K. S. REIST & S. B. BATSFORD.

DISTRIBUTER AND ASSEMBLER FOR LINOTYPE MACHINES.

APPLICATION FILED JULY 26, 1909.

1,005,576.

Patented Oct. 10, 1911.

3 SHEETS—SHEET 1.

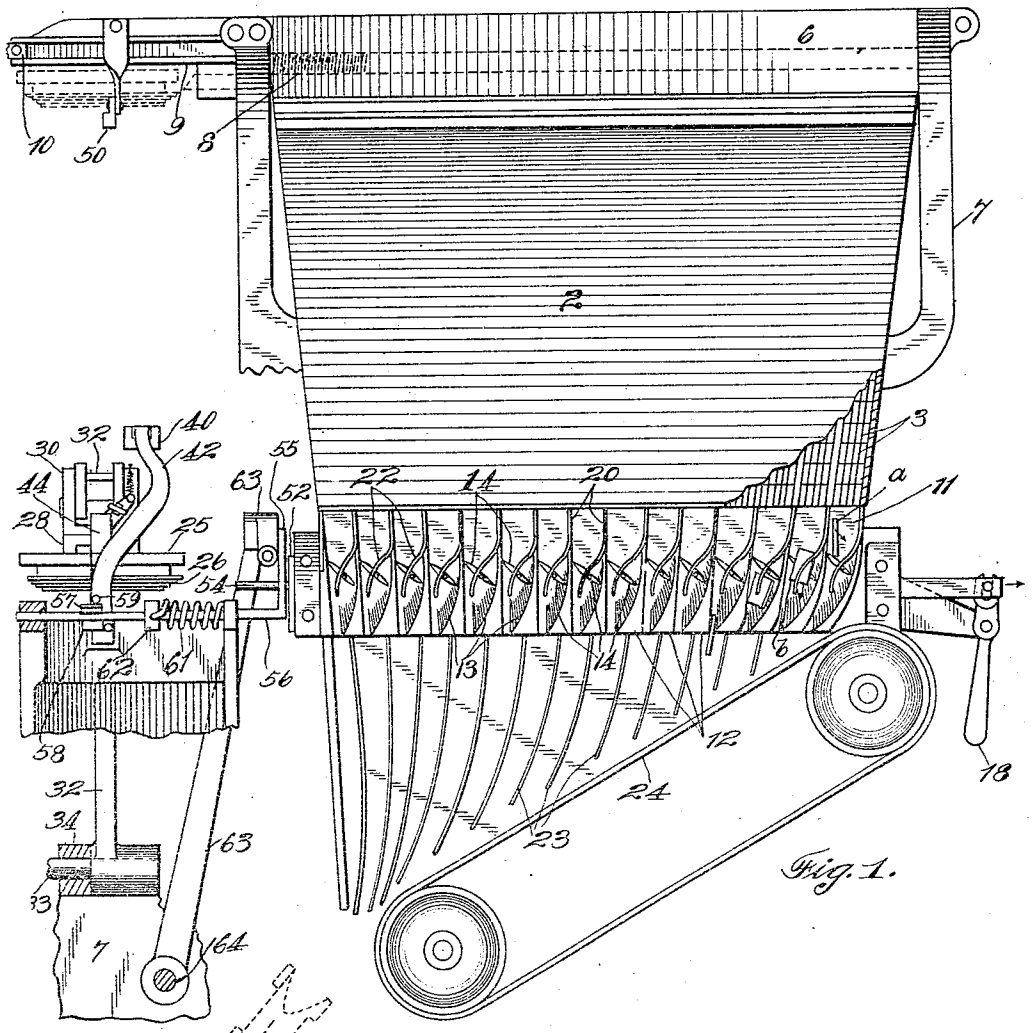

Fig. 1.

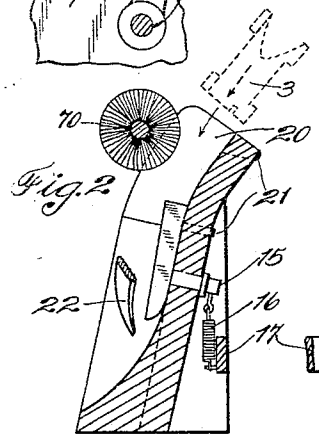

Fig. 2.

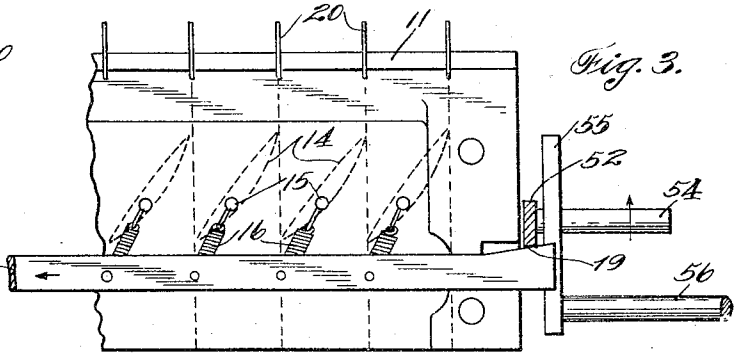

Fig. 3.

Witnesses;

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By Geo. H. Strong

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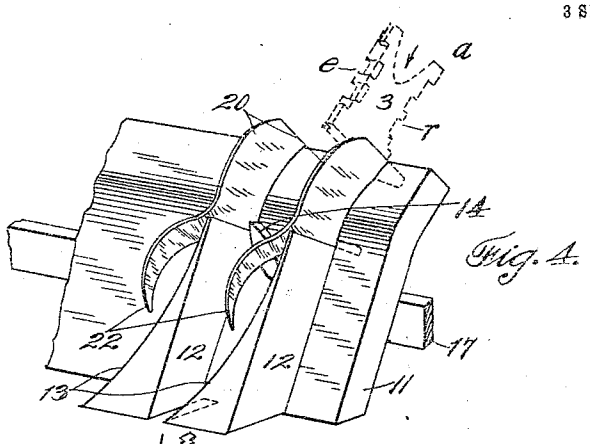


Fig. 4.

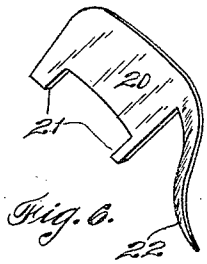
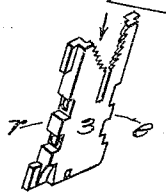


Fig. 6.



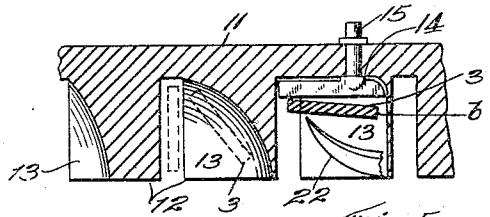


Fig. 5.

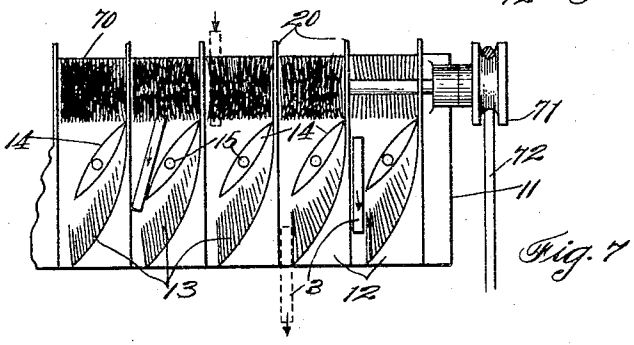


Fig. 7

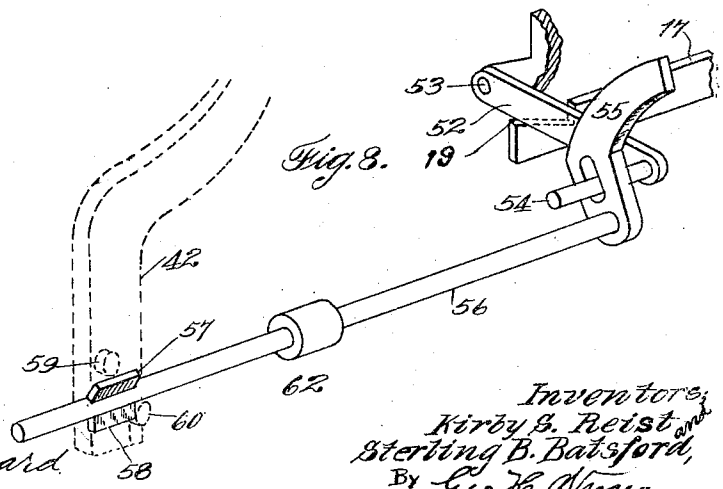


Fig. 8.

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APPLICATION FILED JULY 26, 1909.

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3 SHEETS—SHEET 3.

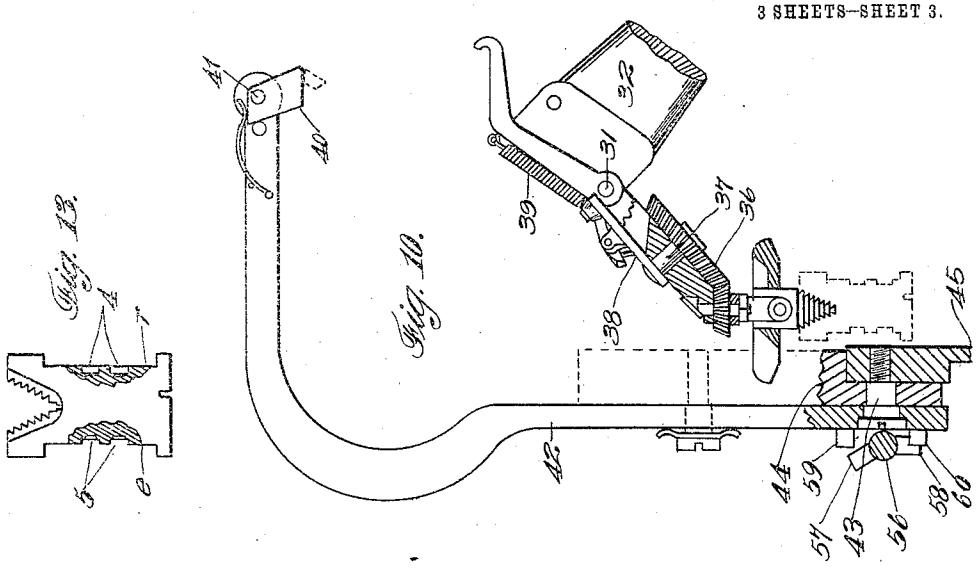

Fig. 10.

Fig. 12.

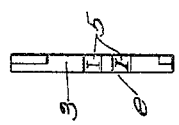

Fig. 13.

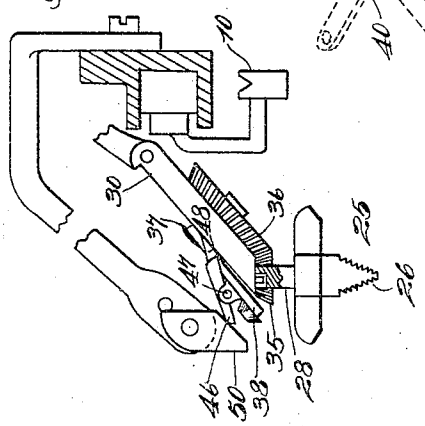

Fig. 11.

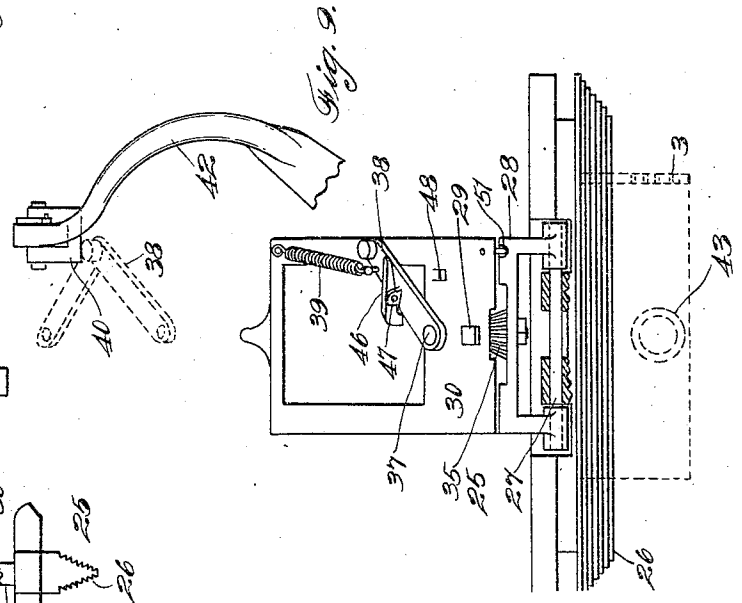

Fig. 9.

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UNITED STATES PATENT OFFICE.

KIRBY S. REIST AND STERLING B. BATSFORD, OF BERKELEY, CALIFORNIA.

DISTRIBUTER AND ASSEMBLER FOR LINOTYPE-MACHINES.

1,005,576. Specification of Letters Patent. Patented Oct. 10, 1911.

Application filed July 26, 1909. Serial No. 509,486.

To all whom it may concern:

Be it known that we, KIRBY S. REIST and STERLING B. BATSFORD, citizens of the United States, residing at Berkeley, in the county of Alameda and State of California, have invented new and useful Improvements in Distributers and Assemblers for Linotype-Machines, of which the following is a specification.

This invention relates to linotype machines, and pertains especially to assembling and elevating mechanisms therefor.

It is a primary purpose of our invention to provide means whereby a single magazine, linotype machine operating the standard matrices having, instead of two-letter molds or intaglios, four, two being cut upon each of its longitudinal edges, will have its "face" or font capacity increased one hundred per cent., without increasing the number of matrices, or changing their standard form in any degree, and without increasing the cost of the machine, or making expensive alterations or adding cumbersome attachments.

Another purpose of our invention is to provide a simple selecting mechanism whereby the operator may at will select a choice of faces or fonts; and further, a provision is made for automatically arranging the matrices in proper position before being deposited in the magazine.

The invention consists of the parts, the construction and the combination of parts, or their equivalents, as set forth in the specification and shown in the accompanying drawings, in which—

Figure 1 illustrates the magazine, and a portion of the frame of a linotype machine, with the invention applied. Fig. 2 is a cross section through the switch-block. Fig. 3 is a rear view of a portion of the switch-block and switch-bar. Fig. 4 is a perspective of a fragment of the switch-block showing a matrix reversed. Fig. 5 is a longitudinal section of a portion of the switch-block. Fig. 6 is a perspective of a guide blade. Fig. 7 represents a front elevation of the switch-block, showing the switches in the open or normal position, and the accelerating brush. Fig. 8 illustrates the pawl shifter. Fig. 9 is a front elevation of the elevator, and shows the pawl arm broken away. Fig. 10 shows in cross section the elevator, and in detail the pawl arm secured to the back plate and guide of the machine. Fig. 11 shows the elevator in the upper position. Fig. 12 represents the position of the matrix as it enters the magazine. Fig. 13 is a side view of a four letter matrix.

This machine is designed to operate upon a single "set" of four-letter matrices bearing two intaglios or letters upon each longitudinal, parallel edge, and for this purpose we embody means whereby each and every one of the matrices of this single "set" may be reversed or turned about its vertical axis, so that a choice of either of its letter faces may be utilized. It is important since only one "set" of matrices is employed, that means be provided whereby each matrix will be caused to assume a normal or given position in the magazine.

In Figure 1 is shown the usual magazine 2 containing properly segregated matrices 3 having two of the faces or edges *r* and *e* provided with character intaglios 4 and 5, (Fig. 13.) The regular face, designated *r*, may be provided with characters of standard or popular "faces" or fonts as a "body" character, and an italic, while the other or opposite edge *e* may carry a display character and a "black" face, or other variant, the position of the characters coinciding when the matrix is turned. The magazine 2 is suitably connected with its distributing box 6 secured upon the standard or frame 7, and within which is the distributing mechanism as shown by the screw 8. Extending to the left from the distributer box 6 is a track 9, upon which is a suitably driven shifter slide 10, by which the matrices are shifted into the distributing box 6.

Our invention resides in the embodiment of a means for so manipulating the double edged matrices that, at will, the operator may select the extra letters, or the regular fonts, and we employ in combination with the selective mechanism, returning mechanism.

While we may use any suitable means for selecting the obverse or the reverse edges *r* or *e*, a simple form is shown comprising a removable entrance plate or block 11, situated proximate the lower end of the magazine 2 and having a series of channeled ribs 12, one face 13 of which is concaved. Mounted in each channel between the ribs 12 (Fig. 2) is a switch or guide 14 adapted to be swung to oblique, opposite positions

across the channel. Each switch is provided with a post 15 journaled in and projecting through the block 11, and connected by suitable, flexible members as spring links 16, to a switch bar 17, mounted for reciprocation in the rear of the block 11. The switch bar 17 projects slightly from the right-hand end of block 11, and is operated by a convenient handle 18. The left-hand end of the switch-bar is provided with a cam or wedge 19, the purpose of which will be set forth hereafter. Extending in line with each rib 12 is a removable and renewable blade 20 secured by prongs 21 or equivalent fastenings in the upper portion of the block 11, and each blade is provided with a cam finger 22, curved angularly and downwardly between two adjacent, parallel ribs 12, Fig. 4.

The mode of operation of the device as far as described, is as follows:—The matrices 3, when they escape from the magazine 2, are in a position indicated in dotted lines *a*, Fig. 4, thus exposing the regular font *r* to the casting mechanism (not shown) if they are allowed to pass the switches 14 without interference, which will be the case when the switches are in their normal inoperative position, as shown in Fig. 7. When the switches are in the normal open position, the matrices enter the channels between the ribs 12, slip past the open switches 14, and the fingers 22, without being turned over. Now, if the operator wishes to set a line of black face or such other extra, or display faces, as may be cut upon the reverse edge *e* of the matrix 3, he will simply throw the lever or handle 18 so as to pull over the switch bar 17, which will cause every switch 14 to turn about a quarter revolution, through the instrumentality of the connecting elements 16, which position is well shown in Figs. 1, 2, 3, 4 and 5. In consequence of this, as each matrix escapes from the magazine 2, and enters the channeled block 11, its lower edge engages the upper end of the switch 14, is thereby deflected and partly turned until it assumes the position *b* across the channel between the switch 14 and the cam-finger 22, Fig. 5. As soon as the matrix 3 clears the switch 14, it encounters the concave wall 13 of the rib 12, and is thereby gradually turned until it has completely turned its reverse edge *e* inwardly, and the edge *r* outwardly, or, to be precise, the matrix 3 is turned about a vertical axis 180 degrees, with the result that the extra face *e* is now in position to be presented to the casting mechanism. After leaving the switching mechanism the matrices fall through the usual assembler guides 23 and upon the assembler conveyer 24, Fig. 1, by which they are taken to the assembler (not shown). After the matrix has traveled its usual circuits and performed its several functions, none of which relate to the subject matter of this invention, it is delivered to an elevator 25, Fig. 9, comprising an elevator bar 26 pivoted at 27, to a turntable 28 journaled for rotation upon a stud 29 fastened in the lower end of an elevator link 30. The link 30 is pivoted at 31 to an elevator lever 32 mounted upon a shaft 33 journaled in bearings 34 of the main frame 7, the lever 32 being actuated by the usual elevator cam, not shown. It is now apparent that if the operator has just set a line of matrices in such position that the extra fonts *e* were utilized and all the matrices in the line have a position which is reversed relative to those in the magazine then these matrices must be again turned so that when they are deposited within the magazine they will be in similar positions, relative to their font or face edges, with those already therein; in other words, all matrices must have a given normal "face" disposition in the magazine, which will be, preferably, such that the standard body faces may pass through the switch channel unmolested after being released from the magazine, in which event the operator leaves the handle 18 and switch bar 17 in their normal position with the switches 14 open. Therefore, for the purpose of automatically causing the line of reversed matrices to be properly positioned in the magazine, we have provided a simple means having this function, though we do not wish to be limited to the form or relative arrangement of the means as shown, as we aim to demonstrate by the device shown simply a means by which the functions of our invention may be accomplished. The means for re-turning the matrices 3 may be installed at any convenient location, but in this instance we have so designed and constructed the usual elevator 25 that the bar 26 is turnable relatively to the link 30; thus when a line of matrices 3 has been placed upon the elevator bar 26 the whole line may be lifted by the elevator arm 32 in the usual well known manner, or if necessary the line may be re-turned, if the matrices composing it have all been "reversed" by the switches 14.

As here shown in Figs. 9 and 10, the turntable 28 has secured rigidly upon it so as to surround the stud 29, a pinion 35, meshing with a gear 36 fastened on a rocker-shaft 37, journaled in the link 30, having a rocker-arm or crank 38 fastened upon its upper end. A spring 39, or other suitable connection between the crank 38 and the link 30, holds the elevator bar 26 in its normal position, Fig. 9, by means of the gears 35—36. When the operator wishes to set a line of matrices 3 utilizing the extra fonts *e*, he shifts the switch bar 17 and switches 14, reversing the matrices which are ultimately deposited, in a position reverse to normal, upon the elevator bar 26,

that is, the regular letter faces *r* outward. As the loaded elevator ascends, carried by the lever 32 the crank 38 encounters a suitable pawl 40 pivoted at 41 upon a shiftable arm 42 secured by a screw 43 to the usual elevator guide 44 and back plate 45 of the machine; and as the elevator continues to ascend, the crank 38, held at its outer end by the pawl 40, turns about its axis, carrying the gear 36, which in turn actuates the pinion 35, thereby swinging the turntable 28 and the pivoted elevator bar 26 a half turn about the stud 29 of the link 30; thus the matrices which were deposited in a "reversed" position are now carried around 180 degrees by the turnable elevator bar 26. The crank 38 carries a small pawl or detent 46, pivoted at 47, adapted to ride over a lug 48 on the surface of link 30 as the crank 38 passes downwardly over it; but as the crank frees itself from the pawl 40, and the spring 39 pulls the crank back, the detent will engage the lug 48 and hold the several turnable members 35 and 36 against the reaction of the now extended spring 39. The elevator 25 with the now re-turned matrices 3, carries them up into register with shifter slide 10, Figs. 1 and 11, by which they are removed from the elevator bar 26 into the distributer box 5 where the usual screw mechanism 8 distributes them. As the elevator 25 descends, Fig. 11, the detent 46 engages a pivoted cam 50, or other suitable device, which depresses it so that the lug 48 escapes, and the spring 39 reacts and pulls up the crank 38 simultaneously swinging around the turntable 28 and the suspended elevator bar 26 which is stopped at its normal position by a stop pin 51 in the link 30, engaging the turntable 28, Fig. 9.

In order that the turnable elevator turntable 28 may act coördinately with the switching mechanism, means are provided by which, when the switch arm 17 is pulled out by the operator to "reverse" or turn the matrices 3, the pawl arm 42 may be connected to suitable reciprocating or oscillating elements of the machine, and shifted so that the pawl 40 will engage the crank 38 and turn the turntable 28. The means mentioned to perform this function comprise a lever 52, Fig. 8, pivoted as at 53, to any portion of the frame 7 contiguous to the cam 19 of the switch bar 17, so that when said bar is pulled toward the right by the operator, the cam 19 will lift the lever 52, in the end of which is a wrist-pin 54, which engages a slotted arm 55 secured upon a rocker-shaft 56. The rocker-shaft 56 is journaled conveniently upon some portion of the machine as the back plate 45, and is provided with wings 57—58 adapted to be turned into engagement with complementary pins 59—60 on the shiftable pawl-lever 42, Fig. 10. The pin 59 is just above the pivot 43, while the pin 60 is below it, and the wing 57 on rocker-shaft 56 is normally held up behind the pin 59, of lever 42, by means of a spiral spring 61, Figs. 1 and 8, one end of which is secured in a collar 62 fastened on shaft 56, and the other end being secured to the fixed frame. This spring 61 is also under compression so that it tends to normally force the rocker-shaft 56 away from the lever 52 a limited distance, hence the wrist-pin 54 is made sufficiently long to allow for this longitudinal movement of the shaft 56, and still remain in the slotted arm 55. Thus if the rocker-shaft 56 were at its extreme left-hand position and the operator would pull over the switch bar 17, then the cam 19 would raise lever 52 turning, by means of the wrist-pin 54 and the arm 55, the rocker-shaft until the lower wing 58 would stand vertically behind the pin 60 on the shifter lever 42, Figs. 8 and 10. The spring 61 is effective against the collar 62 to keep the wings 57—58 to the left of the pins on the lever 42 thus keeping the slotted arm 55 in contact with the rockable space-band lever 63, Fig. 1, which is pivoted at 64 in suitable bearings and may be actuated by the usual cams provided for this purpose (not shown). The operator having shifted, by means of the handle 18, the switch bar 17, consequently rocking the shaft 56 until the wing 58 is in the rear of pin 60, then when the space-band lever 63 rocks on its pivot 64 toward the right (Fig. 1) it will engage the arm 55 of shaft 56 and shift it longitudinally, compressing the spring 61, and by means of the engagement of wing 58 with pin 60, the pawl-carrying arm 42 will be slightly turned on its fulcrum 43, thrusting the pawl 40 into the path of the elevator 25 so that the crank 38 will be actuated, as the elevator is raised, to re-turn the line of matrices 3.

When the operator wishes to discontinue reversing the matrices 3 as they leave the magazine he pushes the switch-bar 17 to the left which changes the position of all the switches 14 and allows the cam lifted lever 52 to fall under the impulse of the spring 61 through arm 55 of the shaft 56. This action disengages the wing 58 from pin 60, and the spring 61 shifts the shaft 56 to the left so that wing 57 is brought upward and behind pin 59 of lever 42. The first right-hand motion of the space-band lever 63 will then carry the arm 55 and shaft 56 over, and by reason of the engagement of wing 57 with pin 59, the lever 42 will shift pawl 40 out of the path of the elevator 25, and the crank 38 will not be actuated to turn the turntable 28, therefore this particular line of matrices will not be "returned" since they were not "reversed" in the switch-block 11, and may be carried to the distributer

mechanism in the usual, normal position. It has been stated hereinbefore that the turntable 28 is always turned to its normal position before it is lowered by means of the pawl cam 50 and the release of detent 46.

It is manifest that we have provided a simple, inexpensive mechanism whereby the capacity of the machine is increased one-hundred per cent., and this without the addition of a single extra matrix, or cumbersome attachments, and without altering the general machine, or the key-board in any way.

For the purpose of accelerating the motion of the matrices 3 as they enter the channeled block 11, a suitable roller or brush 70 may be mounted over the blades 20, and be driven by means of pulley 71 and belt 72 from any convenient source of power or motion on the machine.

We have found that by a proper disposition of this brush, its action will be such that it will operate in conjunction with the switches 14 to turn the matrices without the assistance of the fingers 22.

Having thus described our invention, what we claim and desire to secure by Letters Patent is—

1. In a linotype machine having a matrix magazine and channeled ribs in line with the discharge thereof, means for turning a matrix about its vertical axis during its passage through the channel, said means including a concaved surface in the channel onto which the matrix is directed, and turned on its passage thereover, and a shiftable guide for directing the matrix toward said surface.

2. In a linotype machine having a matrix magazine and channeled ribs in line with the discharge thereof, means for turning a matrix about its vertical axis during its passage through the channel, said means including a concaved surface in the channel onto which the matrix is directed, and turned on its passage thereover, and a switch interposed in the path of the matrix and adapted to direct the matrix to said surface, said switch being also adapted to obstruct the entrance to said surface and direct the matrix through the channel without turning.

3. In a linotype machine, the combination with a matrix magazine of channeled ribs in line with the discharge thereof and having concaved faces upon one side, and means movably mounted within the channels and coacting with said concaved faces to turn a matrix about its vertical axis and reverse the position in which it entered the channels.

4. In a linotype machine, the combination with a matrix magazine, of channeled ribs in line with the discharge thereof, and means for reversing the position of a matrix entering said channel by causing it to turn about its vertical axis, said means including a concaved surface in the channel and means for diverting the course of the matrix through the channel and directing it over said concaved surface.

5. In a linotype machine, the combination with a matrix magazine, of channeled ribs in line with the discharge thereof, means for reversing the position of a matrix entering said channel by causing it to turn about its vertical axis, said means including a concaved surface in the channel and means for diverting the course of the matrix through the channel and directing it over said concaved surface, said means including a switch member adapted to be turned into the path of movement of a matrix to thereby divert its course and direct it over said concaved surface.

6. In a linotype machine, channeled ribs located in line beneath the matrix magazine and having concaved faces, devices located above said faces, switch bars turnable upon the bottoms of the channels and coacting with the concaved faces and devices, to guide the matrices directly, or to turn them about their vertical axes during the passage through the channels.

7. In a linotype machine, channeled ribs located in line beneath the matrix magazine discharge, and having concaved faces upon one side, devices located above said faces, switch bars mounted upon turning-posts projecting through the bottom of the channels, and connections by which said posts and bars may be turned to guide the matrices from the matrix magazine or turn them about their vertical axes to present either edge to the front.

8. In a linotype machine, channeled ribs located beneath the matrix magazine discharge, having one curved concaved face, and coacting means projecting above said face, switch levers turnable upon the bottom of the channels, posts extending through the bottoms of the channels to which the levers are fixed, rocker arms connecting with each post, and a shifting rod whereby the switch levers may be turned to change their angular position within the channels.

9. In a linotype machine, a matrix magazine adapted to contain matrices, assembler guides through which said matrices are deliverable from the matrix magazine, and a mechanism for directly guiding or turning the matrices about their vertical axes between the matrix magazine and assembler guides, said mechanism including ribs having one curved concaved face, fixed fingers projecting into the channels between the ribs, switch bars mounted upon turnable posts passing through the bottoms of the channels, and rocker-arms and connecting rods whereby the angle of the switches upon the bottom of the channels may be changed.

10. In a linotype machine, mechanism located between the matrix magazine and the

assembler and including a matrix-directing element and a concaved surface onto which the matrix is directed whereby the matrices may be delivered to present one edge or turned about their vertical axes to present the opposite edge, and means for restoring the reverse matrices to the normal position in the matrix magazine, said means including an elevator bar, and a turntable by which said bar is reversed during its ascent.

11. In a linotype machine, the combination of a matrix magazine, means for turning matrices about their vertical axes after leaving the matrix magazine, and means for again turning the matrices about their vertical axes before restoring them to the matrix magazine, said last named means including an elevator bar upon which the matrices are received, a turn table upon which said bar is carried, and means whereby the table and bar are turned a half revolution, and brought into position to deliver the matrices to the distributer.

12. In a linotype machine, mechanism for reversing the matrices previous to distribution, said mechanism including a matrix-receiving bar and an elevator, a pinion connected with the bar, a gear carried by the elevator, a lever arm fixed to the gear shaft, a spring by which the lever arm is normally drawn in one direction to revolve the gears and turn the matrix-carrying bar, and means by which the bar may be turned in the opposite direction during the movement of the elevator.

13. In a linotype machine, an elevator bar adapted to receive matrices, a pivot upon which said bar is turnable, a pinion connected with the bar, a gear engaging the pinion, a crank arm upon the gear-shaft, a lug in the path of travel with which the crank contacts to turn the elevator bar a half revolution, and a detent to retain the bar in its turned position.

14. In a linotype machine, an elevator bar adapted to receive matrices, a central pivot upon which the bar is turnable, a gear and pinoin and an actuating crank arm, a lug with which the crank contacts to turn the bar, a detent to retain the bar in its turned position until the matrices are removed, and a contact piece to disengage the detent and release the elevator bar on its descent.

15. In a linotype machine, an elevator bar adapted to receive and transfer matrices, a central pivot upon which the bar is turnable, an actuating gear and pinion, a crank arm connected with the gear, a lug with which the crank contacts to turn the bar, a detent to retain the bar in its turned position, a contact piece to disengage the detent as the elevator bar descends, and a spring by which the released bar is returned to its first position.

16. In a linotype machine, mechanism to turn the matrices about their vertical axes after leaving the matrix magazine, an elevator bar to return the matrices to the distributer and matrix magazine, mechanism by which said bar may be turned before reaching the discharge point, and connections whereby a synchronous action of the turning devices is insured.

17. In a linotype machine, mechanism to turn the matrices about their vertical axes after leaving the matrix magazine, an elevator bar to return the matrices to the distributer and matrix magazine, mechanism by which said bar may be turned before reaching the discharge point, and connections actuated by the primary switch lever whereby the turning mechanism of the elevator bar may be engaged or released.

18. In a linotype machine, the combination with a matrix magazine, and channeled ribs in line with the discharge thereof, of means for turning the matrices about their vertical axes while passing through the channels, and co-acting brushes located at the entrance to the channels in advance of the matrix turning means for accelerating the travel of the matrices through the channels.

19. The combination of a matrix magazine adapted to contain matrices, mechanism to release the matrices, mechanism into which the released matrices pass and by which they may be delivered to present either edge in either direction, said last mechanism including a concaved surface and a device for directing the matrices thereover, and mechanism capable of acting in unison with the reversing mechanism to return the matrices to the matrix magazine in their normal position.

In testimony whereof we have hereunto set our hands in the presence of two subscribing witnesses.

KIRBY S. REIST.
STERLING B. BATSFORD.

Witnesses:
GEO. H. STRONG,
CHARLES EDELMAN.