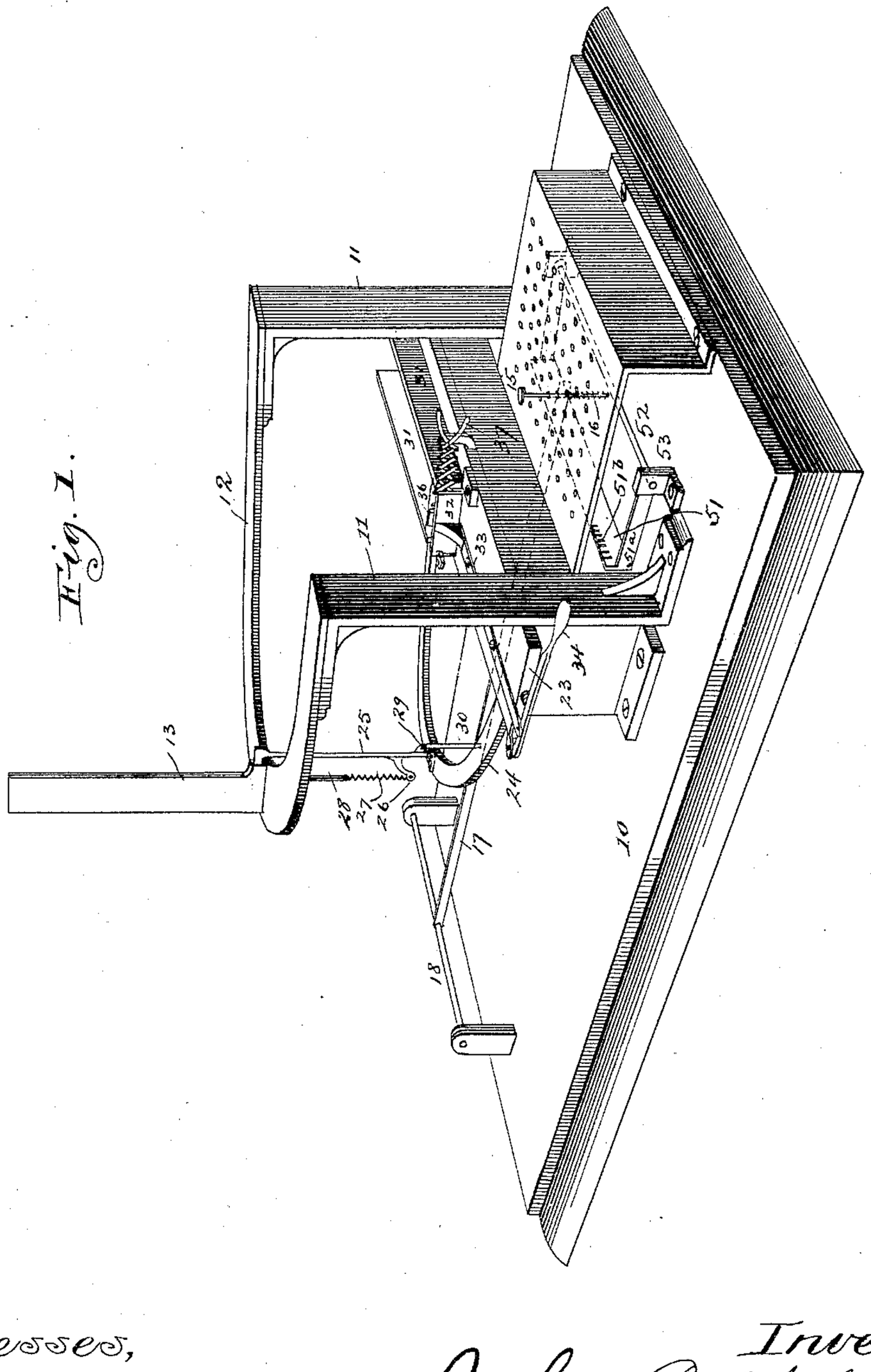
(No Model.) 4 Sheets—Sheet 1.

J. B. ODELL.

TYPE SETTING MACHINE.

No. 434,942. Patented Aug. 26, 1890.

Fig. 1.



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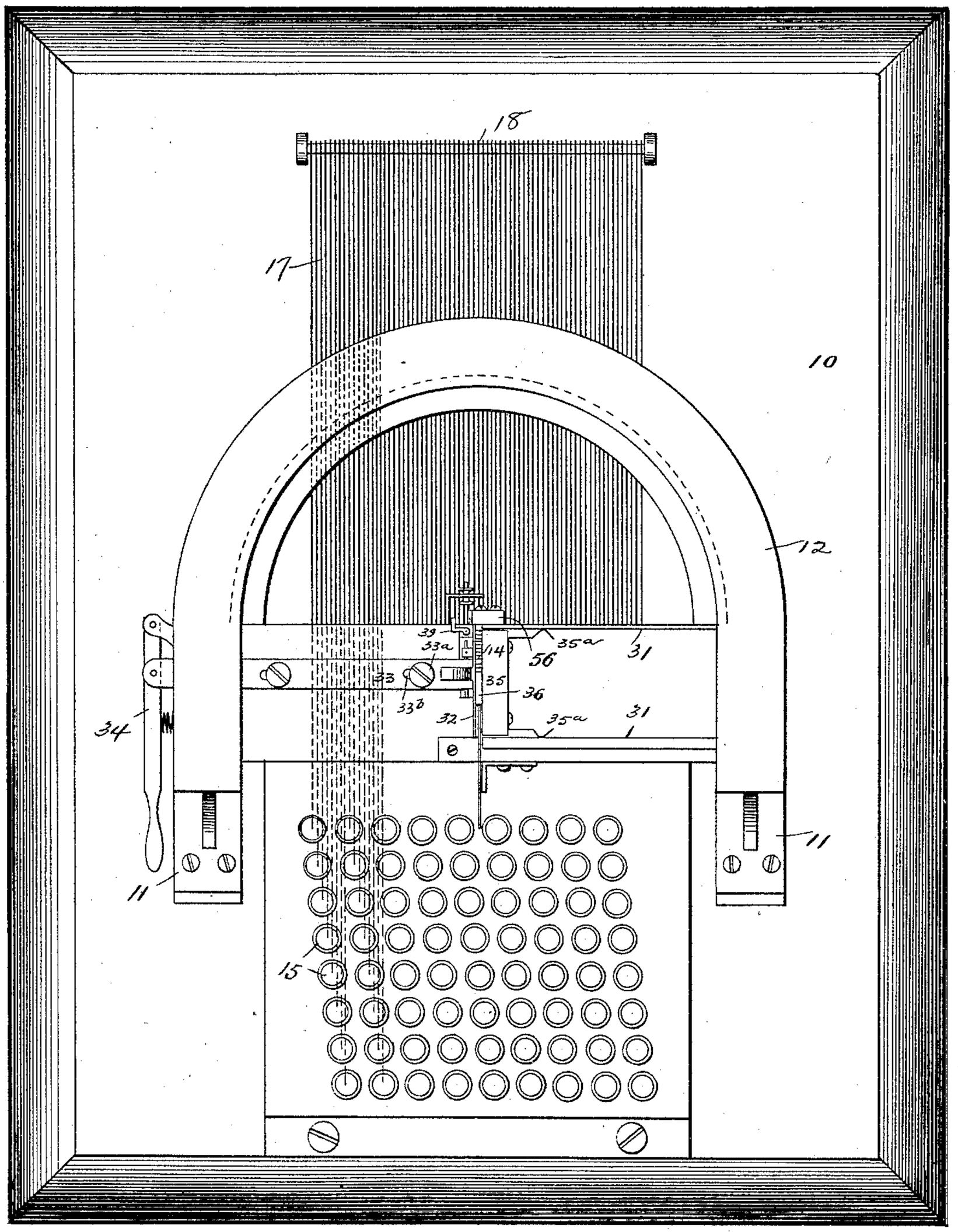
(No Model.) 4 Sheets—Sheet 2.

J. B. ODELL.

TYPE SETTING MACHINE.

No. 434,942. Patented Aug. 26, 1890.

Fig. 2.



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(No Model.) 4 Sheets—Sheet 3.

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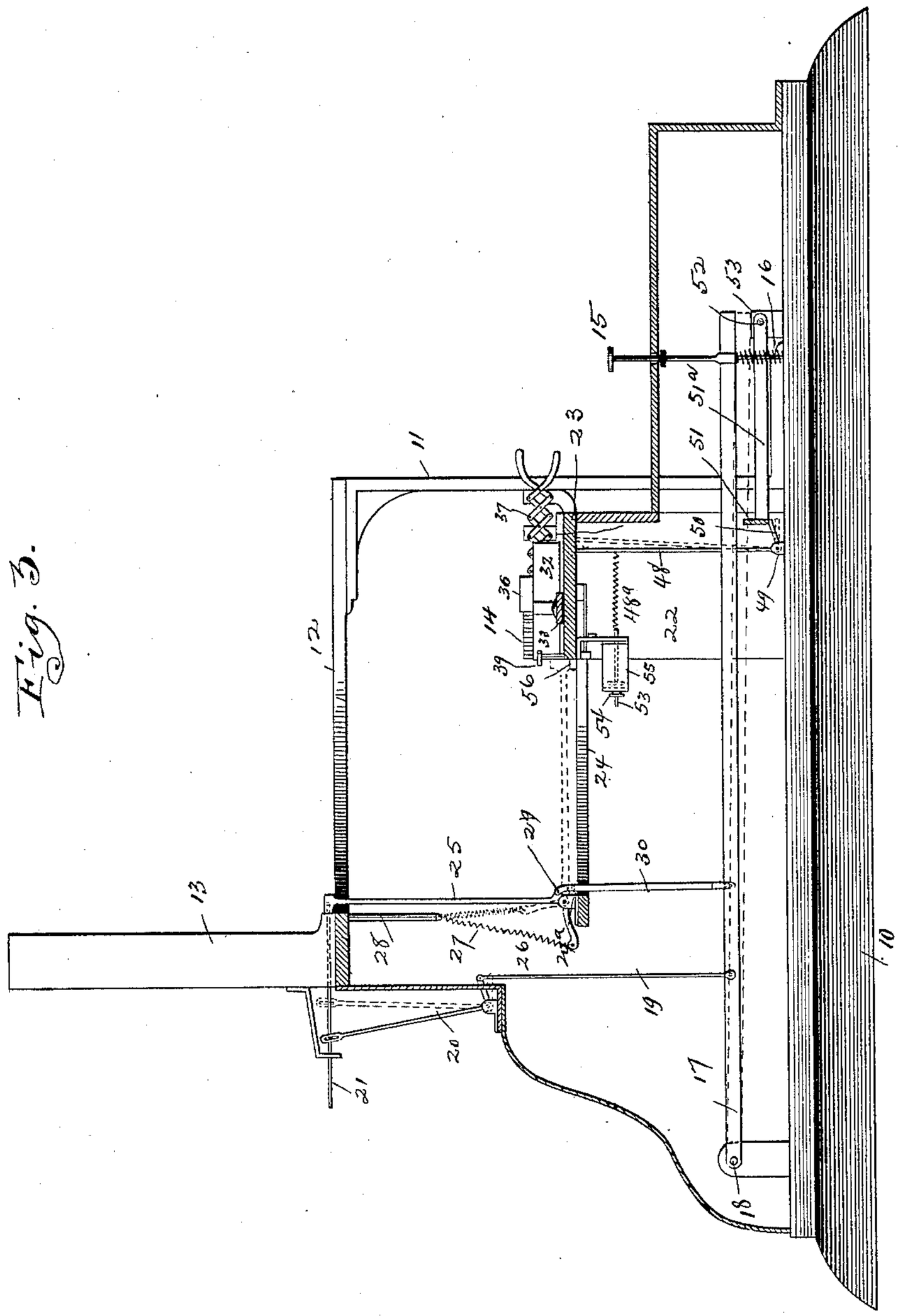
TYPE SETTING MACHINE.

No. 434,942. Patented Aug. 26, 1890.

Fig. 3.



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(No Model.) 4 Sheets—Sheet 4.

J. B. ODELL.

TYPE SETTING MACHINE.

No. 434,942. Patented Aug. 26, 1890.

Fig. 4.

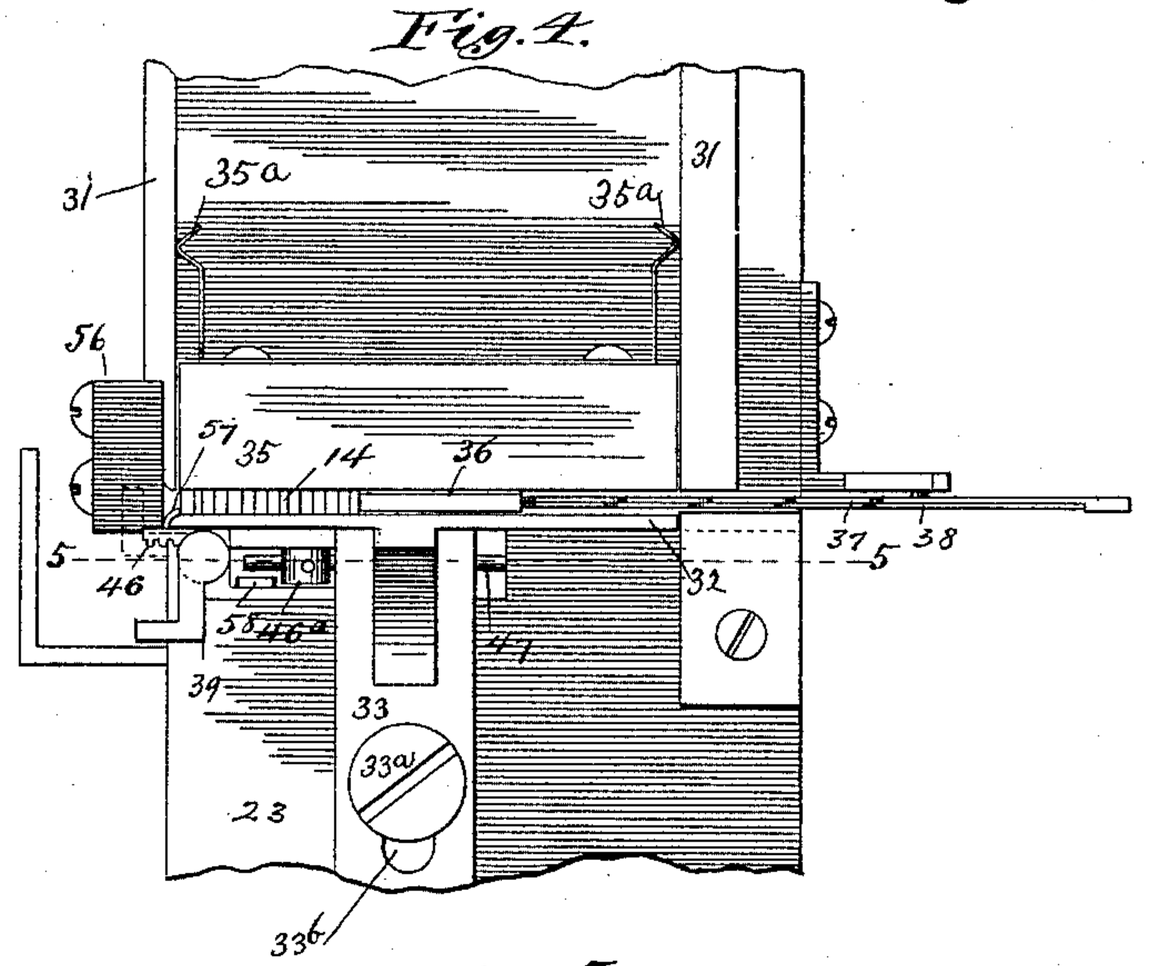


Fig. 5.

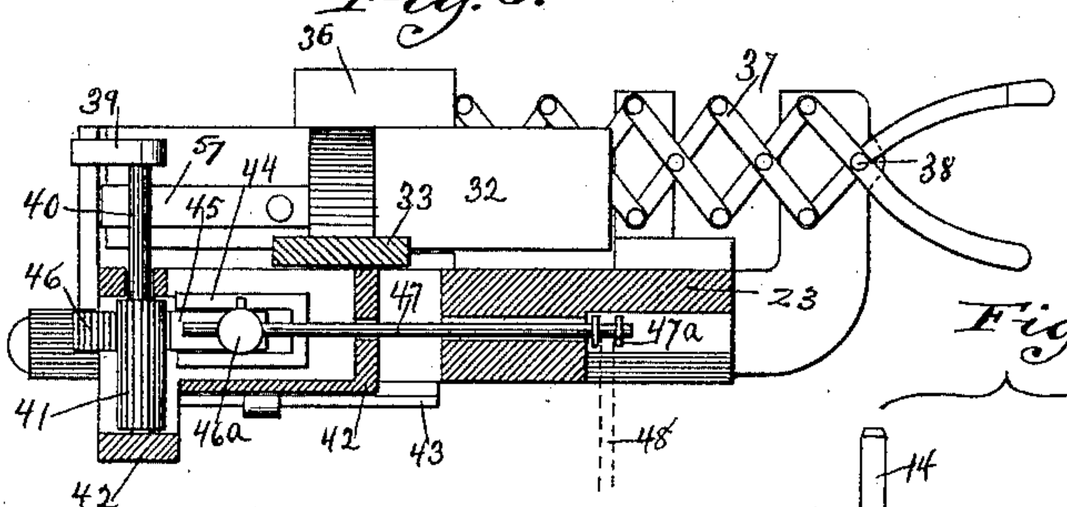


Fig. 8.

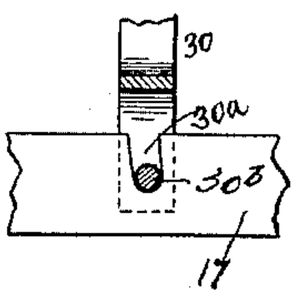


Fig. 9.

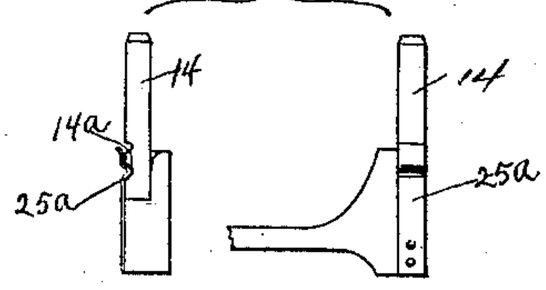


Fig. 6.

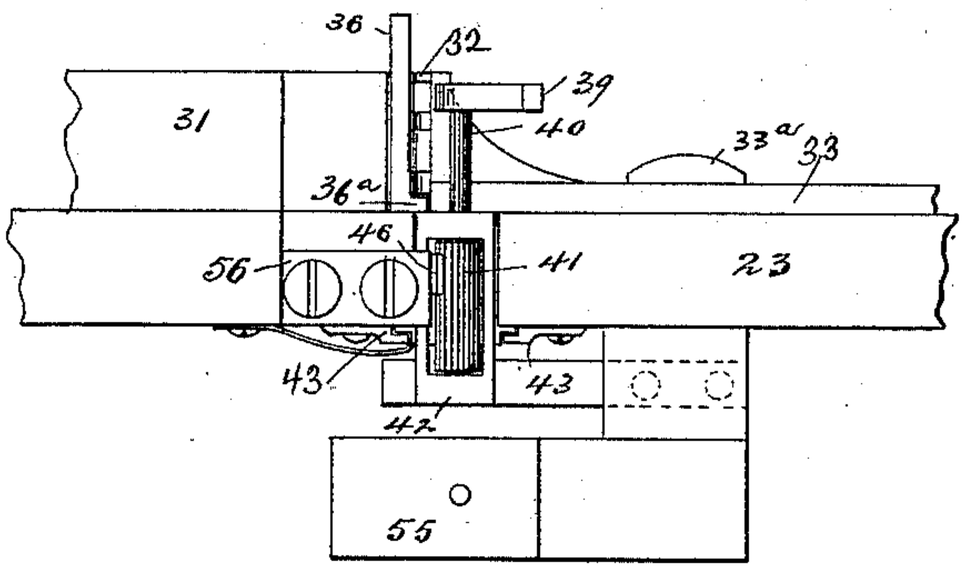
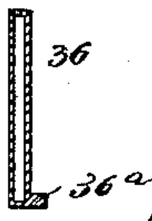


Fig. 7.



Witnesses,
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UNITED STATES PATENT OFFICE.

JOHN B. ODELL, OF CHICAGO, ILLINOIS, ASSIGNOR OF TWO-THIRDS TO HORATIO N. MAY AND NATHANIEL S. JONES, OF SAME PLACE.

TYPE-SETTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 434,942, dated August 26, 1890.

Application filed December 14, 1889. Serial No. 333,742. (No model.)

To all whom it may concern:

Be it known that I, JOHN B. ODELL, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Type-Setting Machines, of which the following is a specification.

This invention has for its object to provide a practical machine for setting type in line and forming the lines into columns. In the organization of this machine I provide receptacles for holding the type, which are arranged concentrically about a composing-table, the type being fed down by gravity, a bank of keys corresponding in number to the type-holding boxes, levers connecting the key-levers with plungers to force the type, one at a time, from the type-holding boxes upon a support and into position to be grasped by spring-actuated carrying-levers having gripping-jaws which seize the type, and which levers deposit the type in a position opposite the lineway on the composing-table, a pivoted transfer-lever which is operated to take the type from the gripping-jaws and draw them into position in the lineway, and mechanism for moving the lines along the table to assemble them in columns.

In the accompanying drawings, Figure 1 is a perspective view of the device showing one type-compartment and its corresponding lever, the devices for discharging the type and their supporting-frame being omitted. Fig. 2 is a plan view, some parts omitted, and designed particularly to show the arrangement of the key-board and levers. Fig. 3 is a vertical longitudinal section taken centrally of the machine, showing one type-compartment and set of operating-levers and other parts in elevation. Fig. 4 is a broken plan view of the central portion of the composing-table, and showing the mechanisms for assembling the type in the lineway. Fig. 5 is a sectional elevation on line 5 5 of Fig. 4. Fig. 6 is a side elevation of the parts shown in Fig. 4 looking in the direction of the arrow 6. Fig. 7 is a sectional view of a follower, within the hollow of which the ends of a pair of lazy-tongs work, and which is used to support the type in the lineway. Fig. 8 is a detail of one of the key-levers; and Fig. 9 shows an edge and a plan view, respectively, of the gripping-jaws with the type therein.

In the drawings, 10 represents the base, from which rise standards 11, supporting a semicircular table 12, on which the type-boxes 13 are mounted. These boxes are adapted to hold the type superposed upon each other flatwise in single columns and with their faces projecting toward the rear of the boxes. At the lower end of the boxes there is an aperture in the front thereof, above the table 12, through which the type are ejected. There will be as many of these type-boxes as there are letters or characters to be represented in type, and the type themselves are of the form shown in Fig. 9 of the drawings, wherein 14 represents the type and 14^a recesses in one of their edges, for a purpose presently described. There will be as many keys 15 as there are type characters. These keys may be arranged in any desired way, and each key is seated upon a compression spiral spring 16, the lower end of the spring bearing upon the base-plate and the upper end engaging a shoulder on the key or the lower side of the key-lever 17. These key-levers will project parallel to the top of the base-plate, and are pivoted at their rear ends, as shown at 18. The spring 16 yieldingly sustains the key-lever in its normal position, and to said key-lever is pivotally connected a link 19, the upper end of which is connected to a bell-crank lever 20, the upper member of which operates a plunger 21, whereby each time a key is depressed the plunger ejects a type through the aperture in the front of the type-boxes 13.

22 are standards rising from the base of the machine and supporting thereon the composing-table 23. 24 is a semicircular plate connected with this table. 25 are the type-carrying levers, which are provided with the gripping-jaws 25^a. (Shown in Fig. 9.) One of these jaws may be a spring having bends therein to enter the notches 14^a of the type. The lower ends of the type-carrying levers 25 are pivoted to lugs 24^a on the plate 24, and each has a rearwardly-projecting arm 26, to the end of which is connected a spring 27, the

upper end of which will be secured to a fixed part of the frame, such as the bracket-rod 28. The arm 25 also has an extension 29 in front of its pivot, to which is pivoted a pendent arm 30, the lower end of which has a bearing in a notch 30ª of the key-levers 17. (See Fig. 8.) Two guide-pieces 31 are arranged on the surface of the table 23 parallel to the sides thereof and a distance apart equal to the width of the column which it is desired to set.

32 is a plate carried on the end of a sliding bar 33, and which plate constitutes one side of the lineway. The bar 33 will have cap-screws 33ª, passing through the slots 33ᵇ into the bed-plate to allow of the free movement of the bar preferably the width of the line of type. The outer end of the plate may terminate in a handle 34. The second wall of the lineway is formed by a block 35, having thereon springs 35ª, adapted to bear against the guide-pieces 31, so as to hold said block up against the type.

36 is a follower which is shown in cross-section in Fig. 7. This follower is a box-like structure having one open side, and into its hollow is projected the end members of a lazy-tongs 37, which will be pivoted to the frame at 38. These lazy-tongs being operated will cause the follower to move along the lineway, and it is adapted to be moved so as to bring the follower near to that end of the lineway at which the type will be introduced.

In order to prevent the follower from rising by the action of the tongs, it has a projection 36ª at its lower side which travels under the edge of the plate 32.

In order to withdraw the type from the spring-jaws of the type-carrying levers into the lineway, I employ a pivoted transfer-lever having a bent end, which lever is adapted to be turned to bring its end just behind the type and then to be drawn toward the front of the machine, carrying the type with it into the lineway. This transfer-lever and its actuating parts are best shown in Figs. 4, 5, and 6 of the drawings. This lever is marked 39, and it is secured on a stud 40, formed integrally with a pinion 41 journaled in a sliding box 42. This box moves in ways 43 secured to the bottom of the table. Formed on the side of this box are ways 44, in which moves a bar 45, the end of which bar is provided with rack-teeth 46 adapted to mesh with the pinion 41. The bar 45 has a stud 46ª, to which is connected a sliding rod 47, having at its outer end two washers 47ª, between which projects the upper end of a bell-crank lever 48, the lower end of which is pivoted to a stud 49 on the base-plate, the other member 50 of said lever projecting forward.

51 is a bar having ends 51ª secured with the rod 52, the latter being journaled in brackets 53 on the base-plate. The bar 51 is sustained normally parallel to the base-plate by the arm 50, which is held under its weight by means of the coil-spring 48ª, having one of its ends connected to the upright member 48 of the bell-crank lever, and its other end connected, preferably, with the rod 52, having adjusting-nuts 54 on the respective sides of a yoke 55.

The key-levers 17 are adapted when operated, first, to permit the spring 27 to act on the arm 26 of the type-lever 25 to carry the type from the circular table 12 down through the arc of a circle and deposit it on its end upon a block 56 in front of the lineway, and then by the further movement of the key-lever it actuates the transfer-lever 39, bringing it into position to engage the type, and then during the completion of its downward stroke said transfer-lever is moved to withdraw the type from the jaws of the carrying-lever into the lineway. This will be best understood by reference to Fig. 3, wherein the initial movement of the key-lever will be understood to have overcome the superior tension of spring 16 over spring 27, thus allowing the latter to act upon the type-lever 25 and throwing it down, carrying with it the type, as indicated in the dotted lines of said figure. By this time the key-lever 17 will have come into contact with the bar 51 and depressed the latter, which will rock the lever 48 by its engagement with the arm 50, overcoming the tension of the spring 48ª and sliding the rod connected to the rack, which will operate to turn the pinion in its bearing and swing the bent end of the transfer-lever around to the position indicated by the dotted lines in Fig. 4. By this time the rack will have reached the limit of its travel, preventing the further turning of the bent end, and the rack and sliding block 42, being now locked together, will both move along the ways 43, thus withdrawing the type from the gripping-jaws by the engagement of the lever 39 therewith and moving it into the lineway.

In order to hold the type within the lineway, I provide a spring-catch 57, having an engaging-point located at the adit of the lineway, and which is pressed back out of the way by the entering type and immediately closes behind it, thus maintaining it, by its co-operation with the follower, in an upright position. Upon the release of the key the movement just described will be reversed—that is to say, the spring 16 will first act to free the key-lever from its contact with the bar 51, and this in turn will allow the spring 48ª to draw the lever 48 back to its normal position, and during the movement of the latter the rack will first be thrown forward until its stud comes in contact with the stop 58. During this part of the movement the transfer-lever 39 will have been turned back to its first position, and when the rack and bar are again locked to the sliding block 42 the latter will be moved back to its original position. The upward movement of the key-lever will act through the arm 30, under the influence of the spring 16, to return the type-lever 25 back to its original position, distending the spring 27. As this type-lever is returned, the force of the spring 16 will be sufficient to cause the

gripping-jaws to engage another type, and thus the working cycle of the machine is completed.

It will be observed that the key-levers 17 must be pushed downward far enough to allow the type-levers 25 to deliver the type upon the block 56 before striking the bar 51 and the notch 30[a] in the key-levers 17 deep enough to allow the key-levers to travel downward far enough to fully operate the transfer device without disengaging the pin 30[b] therefrom. As the key-levers are of different lengths, according to their position on the key-board, and all have the same stroke, and the levers 30, operating the type-levers 25, all have the same stroke, but occupying different positions upon the key-levers 17, according to the position of the type-levers 25, with which they are engaged, it follows that there is a difference in the stroke of the key-levers 17 at the point where the levers 30 enter the slots 30[a], and this difference is compensated for by slotting the rod 51, so that the key-levers 17 may travel downward far enough to allow the type-levers 25 to deliver the type upon the block 56 before operating the transfer device.

I claim—

1. In a type-setting machine, the combination, with a type box or compartment from which the type are removed one at a time, of an operating-key having a spring to return it to its normal position, a type-carrying lever pivoted at its lower end and provided with type-grasping jaws at its opposite end, an arm seated on the key-lever and normally supporting the carrying-lever in a position to grasp the type, and a spring for actuating the type-carrying lever to deliver the type at the lineway, substantially as described.

2. In a type-setting machine, the combination, with a type-holding compartment from which the type are removed singly, of a key-lever, a type-carrying lever adapted to engage the type, a pendent arm pivoted to the type-carrying lever and loosely bearing on the key-lever, a spring to sustain the key-lever and through said arm the type-carrying lever in a position to normally engage the type, and a spring to depress the type-carrying lever when the key-lever is depressed, said loose connection permitting the type to be delivered opposite a lineway and there remain during the continuation of the movement of the key-lever, substantially as described.

3. In a type-setting machine, the combination, with a type-holding compartment and means for carrying the type therefrom to a common point opposite a lineway, of a composing-table having the lineway thereon, and a pivoted and horizontally-movable transfer-lever, and means for turning said transfer-lever on its pivot to engage the type and for moving the lever with the engaged type, said means being actuated by the key-lever, whereby to draw the type into the lineway, substantially as described.

4. In a type-setting machine, the combination, with the composing-table having a lineway formed thereon opposite which the type are delivered singly, of a pivoted transfer-lever adapted when turned on its pivot to be brought to engage the type, said transfer-lever being mounted in a sliding frame, and connections between said lever and frame and the key-lever whereby the movement of the key-lever is made to first turn the transfer-lever to engage the type and then move the same to draw the type into the lineway, substantially as described.

5. In a type-setting machine, the combination, with a type-compartment from which the type are removed one at a time, of an operating-key, a carrying-lever for the type actuated by said key, a composing-table having a lineway thereon opposite which the type are delivered, a pivoted and horizontally-movable transfer-lever operated by the key-lever to draw the type into said lineway, and a follower in said lineway against which the line is formed, substantially as described.

6. In a type-setting machine, the combination, with a composing-table having a lineway thereon, into the end of which the type are introduced, of a follower against which the line of type is formed and a lazy-tongs loosely connected at one end to the follower and secured against endwise movement at the end opposite the follower, substantially as described.

7. In a type-setting machine, the combination, with means for delivering the type at a common point opposite a lineway, of a transfer device comprising a lever pivoted in a sliding frame, a sliding rod adapted to turn said lever on its pivot to cause it to engage the type, and a lever connected with said rod and actuated by the key-lever to withdraw the type into the lineway, substantially as described.

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