

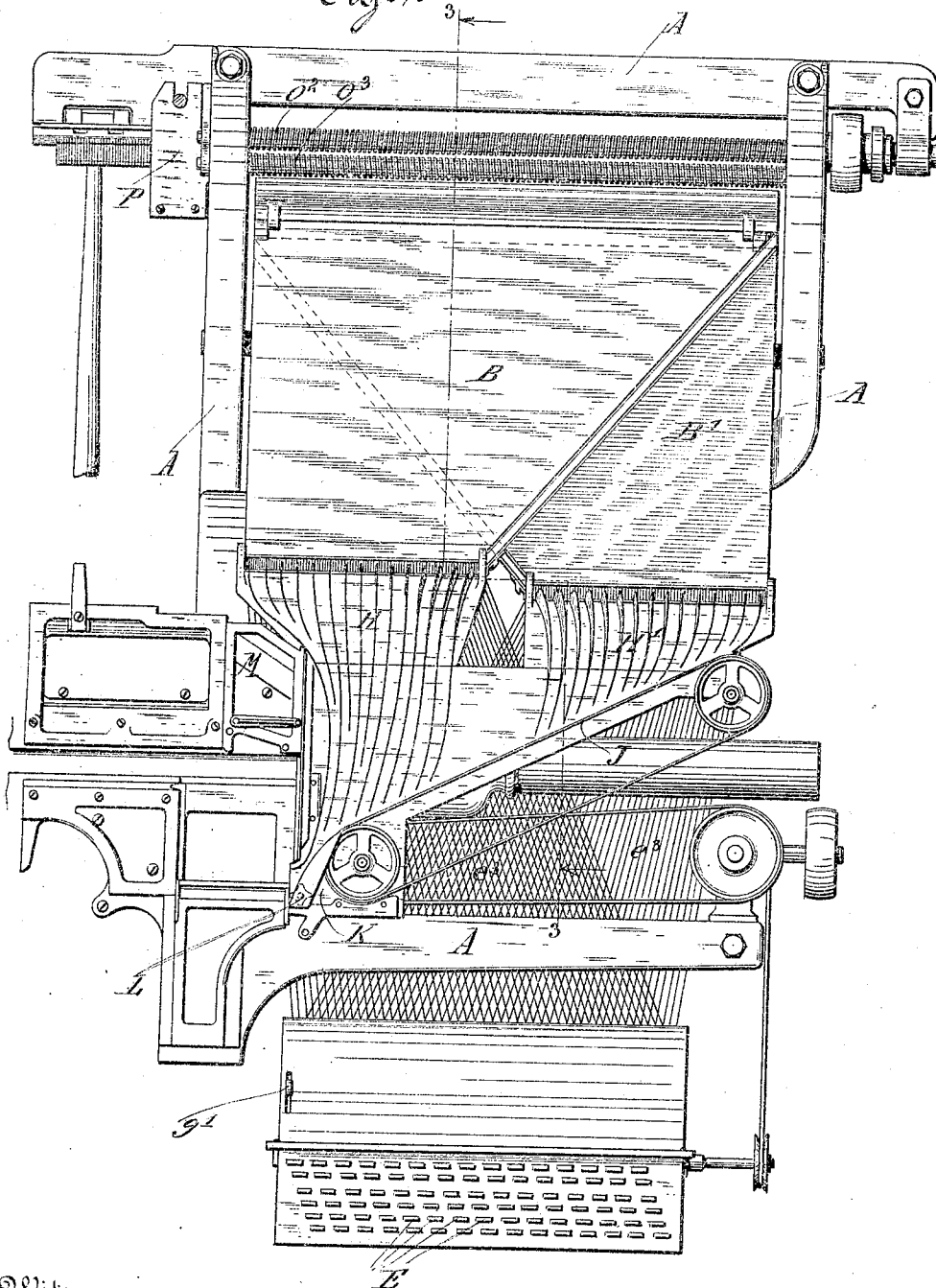
No. 812,585.

PATENTED FEB. 13, 1906.

C. MUEHLEISEN.
TYPOGRAPHIC MACHINE.
APPLICATION FILED OCT. 20, 1905.

3 SHEETS—SHEET 1.

Fig. 1.



Witnesses
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3 SHEETS—SHEET 2.

Fig. 2.

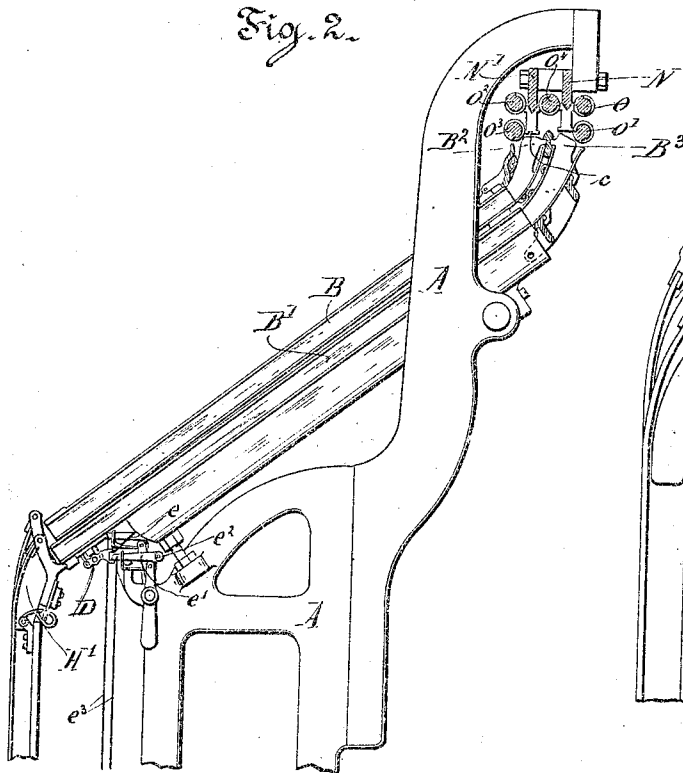


Fig. 3.

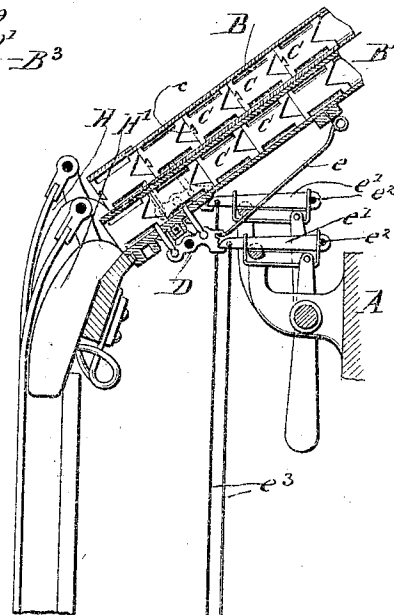


Fig. 11.

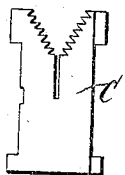
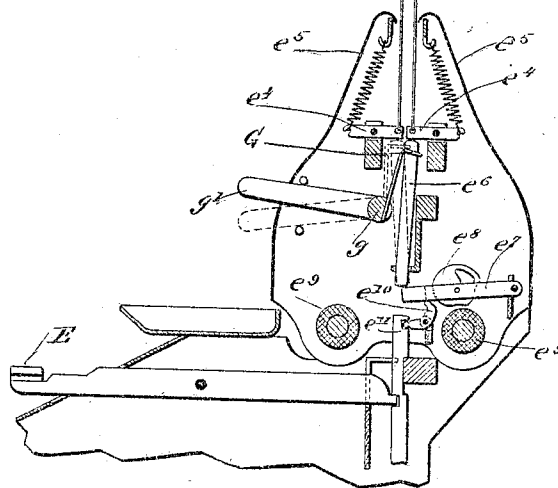
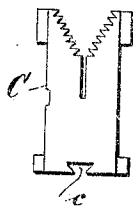


Fig. 12.



Witnesses
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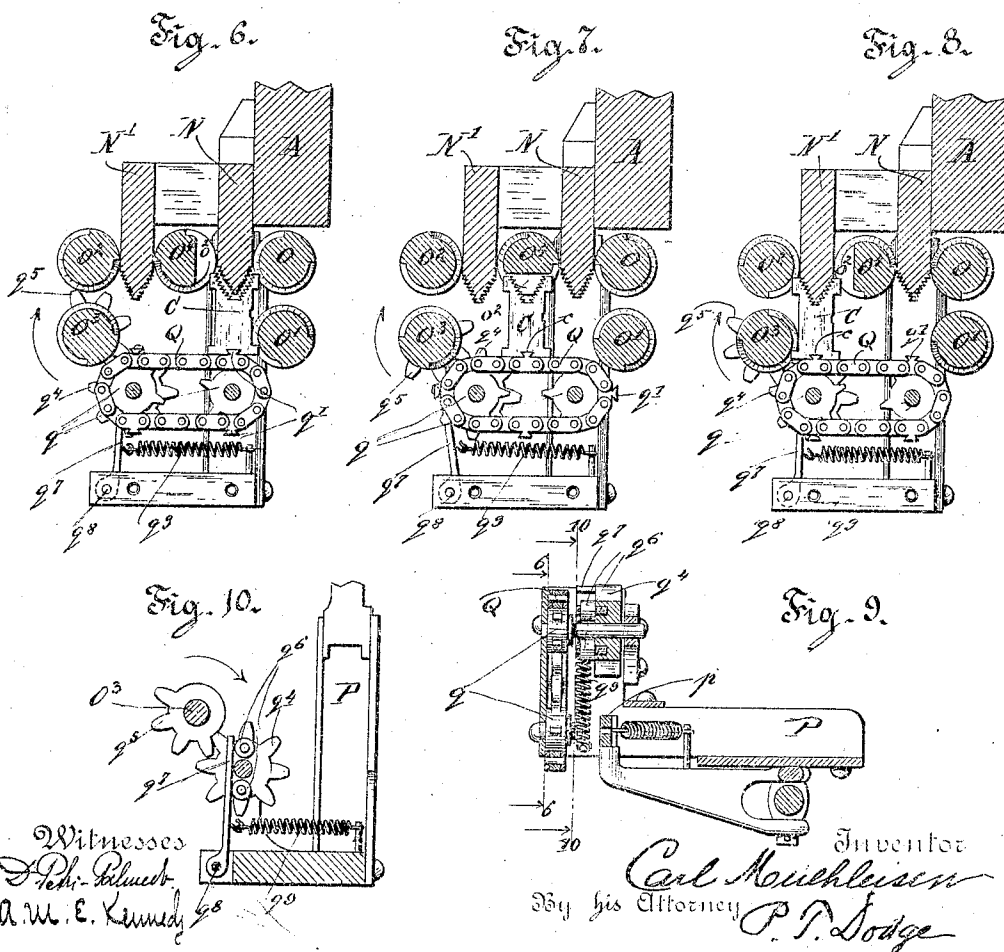
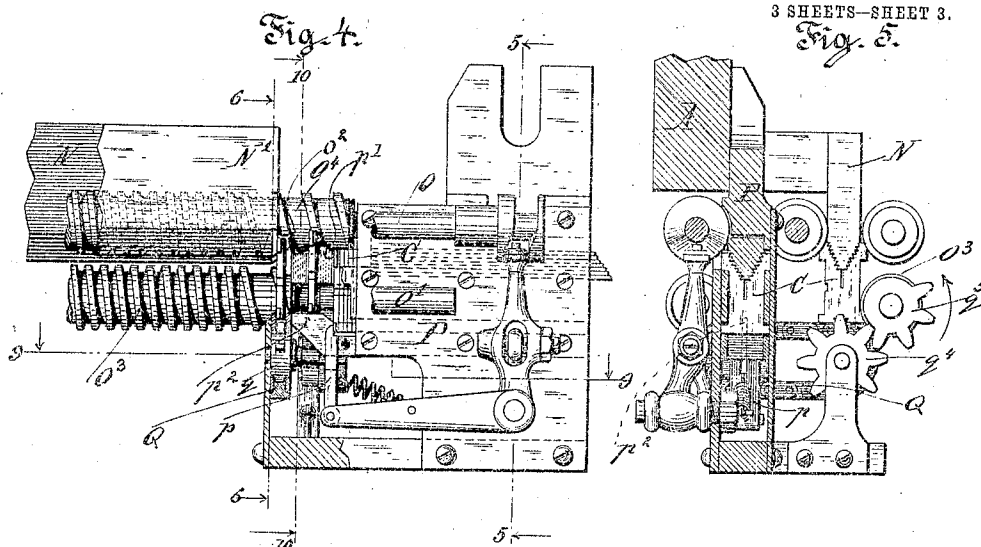
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

CARL MUEHLEISEN, OF BERLIN, GERMANY, ASSIGNOR TO MERGENTHALE
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TYPOGRAPHIC MACHINE.

No. 812,585.

Specification of Letters Patent.

Patented Feb. 13, 1906.

Application filed October 20, 1905. Serial No. 283,603.

To all whom it may concern:

Be it known that I, CARL MUEHLEISEN, of the city of Berlin, in the Empire of Germany, have invented a new and useful Improvement in Typographic Machines, of which the following is a specification.

My invention relates to that class of linotype-machines wherein two magazines, each containing a set or font of matrices, are combined with means for delivering the matrices of either or both magazines to mechanism whereby they are assembled in line for use in connection with the slug-casting devices and with a distributing mechanism whereby the matrices in the composed lines are returned to the magazine-channels from which they were delivered.

My invention further relates to an improved construction and arrangement of the magazines and the devices for releasing and assembling the matrices, having in view more particularly simplicity of construction and freedom of access to the working parts, and also relates to improvements in the distributing mechanism whereby the matrices in the same composed line are separated and delivered to the distributing devices of the respective magazines.

With the exception of the parts herein shown and described the machine may be of the same general construction and organization as that represented in Letters Patent of the United States Nos. 436,532 and 557,000, the present invention having no special relation to the casting mechanism or the parts for transferring the composed line from the assembling devices thereto or to the distributing devices therefrom.

Referring to the drawings, Figure 1 is a front elevation showing the magazines, assembling devices, distributors, and attendant parts. Fig. 2 is a side elevation of the same, viewed from the right, with the upper end of the magazines and the distributor in section on the line 2 2, Fig. 1. Fig. 3 is a vertical section through the delivery ends of the two magazines and adjacent parts on the line 3 3, Fig. 1. Fig. 4 is a rear elevation, partly in section, of the distributor-box for disintegrating the lines and delivering the matrices to the respective distributors. Fig. 5 is a vertical cross-section on the line 5 5 of the

preceding figure looking in the direction indicated by the arrow 5. Figs. 6, 7, and 8 are vertical cross-sections on the line 6 6, Fig. 4, 55 with the matrix-separating devices in successive positions. Fig. 9 is a horizontal section on the line 9 9, Figs. 5, &c., showing means for operating the matrix-separating chain. Fig. 10 is a vertical cross-section on the line 10 10, Fig. 4. Figs. 11 and 12 are side views of the matrices intended for the upper and lower magazines, respectively.

Referring to the drawings, A represents the main frame, the form and construction of which may be varied at will provided it is adapted to sustain operative parts.

B and B' are the two stationary inclined magazines to carry the matrices C, which are received at the upper end from the distributing mechanism and delivered at the lower end one at a time by the escapement mechanism, which may be of any suitable construction. The magazines may be of any suitable construction; but they are preferably made each of two parallel plates secured to intermediate spacing-blocks and grooved in their inner faces to receive and guide the upper and lower edges of the matrices, as shown in Figs. 1 and 3. The magazines are diminished in width from the upper to the lower end and have their channels arranged in converging lines, so that while widely separated at the upper end to permit the free entrance of the matrices from the distributor their lower ends are brought together in a comparatively narrow space in order to equalize in each magazine the distance of the delivery-points from the assembling-point in order to prevent transpositions in the composed line.

It is desirable that the lower ends of the magazines and their escapement devices shall be exposed in such manner as to permit of free access thereto. In order to accomplish this result while retaining the wide upper ends of the magazines without unduly widening the machine, the magazines are made of trapezoidal form and arranged one above the other, their upper ends being overlapped, while their lower or delivery ends are carried, respectively, to the right and left, so that they are exposed without overlapping, as shown in Fig. 1.

I believe it to be broadly new to employ in a typographic machine two magazines which overlap at the receiving end, but which are exposed without overlapping at the delivery end. The magazines may be varied in form and arrangement at will, provided the machine possesses the characteristic named.

For the purpose of delivering the selected matrices one at a time I provide at the lower end of each magazine a series of escapement devices D, one for each channel, which may be of any appropriate construction. I have shown them in the form of pivoted levers, each carrying a dog or pawl at opposite ends, as in the ordinary Mergenthaler machine. I connect the escapements through any suitable intermediate mechanism with a series of finger-keys E, representing the various characters, spaces, &c. In the arrangement shown each escapement D is acted upon by a spring e , tending, as usual, to lift the rear end of the lever and depress the forward pawl to release a matrix from the end of the magazine. Each escapement is engaged by a horizontal lever e' , pivoted at e^2 to the main frame. From the lever e' a wire e^3 is extended downward to a short lever e^4 , which is pivoted at its middle in the main frame and urged constantly upward at the rear end by a spring e^5 of strength sufficient to overcome the upper spring e and hold the escapement normally in the position shown in Fig. 3. When the lever e^4 is lifted at the inner end against the strain of spring e^5 , the position of the escapement D is reversed by the spring e and the release of a matrix effected.

For the purpose of actuating the levers e^4 to release the matrices I provide a series of vertically-guided bars e^6 , which are raised through any suitable connections by means of the finger-keys. I preferably employ for this purpose the usual Mergenthaler keyboard mechanism, each key consisting of a vertically-swinging yoke e^7 , carrying a cam e^8 , overlying a continuously-revolving roll e^9 , extending entirely across the keyboard. The yokes are supported normally in such position that the cams e^8 are held out of engagement with the driving-rolls, and this by elbow-levers e^{10} , controlled by bars e^{11} , connecting with the rear ends of the finger-keys E, so that when a key is actuated a yoke is permitted to fall and the cam thrown into engagement with the roll. This engagement causes the rotation of the cam, which lifts the yoke above its original position, thereby lifting the bar e^6 and causing the action of the escapement.

There may be in the keyboard as many keys as there are channels in the two magazines, or, in other words, a key for each escapement in the machine. In order, however, to reduce the size of the keyboard and

number of keys, I propose to employ a keyboard having a number of keys equal only to the channels in one magazine and to provide shifting connections through which these keys may be caused to actuate the escapements of one magazine or the other at will. The preferred arrangement is that shown in Figs. 1 and 3, in which the wires from the respective magazines are extended downward diagonally, those of the upper magazine being deflected to the left and those of the lower magazine to the right, so that those of one series terminate directly behind those of the other. The levers e^4 of the forward series leading to the upper magazine are terminated directly opposite the ends of those in the rear series, as shown in Fig. 3. The lever-actuating rods e^6 are extended at their upper ends through a guide G, attached to a rock-shaft g , provided with an operating-handle g' , by means of which the guide may be moved so as to set the bars e^6 in operative position under the rear levers, as shown in full lines, or in like position under the forward levers, as indicated by dotted lines. When the parts are in the first-named position, the keys will release matrices from the lower or right-hand magazine. When the parts are in the dotted position, the keys will discharge matrices from the upper or left-hand magazine.

The matrices discharged from the respective magazines descend through front guides or channels H and H' to the inclined assembling-belt J, which is constantly driven for the purpose of carrying the matrices downward to the end of the assembler K in front of the usual star-wheel L or equivalent device, by which they are carried sidewise one after another into the assembler, and thus assembled or composed in line.

The composed lines, including the wedge spacers or justifiers, delivered from their magazine M, as usual, will be transferred by the customary devices to the casting mechanism and thence delivered to the distributing mechanism, which is of peculiar form and a part of the present invention. The magazines having parallel upper ends are provided with the usual vertically-channeled throats or entrances B² and B³, which are curved upward and terminated in parallel lines. Above the respective throats are mounted two parallel stationary distributor-bars N and N' of the ordinary Mergenthaler construction, described in detail in United States Letters Patent No. 347,629. Each bar is of V-section at the lower edge and is provided with longitudinal distributing-teeth adapted to engage corresponding teeth in the upper ends of the matrices and permuted, so that they may serve to suspend the matrices as they are moved along the bar until they

arrive over their appropriate channels in the magazine.

The movement of the matrices along the bars to their points of delivery is effected by horizontal screws $O O'$, &c. These screws have the same general action as those of the Mergenthaler machine, but are peculiarly grouped herein and possess certain novelties of construction hereinafter described.

As the lines presented for distribution may be composed of matrices from either or both of the magazines, it is necessary that the line shall be disintegrated and the individual matrices directed to one or the other of the distributor-bars. For this purpose I provide the mechanism shown in Figs. 4 to 10, inclusive, in which P represents a distributor lift-box located adjacent to the receiving end of the distributor and provided with a vertically-movable lifting-finger p , to which the end of the matrix-line is presented horizontally, as in the ordinary Mergenthaler linotype-machine, the advance of the line step by step being controlled by shoulders p' on rails located in the upper part of the box, as usual. As each matrix is lifted into engagement with the carrying-screws above, its ears clear the shoulder p' , and the line advances and presents the next matrix in position to be lifted.

The matrices for the lower magazine are provided each with a dovetailed notch c in the lower end, as shown in Fig. 12, while those for the upper magazine are made without this notch, as shown in Fig. 11, this notch being the means of effecting their separation, as presently explained.

The distributor-box is provided beyond the point at which the matrices are lifted with a horizontal central rail or bridge p^2 , serving, like that shown in the Rogers United States Patent No. 767,169, to sustain the advancing matrices of the lower magazine until they are in engagement with the distributor-bar N of the said magazine. The matrices of the upper magazine by reason of the notches therein fall astride of the rail p^2 and are advanced at a lower level, as shown in Fig. 4, so that they fail to engage the distributor-bar N' . It is necessary that these matrices shall be advanced edgewise horizontally until they are opposite the second distributor-bar N' , that they may be advanced endwise therefrom by means of the screws $O O'$, &c. For this purpose I employ a horizontal traveling chain Q , carried by vertical sprocket-wheels q and provided at intervals with dovetailed teeth q' of proper size to enter the notches in the lower ends of the matrices. This chain has an intermittent motion. It stops in such position that when a notched matrix is advanced one of the teeth on the chain will enter the matrix, as shown in Fig. 6. The chain

being then set in motion, it advances the matrix endwise, as shown in Fig. 7, until it finally arrives opposite the end of the distributor-bar N' , on which it is carried by the action of the screws, the chain being at rest during the delivery of the matrix therefrom.

There are five feed-screws, arranged as shown, two pairs outside of the distributor-bars and a single screw between them, so that each matrix is engaged by two screws at the upper end and a single one at the lower end. As the central screw overlies the path of the matrices traveling edgewise to the second distributor, it is necessary to prevent their conflict with the screw, and for this purpose the screw is notched transversely, as shown at o^2 , Figs. 4, 6, 7, and 8, the parts being so timed in relation to each other that the matrix passes through this notch while it is on the under side of the screw, as shown in Fig. 7.

It will be observed that the second distributor-bar N' , by which the matrices are delivered to the upper magazine, has its edge arranged at a lower level than that of the first bar, this to compensate for the fact that the matrices of the upper magazine are lowered in the distributor-box before being carried forward, as before explained.

The intermitting motion may be imparted to the carrier-chain in any suitable manner; but I recommend the arrangement of parts shown in Figs. 9 and 10, in which the shaft of one of the sprocket-wheels q has a toothed pinion q^4 , which receives an intermitting motion from a mutilated pinion q^5 on one end of the matrix-screw O^3 . As the screw revolves continuously, the pinions impart an intermitting motion to the chain.

In order to complete the movement given by the pinions and to insure the stoppage of the chain with its dovetailed teeth in the exact positions required, I use a stop device of any suitable form; preferably, as shown in Figs. 9 and 10, two rollers q^6 , mounted on the side of the pinion q^4 and acted upon by a vibrating arm q^7 , pivoted to the frame at q^8 and acted upon by a tension-spring q^9 . This spring resting against the rollers tends to keep the pinion from turning and serves to arrest it and the chain in the exact positions required.

The operation of the machine is as follows: The finger-keys being manipulated, the intermediate connections cause the delivery of the individual matrices from that magazine which is actuated, and the matrices descending to the belt J are assembled in line in the assembler K , as usual. If matrices from the other magazine are required, the guide G is moved to shift the keyboard connections to the escapement connections of the other magazine. The matrices after passing to the

casting mechanism are lifted to the elevator mechanism, as usual, and the line delivered endwise into the box P, by which the matrices are lifted one at a time into engagement with the screws above. The matrices of the lower magazine pass directly forward onto the distributor-bar N, while those of the upper magazine are dropped to a lower level and sustained by the bridge p^2 , with their upper shoulders riding on the extended rails of the distributor-box, and are moved forward into engagement with the teeth of chain Q, by which they are carried forward until engaged by the second set of screws and advanced from the chain into engagement with the distributor-bar N'. The matrices delivered to the distributor-bars are delivered thereby to the magazine-channels, as usual.

It will be observed that the lower or delivery ends of both magazines are independently exposed and that access may be had thereto without hindrance.

While I have shown my magazines with parallel front and rear ends—in other words, of strictly trapezoidal form—it will of course be understood that exact parallelism of the ends is not essential and that the magazines may be modified in form at the will of the constructor, provided they are adapted to have their receiving ends overlapped and their delivery ends separated substantially in the manner described.

Having described my invention, what I claim is—

- 35 1. In a typographic machine, two magazines overlapped at the receiving end and diverging toward the delivery end, substantially as shown and described.
2. In a typographic machine, two trapezoidal magazines, having their receiving ends overlapped and their delivery ends separated laterally, substantially as shown.
3. In a typographic machine, two magazines, overlapped at the receiving end but laterally separated at the delivery end, in combination with a single mechanism for assembling the matrices from the two magazines.
4. The two trapezoidal magazines, overlapped at the receiving end and laterally separated at the delivery end, in combination with two series of receiving-channels and a common assembling mechanism.
5. In combination with the two parallel distributors, the two magazines having wide upper ends in receiving relation to the respective distributors, and contracted lower ends deflected respectively to the right and left.
6. In a typographic machine, the combination of the following elements: two magazines having overlapped receiving ends of equal width and delivery ends separated lat-

erally, a single assembling mechanism receiving the matrices from both magazines, parallel distributors overlying the respective magazines, and a single feed mechanism delivering matrices to the respective distributors.

7. In a typographic machine and in combination with two magazines, having overlapped upper ends of equal width and contracted lower ends laterally separated, escapement devices at the ends of the magazines, a centrally-located keyboard, and tension-wires deflected right and left from the escapements of the respective magazines to the keyboard.

8. In combination with the magazine and its escapements, tension-wires extending downward from the escapements, levers and springs connected with said wires and maintaining the same under tension, a keyboard mechanism acting to relieve the wires from tension, and springs acting to reverse the position of the escapements when the wires are relieved.

9. The rocking escapements, the spring acting thereon, the levers engaging the escapements, the tension-wires extending thence downward, the spring-actuated levers at the lower ends of the wires, and keyboard mechanism acting upon said levers.

10. In a typographic machine, two magazines having their lower ends laterally separated and arranged at different levels, escapements at their ends, a single centrally-located keyboard, laterally-deflected connections extending from the respective escapements to the keyboard, and a shifting connection whereby the keyboard may be caused to operate the connections for one magazine or the other, at will.

11. In a typographic machine, the combination of two parallel distributors, means for delivering the line of matrices directly to one distributor, and means for moving the individual matrices belonging to the second distributor, edgewise thereto.

12. In combination with the distributor-bar N, and means for urging the composed lines of matrices directly toward the same, the second and parallel distributor N', and a laterally-acting carrier, whereby matrices belonging to the second distributor are carried edgewise thereto away from the matrices proceeding to the first distributor.

13. In a linotype-machine, the combination of two distributors, means for presenting a composed line of matrices, and a rotary carrier for delivering matrices edgewise, one at a time to the second distributor.

14. In a linotype-machine, matrices of two forms, two distributors, means for presenting a composed line of matrices, and a carrier-belt arranged to deliver matrices of one

form to the second distributor and permitting those of the other form to pass to the first distributor.

5 15. In a linotype-machine and in combination with the distributor, an endless belt traveling in a vertical plane and adapted to carry the matrices edgewise successively toward the distributor.

In testimony whereof I hereunto set my hand, this 27th day of September, 1905, in the presence of two attesting witnesses.

CARL MUEHLEISEN.

Witnesses:

HENRY HASPER,
WOLDEMAR HAUPT.