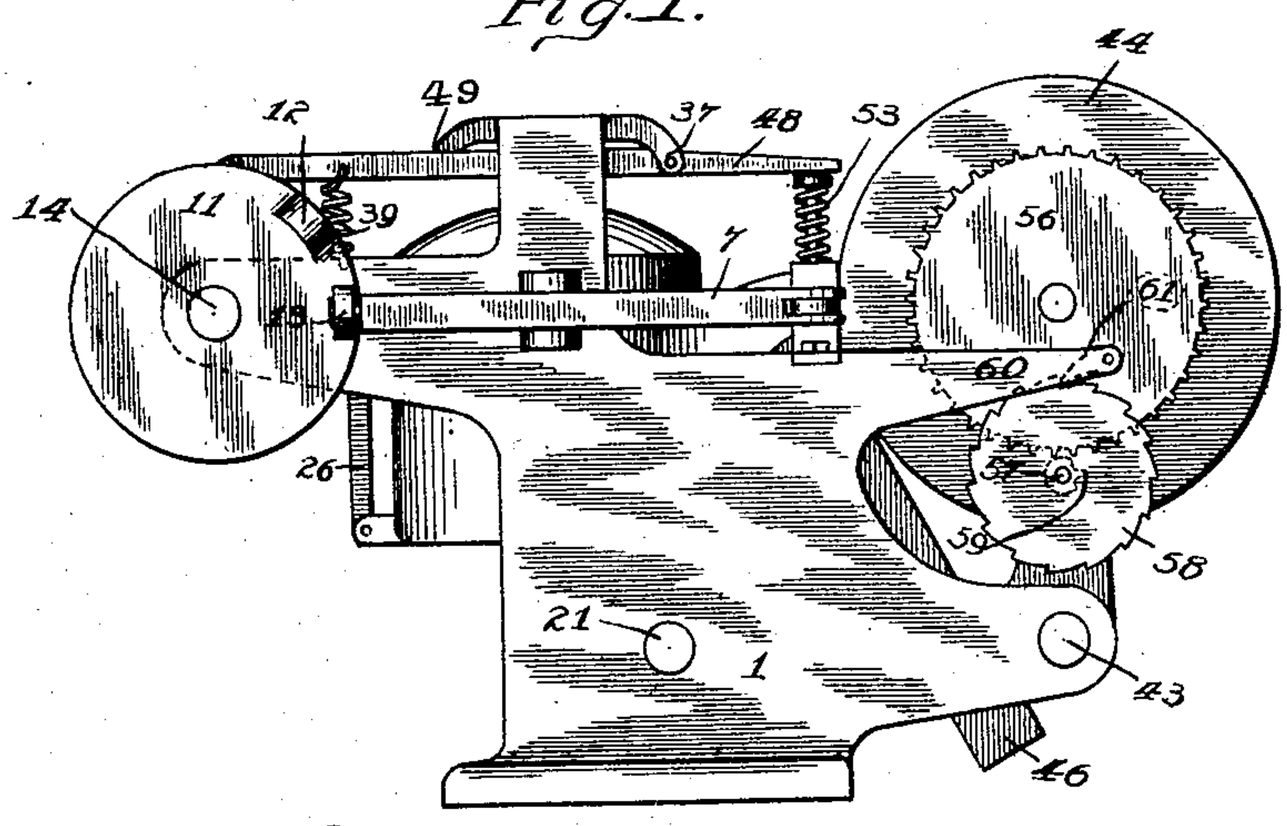


Fig. 9.

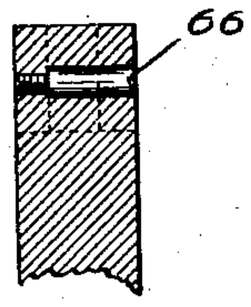


Fig. 8.

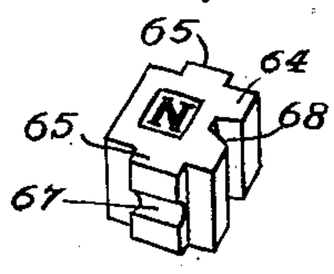
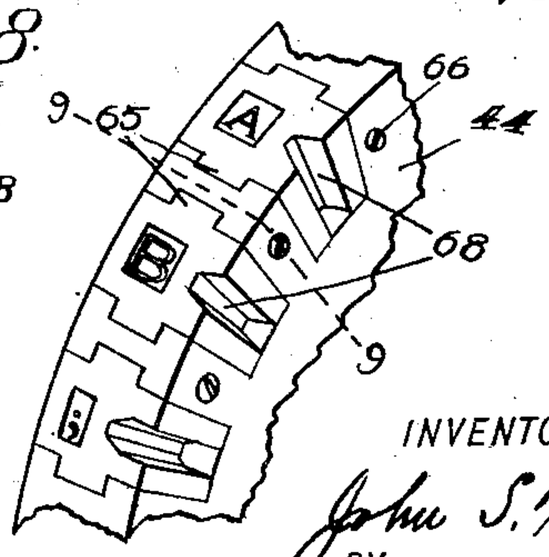


Fig. 7.



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5 SHEETS—SHEET 2.

Fig. 3.

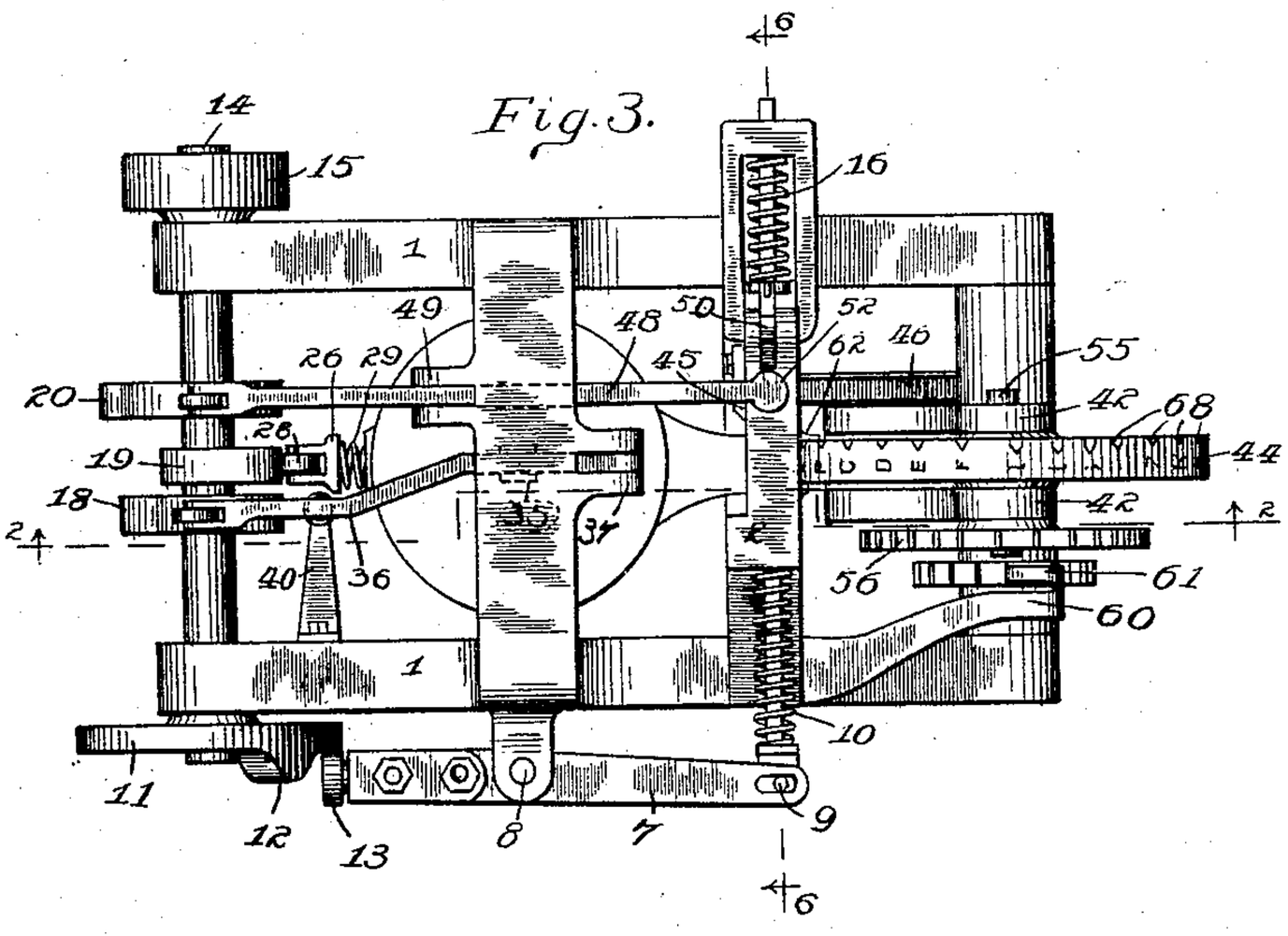


Fig. 4.

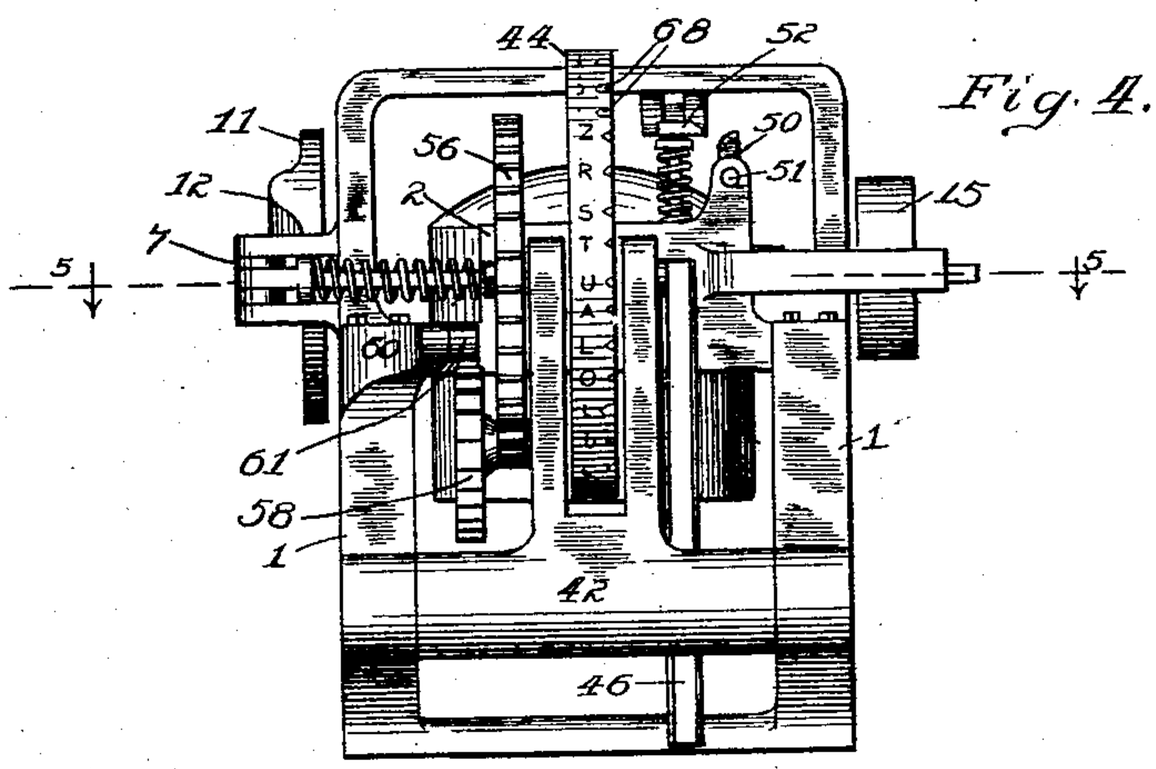
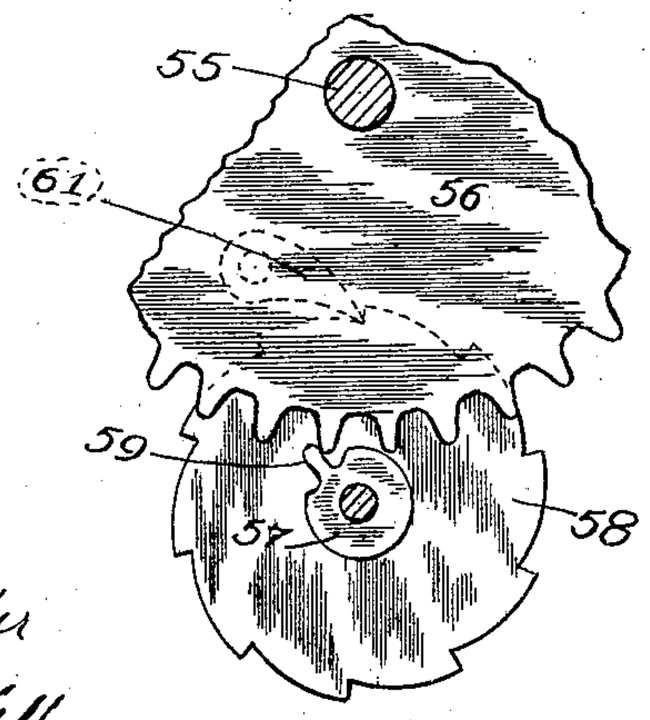


Fig. 10.



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5 SHEETS—SHEET 3.

Fig. 5.

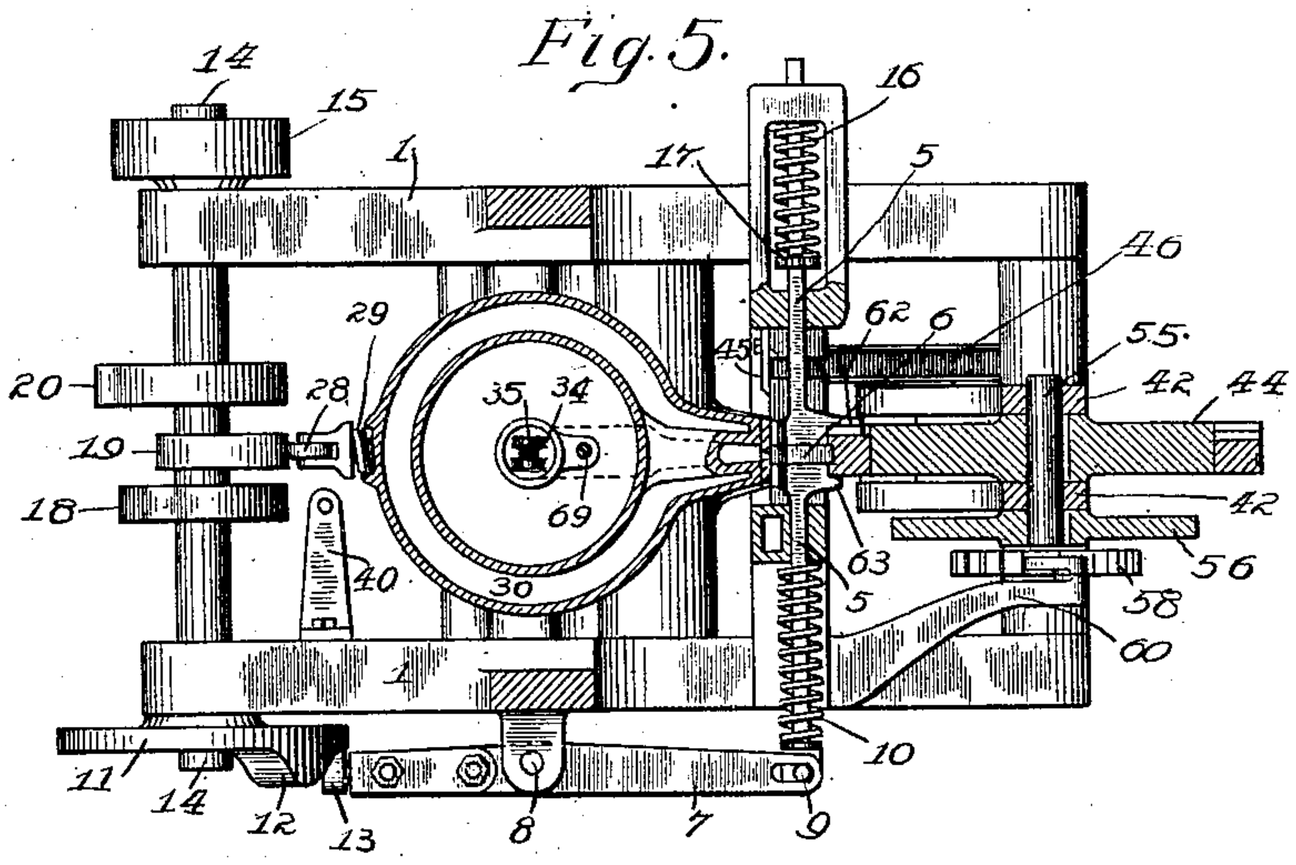
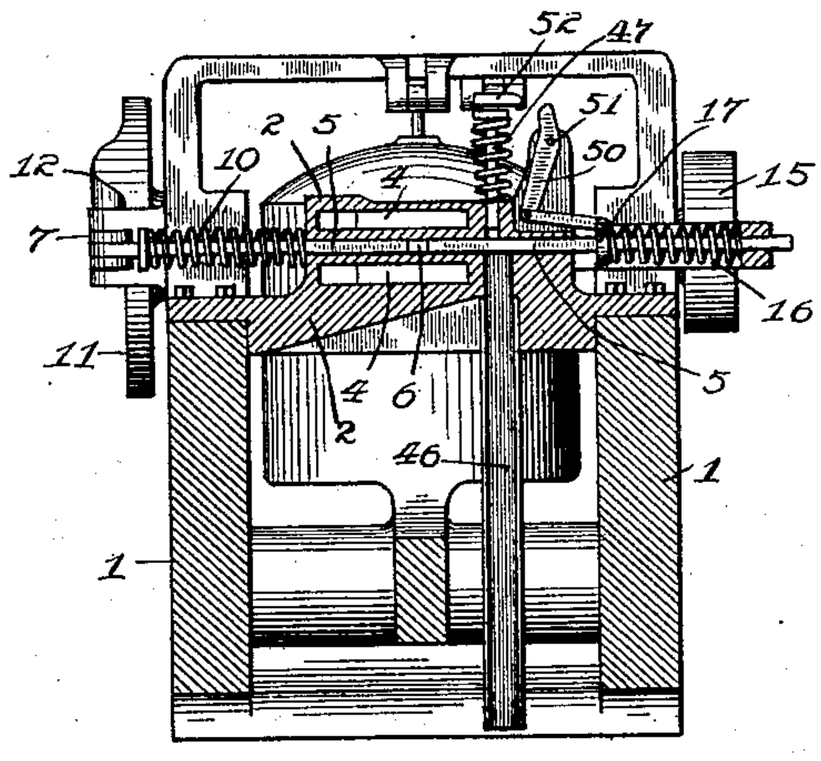


Fig. 6.



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5 SHEETS—SHEET 4.

Fig. 13.

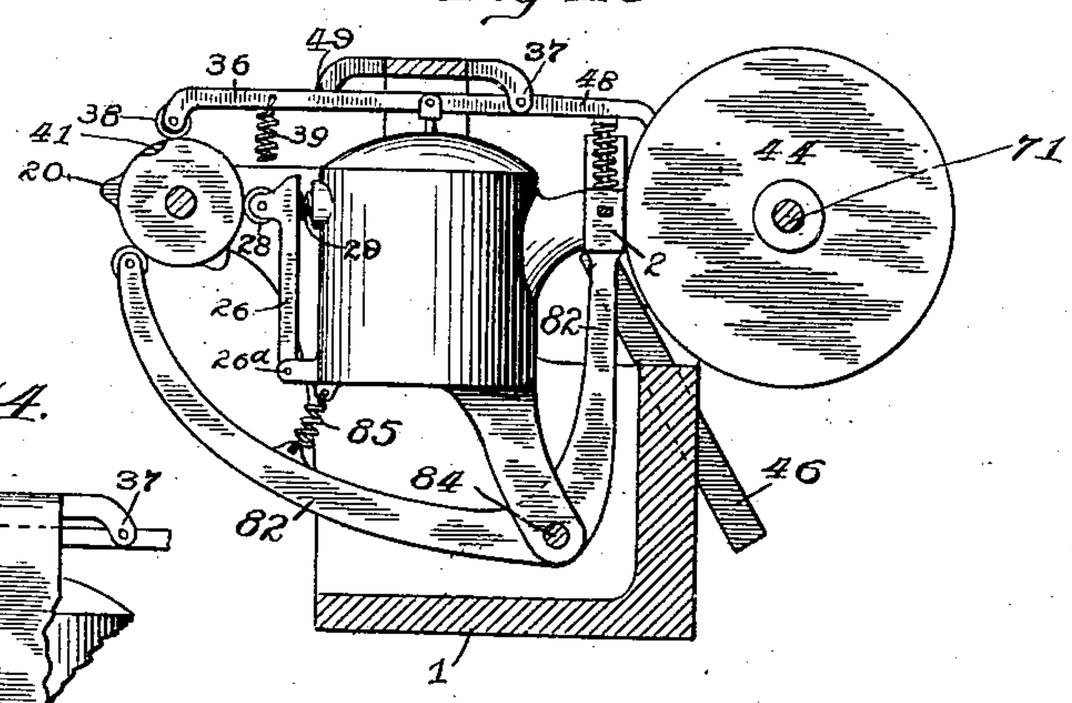


Fig. 14.

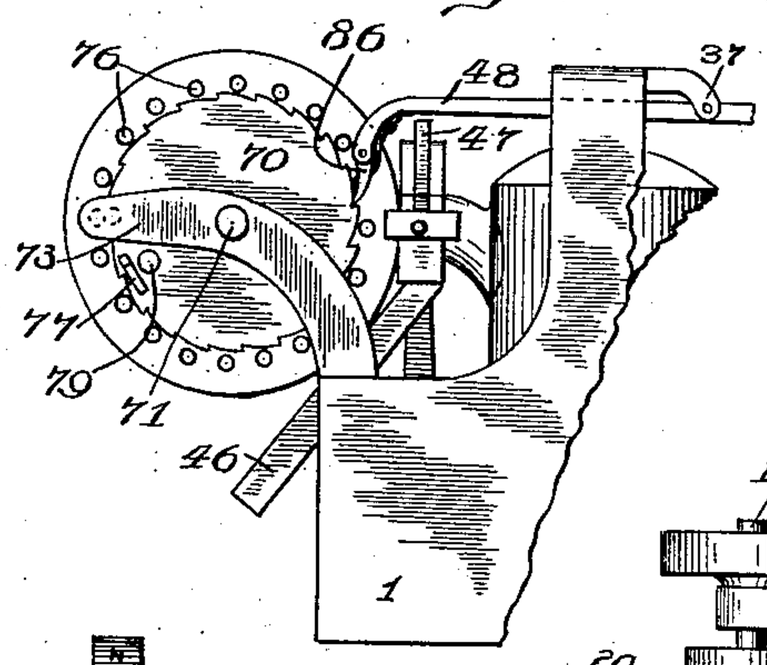


Fig. 12.

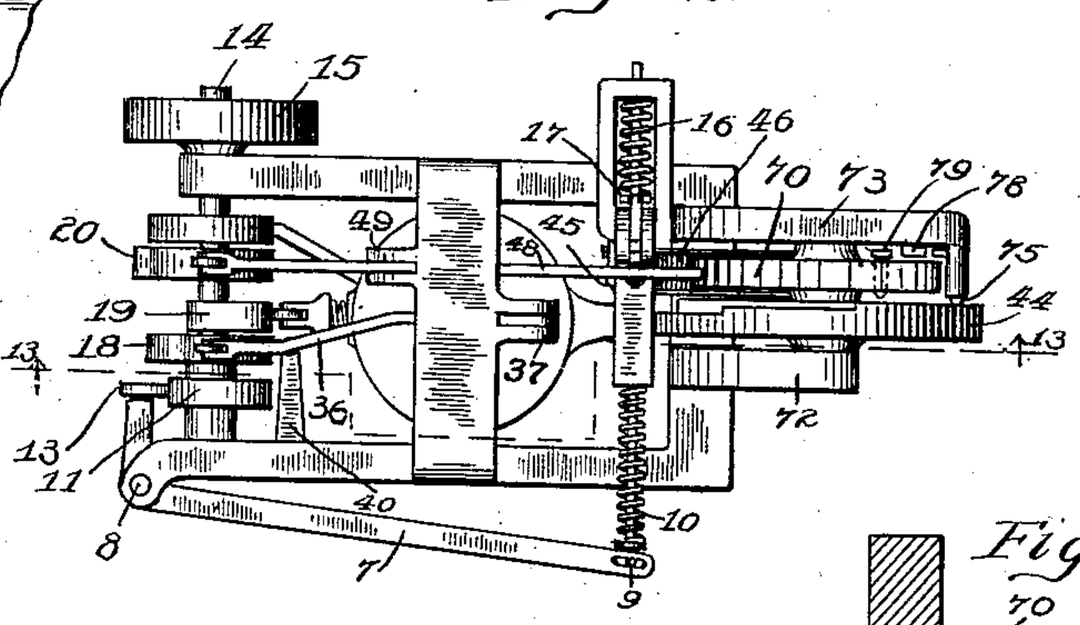


Fig. 15.

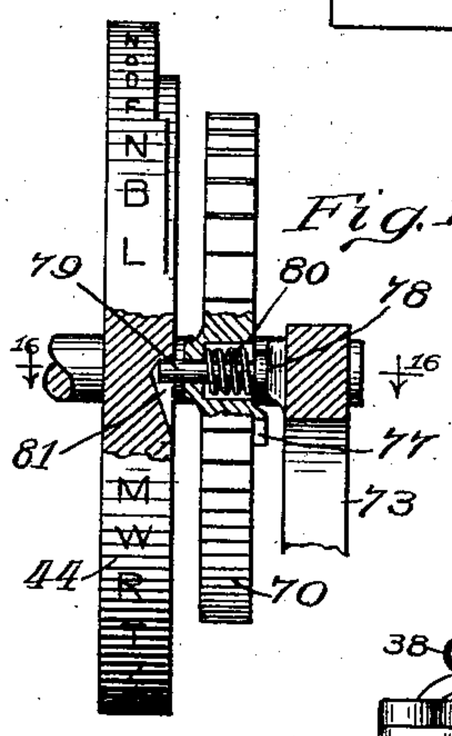


Fig. 16.

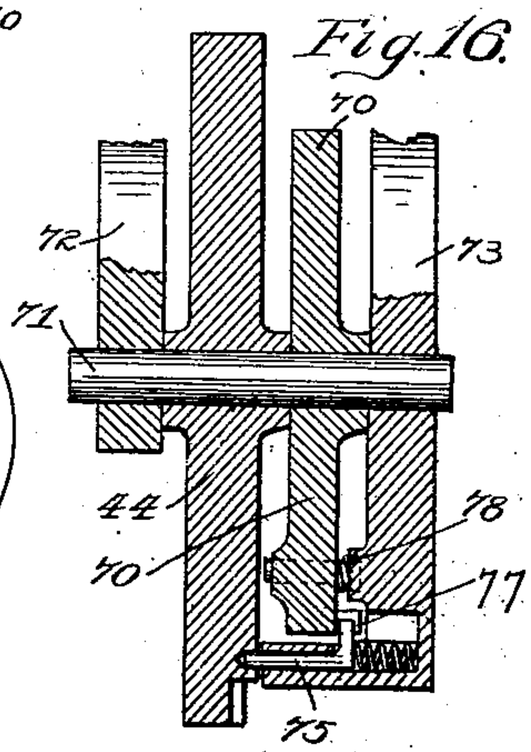
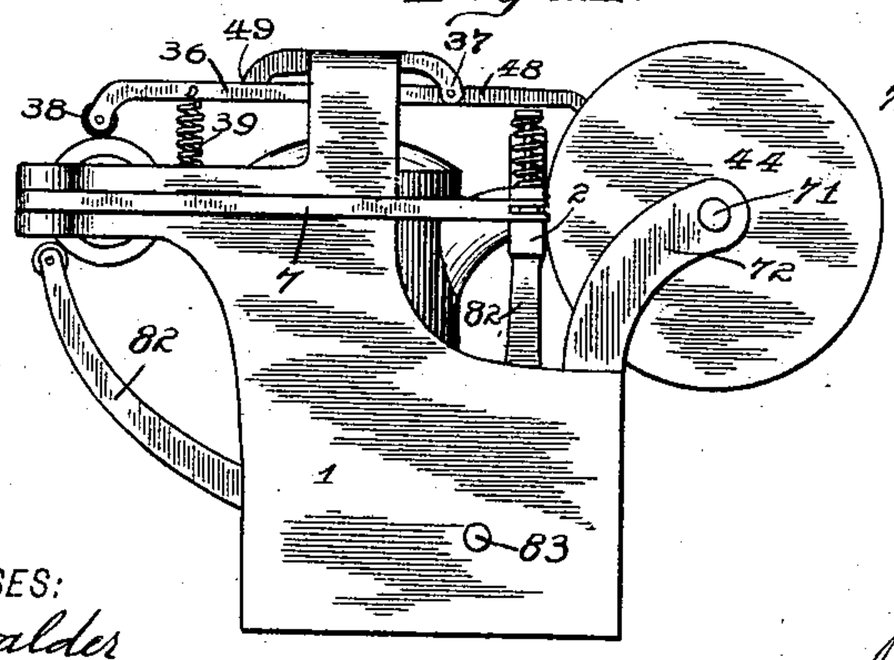


Fig. 11.



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5 SHEETS—SHEET 5.

Fig. 18

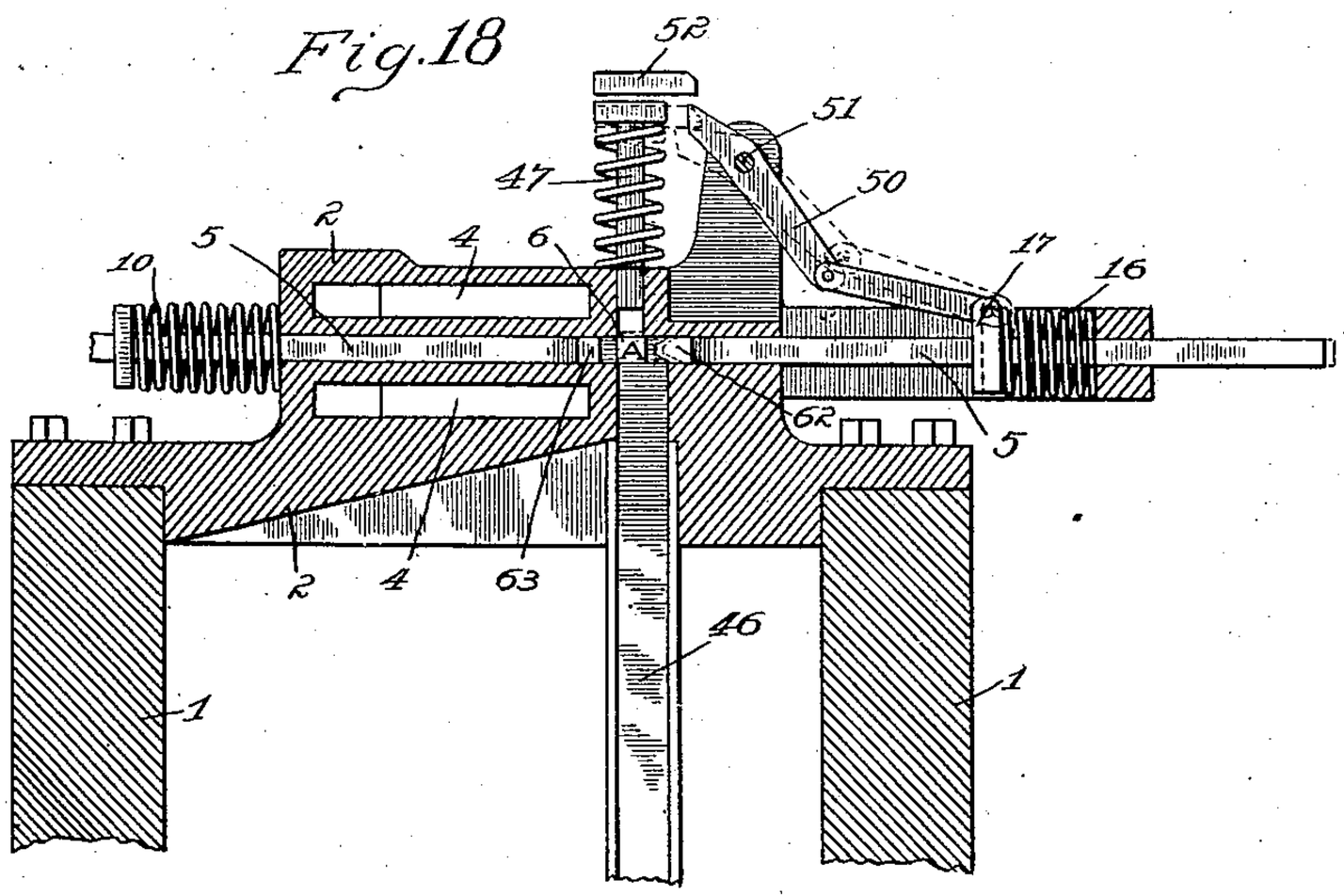
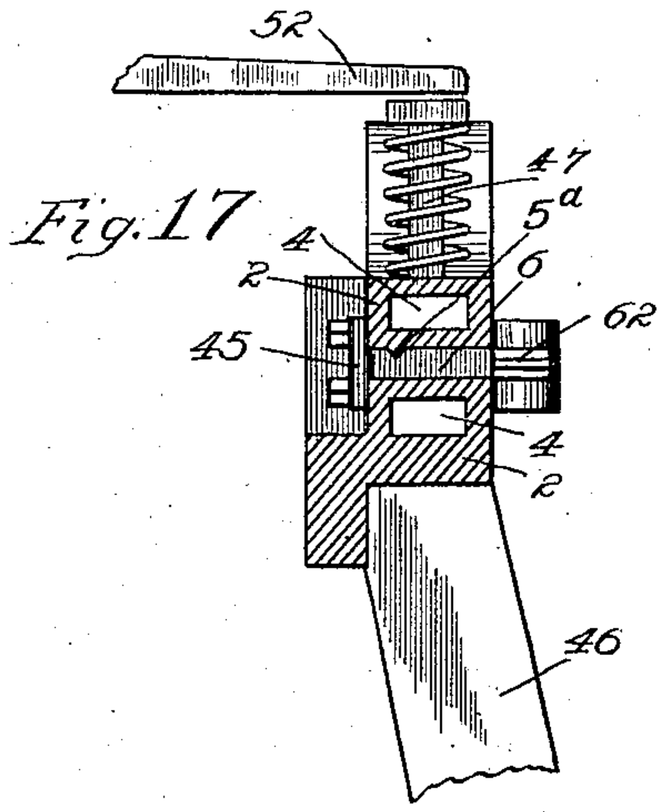


Fig. 17



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UNITED STATES PATENT OFFICE.

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TYPE-CASTING MACHINE.

No. 917,975. Specification of Letters Patent. Patented April 13, 1909.

Application filed May 18, 1904. Serial No. 208,509.

To all whom it may concern:

Be it known that I, JOHN S. THOMPSON, a citizen of the United States of America, residing at Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Type-Casting Machines, of which the following is a description.

My improvement belongs to the class of devices particularly adapted to produce type used in the art of printing. The type thus produced may be delivered to "cases" from which they may be taken and set by hand in the usual manner, or they may be automatically delivered to magazines forming parts of a type setting machine from which they may be extracted, set and justified in the usual manner.

The object of my invention is to produce a machine substantially automatic in its operation that will rapidly and accurately cast various characters or type adapted to be used in the art of printing.

To this end it consists in the novel construction, arrangement and combination of parts herein shown and described and more particularly pointed out in the claims.

In the drawings, wherein like reference characters indicate like or corresponding parts; Figure 1 is a side elevation of one form of my invention; Fig. 2 is a vertical section on line 2—2 of Fig. 3; Fig. 3 is a plan view; Fig. 4 is a front elevation; Fig. 5 is a horizontal section on line 5—5 of Fig. 2 or Fig. 4; Fig. 6 is a vertical section on line 6—6 of Fig. 2 or Fig. 3; Figs. 7, 8, 9 and 10 are detail views; Fig. 11 is a side elevation of a modified form of my invention; Fig. 12 is a top plan of the same; Fig. 13 is a vertical section on line 13—13 of Fig. 12; Fig. 14 is a side elevation of a modified form of matrix wheel and its associated parts. Figs. 15 and 16 are detail views partially in section and also with parts broken away to show the construction. Fig. 17 is a section through the mold taken substantially on line 2—2 of Fig. 3. Fig. 18 is an enlarged section of the mold and associated parts similar to that shown in Fig. 6 but showing the parts in position for ejecting a type.

In the preferred form shown in the drawings, 1 represents a suitable frame for the machine. A type mold 2 is formed of an upper or cap portion and a bottom or base portion separated from each other by liners 5—5, the inner ends of which form the side walls of the type mold, the thickness of the liners determining the size or body of the type cast therein and the distance between the ends of the liners 5—5 determining the set or width of the type so cast. In the form shown, the mold is water jacketed to keep it cool during the casting operation. The channels 4—4 are for the circulation of the water or other cooling agent for that purpose. The liners 5—5 are longitudinally movable between the cap and base portions of the mold 2, the liners being provided with a groove or grooves 5^a running in the direction of their length which coöperate with ribs formed on the mold members. It is apparent that as these ribs extend the entire length of the mold and across the open space between the liners 5—5 which form the mold cell, the type cast therein will be formed with corresponding depressions or nicks. Obviously type may be formed in my mold with nicks on one or more sides by simply constructing the mold with the desired number of ribs traversing the mold cell. Preferably I construct the mold to cause a type nicked on one side to be cast, as in my mold I employ the coöperating nick in type and rib on mold member to serve another useful purpose that of holding the type immovably in the mold while matrix and pot are being retracted and also preventing displacement of the type while the foot or base of same is being trimmed or grooved.

Pivotally mounted upon a bell crank lever 42 is a type wheel 44 upon the periphery of which dies or matrices are seated, any one of which is adapted to coöperate with the mold 2 and, when seated between the liners 5—5, form a complete mold cell into which type metal may be injected for the manufacture of a printer's type. To this end and for other useful and advantageous purposes a metal pot 23 is mounted in the frame 1, provided with a discharge nipple or nozzle 24 so positioned and proportioned that it is adapted to coöperate with the rear end of the mold 2 and make a substantially continuous passage between mold cell and the molten metal contained within the crucible of the metal pot. The positioning and locking up of the matrix, mold and metal pot and ejection of the finished type is accomplished by the following means, it being

understood that the mechanism involved may be altered and varied at will without departing from the spirit of my invention. Various forms of mechanism are known to me and described and illustrated herein, but as a simple and preferred construction I mount a type wheel 44, as shown in Fig. 1, upon one end of a bell crank lever 42, pivotally mounted at 43, a type mold being mounted on the frame 1 and positioned at or near the periphery of the type wheel and on a line preferably level with its axis. The metal pot 23 is likewise mounted and its nozzle positioned so as to be capable of closing the rear or the mold cell 2, being mounted upon a bell crank lever 22 pivoted at 21, the forward end of the lever 22 engaging the free end of the lever 42 and coöperating therewith to transmit movement to the latter. It will thus be seen that reciprocation of the metal pot 23 to and from the mold 2 will cause a like oscillation of the type wheel 44. In order to accomplish the locking up of the matrix and metal pot with the type mold preparatory to the casting of a perfect type, a shaft 14 is mounted in the frame 1 and belted by a pulley 15 to any suitable source of power. The shaft 14 also has mounted upon it three cams 18, 19 and 20, or equivalent means for automatically operating the coöperating parts of the device, as will be more fully pointed out hereafter. A cam 19 mounted thereon is caused to press at the proper moment against the anti-friction roller 28 carried on lever 26, and pivotally connected to the metal pot at 26[a]. Between the upper or free end of the lever 26 and the metal pot 28 is a cushion spring 29, its purpose being to afford a resilient pressure and also obviate the necessity for accurate adjustments. The result of the cam 19 acting through and against the lever 26 and cushion spring 29 forces the metal pot forward and closes its mouth or nipple against the rear face of the mold 2, at the same time causing the bell crank lever 22 to act upon lever 42 and force the type wheel 44 against the opposite face of the type mold. The connection between the end of the bell crank levers 22—42 is provided with suitable means for adjusting the matrix wheel 44 so that it will be exact and accurate in presenting the matrix to the open end of the mold. In Fig. 2 such an adjustable connection is shown, adjusting screws 54 being provided for that purpose. An equivalent would be obtained by locating a cushion spring between the coacting levers.

The metal pot may be constructed in any well known manner, being preferably formed of a crucible and a jacket surrounding same, a space between the two portions preferably being packed with a heat insulating medium. The metal may be heated by any suitable method. The pot is provided with a well 33 in which is positioned a plunger 34 provided with a stem or rod 35 pivotally connected at its upper end to a lever 36, the latter pivotally supported at one end to a fixed arm 37 and at its free end provided with an anti-friction roller 38 riding upon the periphery of the cam 18. The free end of the lever 36 is connected by a spring 39 with an ear 40 on the frame. The spring is under constant tension and consequently as the roller 38 runs into the depression 41 of the cam 18, the plunger 34 is drawn downward and the pressure caused thereby discharges a sufficient quantity of molten metal from the pot through the channel 24 and into the mold cell 6 to form a type.

As the type vary in width, it is also clear that the quantity of metal required for each type will also vary. The movement of the plunger 34, however, is substantially the same in all cases and in a small type an undue pressure might be caused for this reason. To overcome any such effect, I prefer to use a regulating valve 69 which is held to its seat by a spring 70, by means of which when any undue pressure is caused by the action of the plunger 34, the excess of molten metal may be permitted to escape back into the pot. The well 33 is provided with a vent 91 through which the molten metal may readily flow into the well before each stroke of the plunger.

As the molten material is forced into the mold it is immediately chilled and set to retain its form and, after a suitable interval, regulated by the rotation of the cam 19, the pot and matrix wheel are automatically removed from the mold.

As shown in the drawings, the pot is offset from its bearing 21 and consequently upon the rotation of the cam it will be retracted by the force of gravity, any shock being offset by the spring 29. A lever 7 pivotally supported between its ends as at 8 is pivotally connected at one end at 9 to one of the liners 5. In the preferred form a spring 10 is positioned between the end of the lever 7 and the fixed parts 2—2 tending to normally retain that end of the lever at its outer limit of movement, it being held at certain intervals against the side face of the type wheel by the cam face 12 on cam 11, which coöperates with the other end of lever 7. The end of the lever may be provided with an anti-friction roller 13 contacting with the cam face of the wheel. It will be observed that as the cam wheel 11 is rotated, the liner 5 connected to the lever 7 will be regularly reciprocated a distance measured by the relative proportions of the several parts. The companion or loose liner 5 shown at the right in Fig. 6 is provided with a spring 16 positioned within a suitable pocket Figs. 3 and 5 against which one end of the spring contacts, and the liner is provided with a collar 17 or equivalent

means against which the other end of the spring bears. The action of the spring 16 is to normally press the liner 5 toward the type wheel. The several parts are so timed that as the type is released from the matrix the cam face 12 operates the lever 7 driving the liners 5—5 longitudinally with the cast type between them, the stress of the spring 16 being overcome by the power exerted by the cam 11. As the type passes the edge of the knife 45 suitably arranged for the purpose, any unevenness on the base portion of the type is sheared off. By the same operation the end of the type may be grooved or otherwise formed or finished as desired. As the liners 5—5 reach their limit of movement, the type is brought directly over a channel or spout 46 constructed to receive the type and a vertically moving bar or ejector 47 fixed immediately over the type and connected with the end of a lever 48 pivotally supported at 49 and having its free end contacting with a cam 20, is by the rotation of said cam given a downward thrust to push the type into the channel 46. To free the type from the embrace of the liners 5—5, a bell crank lever 50 is pivotally supported upon a fixed part as at 51, having one end connected by a short link to the collar 17 on the free liner 5 and the other end adapted to coöperate with a shoulder 52 on the ejector lever 48 or its associated parts. As the ejector 47 makes its downward movement, the shoulder 52 contacts with the free end of the bell crank lever 50, causing the motion to be transmitted to the free liner 5, which will be forcibly moved away from the type, disengaging the same so that it may be delivered to the tube 46 as described. Another useful result accomplished by the bell crank lever 50 and its connection is that this construction permits the use of but one thickness of ejector blade for the varying thicknesses of type cast, as the distance to which the liner 5 is driven by the bell crank lever 50 and its link is uniform and independent of the thickness of type delivered between the liners 5—5 thus permitting the employment of an ejector blade substantially agreeing with the thickness of the thickest type to be cast and insuring great accuracy in the ejection of the type. In some cases I propose to dispense entirely with the ejector 47 and rely upon gravity to deliver the type to the tube 46 when the liner 5 is retracted. After the ejector 47 has completed its operation, the rotation of the cam 20 and the spring 53 positioned between the end of the lever 48 and the fixed bar 2, or equivalent means for that purpose, (Fig. 2) retracts the ejector 47. The liners 5—5 are promptly returned to their original operative positions by the operation of the springs 10—16 and the operation of casting type is repeated.

The free liner 5 is provided with a lateral extension 62 of sufficient length to always contact with the side of the matrix wheel as the liners return to their normal positions. The end of the companion liner is also provided with an extension 63 which is not so long, however, as to interfere with or prevent that liner passing by the face of the wheel when the latter is retracted, the extension 63 engaging the side of the type wheel when the latter is advanced to coöperate with the mold, the extension in each case embracing the sides of the wheel. The extension 63 is provided with an inclined or beveled part at the outer corner which will readily permit the wheel in its forward movement to be suitably seated as described and as clearly shown in Fig. 5.

It is obvious that a matrix wheel having matrices positioned about its periphery is a simple method adapting the machine to cast a plural series of type, but my device is not limited to such form. Any construction carrying a plurality of matrices each of which in its operation is adapted to be brought successively in contact with the mold to close the end of the same would answer the purposes of my invention.

While ordinarily it is only necessary to cast certain quantities of the various characters used by printers in unvarying proportions, it is apparent that in my machine the proportions may be varied at will by simply duplicating certain characters on the type wheel or matrix carrier, thus adapting it to cast the type in the proportions required to supply a printer's type case or other type receptacles.

In the preferred construction, the matrices are removably secured to the face of the matrix wheel as shown in Figs. 7, 8 and 9. The face of the matrix wheel is provided with a plurality of seats, substantially duplicates of one another, and the matrices are formed to fit any one of said seats. As clearly shown in Figs. 7, 8 and 9, each matrix 64 is provided with dovetailed extensions 65 which will singly fit into similar recesses formed in the matrix wheel while transverse bolts 66 may be seated in suitable grooves 67 formed in the dovetailed extensions for that purpose to secure the parts together. Fig. 9 which is a section in line 9—9 of Fig. 7 clearly shows the preferred method of locking the parts together. It is, of course, apparent that the parts may be reversed or modified without in any wise departing from the spirit of my invention.

As the different type vary in width, provision should be made to provide for such variation in the closing of the sides of the mold. In the form under discussion, each matrix is provided with an indented slot 68, the several slots varying in depth according to the width of the type to be cast. The extension 62 on the free liner 5 in its return to its normal position is seated in a slot 68 opposite the

matrix then in alinement for casting, and as the slots vary in depth according to the various letters and characters to be cast, the width of the mold will be correspondingly regulated. Such engagement also tends to firmly hold the matrix in proper alinement.

In order to insure long life of matrices, I construct them with thick side walls to sustain the pressure of the mold liners, which are automatically adjusted in position to the matrix presented to the mold cell. In order that the mold cell be adjusted to the proper proportions notwithstanding the thickness of the walls of the matrices, I form the mold liners with corresponding notches in the extension lips 62 63 thus permitting the ends of the liners 5—5 which form the side walls of the mold to approach each other more closely than would otherwise be possible.

In the preferred construction means are provided for automatically rotating the matrix wheel 44 at certain periods to change the form of type cast. As shown in Figs. 1, 3 and 5 the matrix wheel 44 is mounted upon a shaft 55 carried by the bell crank lever 42 which is forked or double to receive the ends of the shaft as clearly shown in Figs. 3, 4 and 5. Also mounted upon the shaft 55 is a cog wheel 56. On a spur 57 carried on one of the arms of the bell crank lever 42, is mounted a ratchet wheel 58, and also a single toothed wheel 59 adapted in its rotation to engage the cogs in the cog wheel 56 and rotate the latter a single interval. The wheel 59 is of such a comparative size and the distance between the cogs of the wheel 56 is such that at all times, except when the single tooth is engaging a cog, the body of the wheel will be positioned between two cogs, so, locking the parts as to prevent the accidental rotation of the cog wheel 56 and the matrix wheel 44. A fixed part as for example the extending arm 60 of the frame carries a pawl 61 arranged to coöperate with the ratchet wheel 58. Thus as the end of the bell crank lever 42 carrying the matrix wheel 44 is regularly oscillated back and forth, the ratchet wheel will be engaged and rotated a single interval at each oscillation. There will be no rotation of the matrix wheel however until the single tooth on the wheel 59 engages the cog wheel 56 when it will rotate the same and the matrix wheel 44 a sufficient distance to bring the next succeeding matrix into proper alinement for its coöperation with the mold.

I have spoken of the wheel 59 as containing but a single tooth. It is obvious that this is but the preferred construction and that it may be modified as desired without in any sense departing from the spirit of my invention.

In Figs. 11 to 16 inclusive I have shown a modified form of my device, in which the matrix wheel 44 and ratchet wheel 70 are rotatably mounted upon a shaft 71, supported by the brackets 72 and 73, attached to the main frame 1 of my device. Upon the bracket 73 I provide a socket inclosing a spring actuated pin 75, one end of which normally projects into one of a series of holes 76 in the side of the matrix wheel 44, for the purpose of preventing rotation of the same upon the shaft 71. The pin 75 is also provided with a projecting arm adapted to engage with an inclined part or projection 77 upon the side of the ratchet wheel 70 to periodically withdraw the end of the pin 75 from engagement with the wheel 44. The bracket 73 is also provided with a part 78 lying in the path of, and adapted to engage with, a pin 79 carried in a suitable socket in the wheel 70 and normally held out of engagement with the wheel 44 by a suitable spring 80. At each complete rotation of the wheel 70 the pin 79 engages the part 78, moving the pin 79 longitudinally and causing the end of the pin to enter one of a series of depressions 81 in the side of the wheel 44. These depressions are formed with one side beveled back to allow the pin to be gradually forced into the depression while the ratchet wheel 70 is rotated. The opposite side of the depressions is formed to afford suitable engagement for the pin 79 to cause the matrix wheel 44 to rotate with the ratchet wheel 70 to the point where the part 78 no longer holds the pin 79 in engagement with the matrix wheel 44, when the spring 80 returns the pin 79 to its normal position. The part 77 is so located upon the wheel 70 that as the pin 79 is advanced to engage the matrix wheel 44 the part 77 will engage the arm of the pin 75 to withdraw the same from its engagement, the movements of the pins 75 and 79 being so timed and the holes or depressions 76 and 81 so spaced that the matrices 64 will be successively presented to the mold 2 and each held in that position during one revolution of the wheel 70. The mold 2 is in all respects the same as before described except that it is mounted upon an arm 82 pivotally connected to the frame 1, at 83 by the shaft 84. The spring 85 normally holds the mold 2 in contact with the matrix upon the wheel 44, while a part of the arm, which may be fitted with a roller to reduce friction, is arranged to engage with a cam upon the continuously rotated shaft 14 to periodically withdraw the mold from the matrix wheel a sufficient distance to permit the liners 5—5 which are the same as previously described, to move the cast type to the ejector 47 which also is the same as before described, with the exception of the lever 48 which operates the ejector is in this case extended beyond the ejector bar 47 and provided with a spring actuated pawl 86 adapted to engage with the teeth of the ratchet wheel 70 so that at each downward movement of the lever 48 the ratchet wheel

70 is made to move a certain part of a rotation. The other parts of the machine are the same as previously described and are employed in the same manner to accomplish the same results as heretofore described, and further description is deemed unnecessary, the mode of operation is apparent from the description given.

Having thus described my improvement, it is obvious that various immaterial modifications may be made without departing from the spirit of my invention, hence I do not wish to be understood as limiting myself to the exact form and construction shown.

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

1. In a type casting machine a mold, in combination with a metal pot and a rotatable matrix carrier arranged upon opposite sides of said mold and means for simultaneously moving said metal pot and matrix carrier to and from said mold.

2. A type-casting machine, comprising a rotatable matrix carrier provided with a plurality of matrices, each of which may be positioned to close the open end of the mold in combination with a type-forming mold, arranged to automatically adjust itself by engagement with any of said matrices to dimensions corresponding therewith, means for controlling the positioning of the matrix carrier, and means for introducing molten metal into the open end of the mold to form a type.

3. A type-casting machine, comprising a metal pot, and a rotatable matrix carrier provided with a plurality of matrices, in combination with an adjustable type-mold, open at its ends and interposed between the pot and the matrix carrier, means for adjusting the dimensions of the mold to conform to the width of the matrix presented by the corporation of the mold with said matrix, and means for discharging a charge from the pot into the mold, to form a type.

4. In a type-casting machine, a type-mold comprising an upper or cap portion, an under or base portion, and a pair of liners longitudinally movable between said cap and base, and means for preserving the alinement of the parts, in combination with a matrix adapted to close one end of the mold thus formed, and means for introducing molten metal into the other end of the mold to form a type.

5. In a type-casting machine, a type-mold comprising an upper or cap portion and an under or base portion, in combination with a pair of longitudinally movable liners arranged between the cap and base, and adapted to form the sides of the mold, substantially as described.

6. In a type-casting machine, a type-mold comprising an upper or cap portion and an under or base portion, in combination with a pair of longitudinally movable liners arranged between the cap and base and adapted to form the sides of the mold, and means for automatically controlling the movement of the liners.

7. In a type-casting machine, a type-mold comprising an upper or cap portion and an under or base portion, in combination with a pair of longitudinally movable liners forming the sides of the mold, arranged between the cap and base, and interlocking with the same against transverse movement, and means within the mold for forming a notch or nick in the type.

8. In a type-casting machine, a type-mold comprising a cap and base, in combination with longitudinally movable liners arranged between the cap and base forming the side walls of the mold, and means for automatically moving the liners longitudinally and releasing the cast type therefrom.

9. In a type-casting machine, a type-mold comprising a cap and base and a pair of longitudinally movable liners positioned between the two and adapted to form the side walls of the mold, in combination with guiding means for maintaining the alinement of the parts.

10. In a type-casting machine, a type-mold comprising a cap and base, a pair of longitudinally movable liners arranged between the two, and adapted to form the side walls of the mold, and means for maintaining the alinement of the parts, in combination with a matrix adapted to close the open end of the mold and to determine the position of the side walls thereof.

11. In a type-casting machine, a type-mold comprising a cap and base, one of which is provided with a longitudinal bead extending inwardly from the face of the part, in combination with a pair of longitudinally movable liners provided with a groove coacting with the bead to guide the parts in their movement, said liners being adapted to form the side walls of the mold, and means for automatically moving the liners and for releasing the type therefrom.

12. In a type-casting machine, a type-mold comprising a cap and base spaced from one another, a pair of longitudinally movable liners arranged therein to form the side walls of the mold, and a matrix adjacent to and adapted to close an open end of the mold thus formed, in combination with a melting pot, the spout of which is adapted to register with and close the other end of the mold, means for discharging a charge of the contents of the pot into the closed mold, and means for longitudinally moving the liners, at right angles to the body of the type and discharging the type therefrom.

13. A type-casting machine, comprising

a cap and base spaced from one another to form the top and bottom of the mold, two longitudinally movable liners arranged between the cap and base to form the side walls of the mold, and a matrix adjacent to and adapted to close an open end of the mold thus formed and regulating the distance between the side walls of the mold, in combination with a melting pot, the discharge spout of which is adapted to register with and close the other end of the mold, means for discharging a charge of the contents of the pot into the casting-mold, and means for longitudinally moving the liners, at right angles to the body of the type and discharging the type therefrom.

14. A typecasting machine, comprising a mold open at both ends, and a disk bearing a plurality of matrices any one of which may be brought into registry with and close one end of the mold, means for adjusting the side walls of the mold to conform to the set width of the matrix so presented, in combination with a melting-pot, the discharge spout of which is adapted to register with and close the other end of the mold, means for discharging a charge of the contents of the pot into the mold to form a type, and means for intermittently rotating the matrix-carrier.

15. In a type casting machine, a movable matrix carrier, and a movable metal pot and means for operating the matrix carrier by the movements of the metal pot.

16. In a type casting machine, an adjustable mold, comprising two stationary parts and two movable parts, said movable parts operating to grip a type within the mold and transfer the same from the casting to the ejecting point.

17. A type-casting machine, comprising a mold open at both ends and a matrix wheel provided with a plurality of matrices mounted in its periphery any one of which may be brought into registry with and close the open end of the mold, in combination with a melting pot, the discharge spout of which is adapted to register with and close the other end of the mold, means for discharging a charge of the contents of the pot into the closed mold, and means for automatically rotating the matrix wheel at stated periods to bring another matrix into proper operative position.

18. A type casting machine, comprising a movable metal pot, a stationary type mold, and a movable matrix carrier, in combination with means for simultaneously operating the metal pot and matrix carrier, and means upon the mold for dimensioning the same to correspond with the dimensions of the matrix.

19. A type-casting machine, comprising two parallel bars spaced from one another forming a slot, longitudinally movable bars or liners arranged therein to form side walls for a mold, and a matrix adjacent to and adapted to close one end of the mold thus formed, in combination with a melting pot, the discharge spout of which is adapted to register with and close the other end of the mold, means for discharging a charge of the contents of the pot into the closed mold and means for longitudinally moving the liners and discharging the cast type from the mold.

20. A type casting machine, comprising two parallel bars spaced from one another to form two faces of a mold, longitudinally movable liners arranged in the space between the two with the proximate ends spaced from one another to form the side walls of a mold, and a plurality of matrices adjacent to one end of the mold thus formed, any one of which is adapted to be brought in registry with and close the end of the mold, in combination with a melting pot the discharge spout of which is adapted to register with and close the other end of the mold, means for automatically bringing a matrix and the discharge spout of the pot into contact with the open ends of the mold, closing the same, means for discharging a charge of the contents of the pot into the mold thus closed, means for longitudinally moving the liners with and discharging the type cast, and means for automatically moving a matrix out of registry with the mold and moving another into operative position therewith.

21. In a type casting machine, a matrix carrier and a pivotally mounted metal pot and means connecting said metal pot and matrix carrier for operating said matrix carrier by the movement of said metal pot.

22. In a type casting machine, an adjustable mold and means for casting various widths of type therein, in combination with an ejector provided with a single blade or bar for ejecting the type from the mold, said blade being thicker than the thinnest type it is required to eject from the mold.

23. In a type casting machine, a plurality of movable matrices each adapted to cooperate with a type mold comprising a cap and base with longitudinally movable liners arranged between them forming the side walls of the mold, and means upon the liners for engaging each matrix when coöperating with the mold and centering the same upon the mold.

24. In a type casting machine, a type mold comprising the combination of an upper or cap portion and an under or base portion and a pair of movable liners arranged between the cap and base, adapted to form the sides of the mold, said liners being provided with projections adapted to engage a matrix to determine the width of the mold opening.

25. In a type casting machine, a mold, a pivotally mounted metal pot, and a matrix carrier, in combination with mechanism connecting said metal pot and matrix carrier

whereby a movement of one will cause a corresponding movement of the other.

26. A type casting machine, comprising a stationary mold the body pieces of which are longitudinally movable, in combination with a metal pot and a matrix carrier each mounted upon pivotal supports and provided with coöperating arms, whereby a movement of one will cause a simultaneous corresponding movement of the other.

27. In a type casting machine, an adjustable mold comprising two stationary parts and two movable parts, a metal pot and a matrix carrier arranged at opposite sides of the mold, means for operating said matrix carrier to position a matrix between said movable parts, and means for automatically adjusting the distance between said movable parts to conform to the width of the type to be cast from said matrix, in combination with means for casting type from said matrix, and means for operating said matrix carrier to remove said matrix from the mold and substitute another matrix in position at the mold.

28. A type-casting machine comprising a mold, the side walls of which are longitudinally movable to control the width of the mold-opening, a rotatable matrix-carrier containing a series of matrices and means for positioning a matrix so as to regulate the opening of said mold-cell, in combination with means for making repeated casts from said matrix and then automatically removing said matrix and substituting another.

29. In a type casting machine, a metal pot, and a matrix carrier, arranged to move simultaneously, a link connecting said metal pot and matrix carrier whereby a movement of one will produce a corresponding movement of the other.

30. In a type casting machine, a pivotally mounted metal pot, a pivotally mounted matrix carrier, and means connecting said metal pot and matrix carrier whereby a movement of one will produce a corresponding movement of the other.

31. In a device of the kind described, a metal pot, a matrix carrier, and an adjustable link connecting said metal pot and matrix carrier whereby a movement of one will produce a corresponding movement of the other.

32. In a device of the kind described, a metal pot, and a matrix carrier, in combination with a link connecting said metal pot and matrix carrier so that a movement of one will produce a corresponding movement in the opposite direction of the other and means for controlling said movements.

33. In a type casting machine, a stationary type mold, a movable metal pot, and a movable matrix carrier, arranged to oscillate to and from said mold, means upon the mold for adjusting the same to dimensions corresponding with the dimensions of the matrix, and means for transferring and ejecting the type from the mold.

34. In a type casting machine, a type mold comprising two stationary parts and a pair of movable liners arranged between said stationary parts to form the sides of the mold.

35. In a type casting machine, a type mold, a metal pot and a rotatable matrix carrier supporting a plurality of matrices, mold members adapted to coöperate with the matrix to adjust the mold to conform to the various widths of type to be cast from said matrices, means for casting type in said mold, means for ejecting type from said mold, and means for rotating said matrix carrier at intervals between casting operations.

36. In a type casting machine, a type mold comprising two stationary parts and two movable parts, a metal pot, and a matrix carrier arranged at opposite sides of said mold, means for operating said matrix carrier to position a matrix between said movable parts, means for adjusting the set-width of the mold by the coöperation of the matrix with said movable mold parts, and means for casting type from said matrix.

37. A type casting machine comprising an adjustable type mold, a metal pot adapted to coöperate with one end of said mold, a plurality of matrices mounted on the periphery of a rotatable wheel, any one of which is adapted to coöperate with the opposite end of said type mold, means for adjusting the set-wise dimension of the mold to conform to the set-wise dimension of the matrix presented thereto by the coöperation of the mold with the matrix, in combination with means for casting type from said matrix, discharging said type from said mold and automatically removing said matrix and presenting another to said mold.

In testimony whereof, I have hereunto signed my name in the presence of two (2) subscribing witnesses.

JOHN S. THOMPSON.

Witnesses:
BURTON V. HILLS,
CHARLES I. COBB.