J. R. ROGERS.

LINOTYPE MACHINE.

APPLICATION FILED NOV. 9, 1908.

945,608.

Patented Jan. 4, 1910.

Fig. 1.

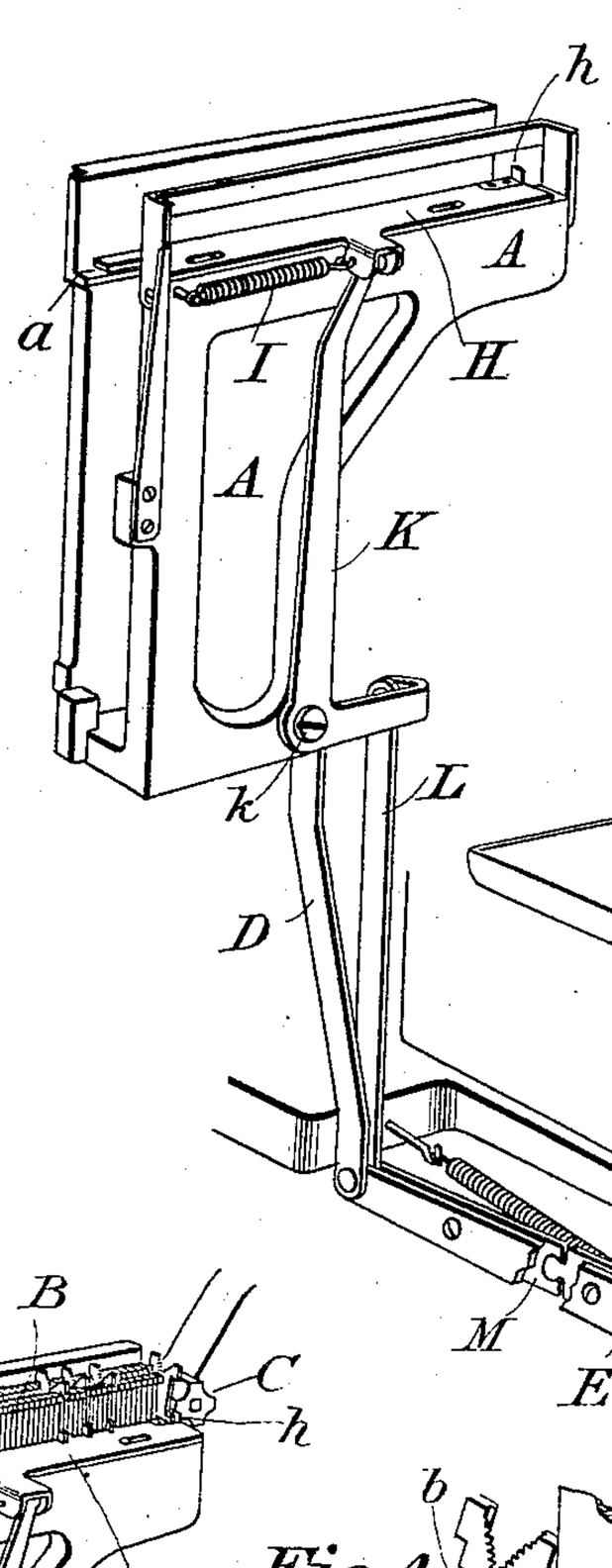


Fig. 3.

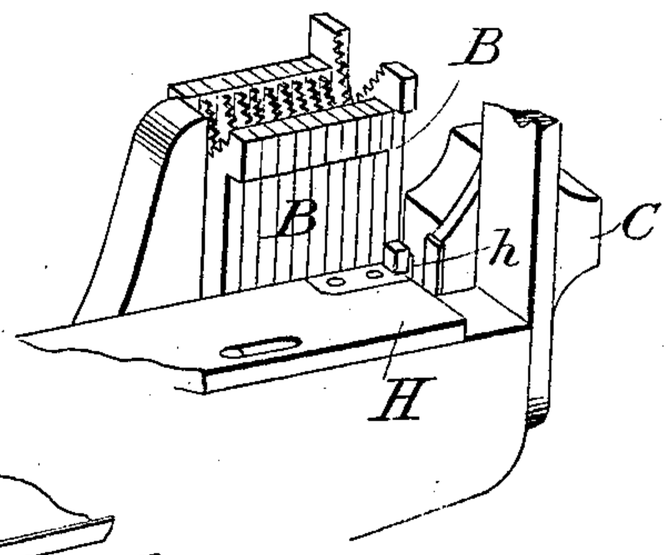


Fig. 2.

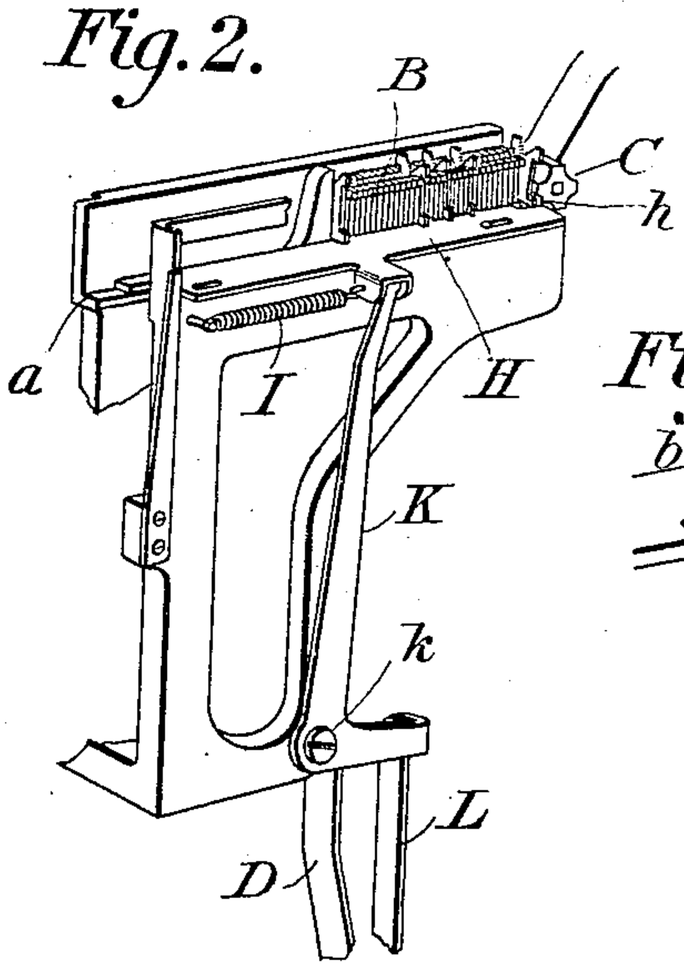


Fig. 4.

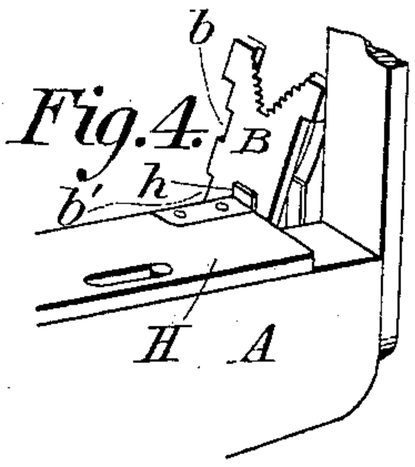
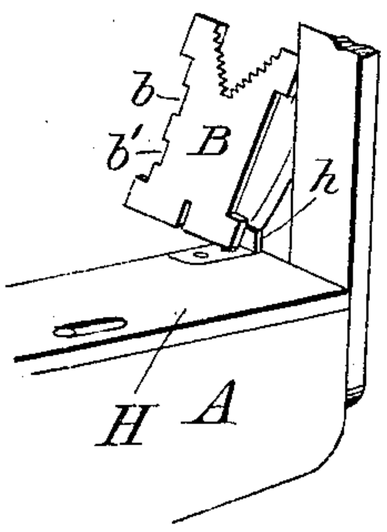


Fig. 5.



WITNESSES:.

Chas. E. Gordon

Chas. F. Schneider.

INVENTOR

John R. Rogers

BY

P. T. Dodge

ATTORNEY

UNITED STATES PATENT OFFICE.

JOHN R. ROGERS, OF BROOKLYN, NEW YORK, ASSIGNOR TO MERGENTHALER LINOTYPE COMPANY, A CORPORATION OF NEW YORK.

LINOTYPE-MACHINE.

945,608. Specification of Letters Patent. Patented Jan. 4, 1910.

Application filed November 9, 1908. Serial No. 461,780.

To all whom it may concern:

Be it known that I, JOHN R. ROGERS, of the borough of Brooklyn, county of Kings, and State of New York, have invented a new and useful Improvement in Linotype-Machines, of which the following is a specification.

This invention relates to that class of line-casting machines in which circulating matrices, representing various characters, are released one at a time from a magazine by finger-keys, assembled in justified lines and presented to a mold for the purpose of forming type characters on a slug or printing bar cast therein, as illustrated for example in Letters Patent of the United States #436,532.

It has special reference to those machines in which the matrices are each provided at different heights with two independent characters, the machine being provided with devices through which each matrix may be assembled in the line at one height or another, in order to present one character or the other at the alining level. Devices for thus determining the height of the matrices as they are assembled in the line are already known in the art. While they permit an entire line or a number of adjoining matrices in the line to be set at either level required without material loss of time, they are not well adapted to secure the speedy setting of single matrices at the higher level.

The object of the present invention is to provide a composing mechanism in which devices for controlling the elevation of the incoming matrices may be set instantly to cause the elevation of individual matrices, and instantly and automatically restored to normal position so that matrices may pass to the lower level in the line.

The invention is of special value in the composition of Greek and other languages in which the number of characters greatly exceeds the number of fingerkeys, and in which the number of accented characters is so great that many of them must be placed in the lower or abnormal position on the matrices. Composition in such case demands the very frequent introduction into the line of single characters located in abnormal positions. The mechanism heretofore in use requires the switch or shift device to be moved in one direction in order to bring an abnormal character into line, and also demands that the switch be returned by a distinct action of the operator to its normal position. The repetition of these operations at short intervals involves a great loss of time; also a reduction in the speed of composition, and frequent errors in composition due to failure to move the switch the full distance required. These difficulties are wholly overcome by my improved mechanism, in which the switch may be moved to the abnormal position by the pressure of one finger at practically the same instant that the character is delivered to the action of a key by another finger, the switch being instantly and automatically restored to the normal position when the keys are released.

In the accompanying drawing I have shown my improvement applied to an assembling elevator of the form shown in Letters Patent of the United States to Homans, #825,054 of July 3, 1906, but it will be understood that it may be embodied in various equivalent forms. The drawings are limited to the assembling elevator and those parts immediately associated in their action with my improvement. All other parts of the machine may be of the construction shown in Patent #436,552, and used in the commercial Mergenthaler machines known under the trade mark "Linotype."

Figure 1 is a perspective view of the assembling elevator and attendant parts provided with my improvement, the parts being in their normal positions. Fig. 2 is a perspective view of the assembler with a composed line therein and with the stop device in position to arrest the last matrix at an upper level. Fig. 3 is a perspective view on a larger scale, showing more clearly the action of the stop device for arresting a matrix at the upper level. Fig. 4 is a perspective view illustrating the stop device in its retracted position, permitting a matrix to descend to the lower level. Fig. 5 is a perspective view illustrating the manner in which the stop device moves the end matrix toward the left after arresting it.

Referring to the drawings, A represents the so-called assembling elevator of a Mergenthaler machine, having in its top a horizontal channel to receive and support the

matrices B, which are delivered successively thereto.

C is the so-called star-wheel revolving on a horizontal axis and serving to carry the matrices, which descend before it, forward horizontally one after another against the end of the line.

The assembling elevator A is mounted to slide vertically and is connected by a link D to one end of a crank-arm E secured to a rock-shaft F mounted in the main-frame and provided with an operating handle G, by which it is turned to lift the elevator A, in order to raise the composed line bodily from the level at which it was composed to the level of the devices by which it is transferred toward the casting mechanism.

So far as described, the parts are all constructed and arranged to operate in the ordinary manner, and are familiar to all persons skilled in the art.

Each of the matrices B is provided, as shown in Fig. 5, with two independent characters *b* and *b'*, which usually differ in form or size. When the matrices meet with no obstruction, they are delivered into the assembler as usual, and are supported by a horizontal shoulder *a*, by which they are held at a common level, this being their lowermost position and one which will cause their upper characters *b* to come into action at the mold.

For the purpose of supporting the entire line of matrices, or any desired number of matrices in the line, at a higher level in order that their lower characters *b'* may come into action, a horizontal blade H is mounted in the assembler in such manner as to move endwise toward and from the star-wheel C, so that the incoming matrices will be caused to ride on top of the blade and receive support therefrom. In the Homans patent above referred to, this blade is moved endwise by means of a handle thereon, and is arranged to remain in the position in which it is placed. After being set in position to sustain the incoming matrices at the upper level, it is necessary that it should be withdrawn by hand to permit the following languages, it is usual to set most of the matrices at the low level and to set single matrices to descend to the lower or normal level.

In the composition of matter in certain matrices at short intervals at the higher level. This could not be readily done with the old device.

In applying my improvement, I provide the forward end of the slide H, next to the star-wheel and to the incoming matrices, with a thin upright lip *h*, in such position that when the slide is moved toward the star-wheel to its extreme position, shown in Figs. 2 and 3, the incoming matrices will be thrown by the star-wheel over this lip and will rest to the left of the same on the blade H, as clearly shown in Fig. 3. For the purpose of automatically and instantly retracting the blade after it has been moved forward, I extend a spring I therefrom to a pin on the elevator, as shown in Figs. 1 and 2. For the purpose of moving the blade forward against the stress of this spring to an active position, I connect to the blade an angular lever K, pivoted at *k* to the elevator A, and connected by a link L with a lever M, which is in turn connected to a finger-key lever N located, as shown, at a point remote from the assembler and adjacent to the ordinary keyboard of the machine.

When the forward end of the lever N is depressed, it causes the blade H, with its lip *h*, to move forward to an operative position, and when the lever is released, the spring I returns the parts to their original positions, the blade being retracted, as shown in Fig. 4, so that the matrices may descend past its end to the lower level. When the blade is moved forward, as described, it arrests the next incoming matrix, as shown in Figs. 2 and 3, and when it is released, its lip *h* retains its hold on the lower end of the elevated matrix and moves the same to the left, in the manner shown in Figs. 2 and 5, against the end of the composed line. This not only prevents the possibility of the elevated matrix slipping downward past the end of the slide, but it also insures an unobstructed space for the descent of the next matrix past the slide. The slide-actuating levers M and N are pivoted at intermediate points in their length to the lever E, by which the lever is raised. Under this arrangement, the slide-actuating devices are caused to rise and fall with the elevator, so that their connections are not disturbed.

I believe it to be wholly new to provide, in a mechanism of the present class, means for arresting and sustaining a matrix at an upper level, and means for holding the matrix upon the sustaining devices. I believe it also to be wholly new to provide means for arresting the matrix at an upper level in combination with a secondary means; that is to say, means other than the star-wheel or pusher, for carrying the matrix laterally toward the end of the line while in the elevated position. I believe it also to be wholly new to combine with a movable device for arresting the incoming matrices at a higher level than their companions, spring connections tending to move the arresting means to an inactive position so that the arresting device is automatically and instantly restored to the normal position, in order that composition may proceed without requiring any special action on the part of the operator. I believe it also to be wholly new to combine with the

rising and falling elevator, adjustable means for arresting the matrices at an upper level therein, and the finger-key connection by which the arresting device may be thrown into action at will.

The skilled mechanic will understand that the parts may be widely modified in form and arrangement without essentially changing their mode of action.

It will be observed that the finger-key for adjusting the blade is located adjacent to the keyboard of the machine so that when it is required to set a matrix at the upper level, it is only necessary for the operator to depress with one hand the key for adjusting the blade and immediately following the key which designates the character. On release of the keys, the parts resume their normal position, and composition may proceed without loss of time.

While I prefer, for the purposes hereinbefore stated, to employ the lip *h*, it is to be understood that the finger-key connections for adjusting the blade are of decided importance in the absence of the lip, to admit of the blade being adjusted for its old or ordinary functions more quickly and conveniently than when operated directly by hand, as in the original patent #825,054.

Devices for arresting matrices at an abnormal level are known in the art in various forms. It is to be understood that my improved actuating means may be combined with any of such devices.

It will be observed that the lip *h* is a secondary device for moving the last matrix in the line laterally to the left, or toward the line. I believe the present to be the first instance in which any secondary device for this purpose has been used in addition to the star wheel or other primary device for carrying the matrices against the end of the line. While I prefer to attach the lip *h* to the slide H, it is to be understood that it may be independently mounted, and operated in any manner which will give it the mode of action and secure the result herein described.

Having thus described my invention, I claim and desire to secure by Letters Patent,—

1. In a mechanism for composing two-letter matrices, means for assembling the matrices in line at one level, means for arresting the individual matrices at a higher level in the line, a fingerkey, a connection for throwing the arresting device into action, and spring connections adapted to instantly and automatically restore the arresting device to its normal position when released; whereby the location of individual matrices in abnormal positions in the line may be effected without materially affecting the speed of composition.

2. In combination with the assembling elevator A, the slide H to arrest and sustain the incoming matrices, a spring tending to move the slide in one direction, and finger-key connections for moving the same in the opposite direction; whereby the sustaining device is automatically restored to its normal position when released, so that loss of time and accidental displacement of matrices is prevented.

3. In combination with an assembler to receive the matrices and means for delivering the matrices successively thereto, a blade, H, provided with a lip, *h*, and movable longitudinally toward and from the point at which the matrices enter; whereby the incoming matrices may be directed to an upper or lower level in the line, and the elevated matrices prevented from escaping and passing to the lower level.

4. In a linotype machine, in combination with the assembling elevator, a movable blade therein to support matrices above the normal level, means for lifting the elevator, and finger-key connections carried by said lifting means and acting to move the blade.

5. In combination with the assembling elevator mounted to rise and fall, the crank-arm for lifting the same, the movable blade in the elevator, the finger-key mounted on the lifting arm, and connections from said key to the blade.

6. In a matrix assembling mechanism, including the star wheel and means for arresting the matrices above their normal level, a secondary means for moving each arrested matrix laterally toward the line.

7. In a matrix assembling mechanism, and in addition to the ordinary means for assembling the matrices in line, a secondary means for moving the incoming matrices individually toward the line and beyond the path of the following matrices.

8. In a matrix assembling mechanism, means for assembling matrices at a normal level, means for supporting the matrices at will at an abnormal level, including a laterally movable lip to engage the lower end of the matrices at the upper level, a manual device for moving the last named means in one direction, and a spring for returning the same when released.

In testimony whereof I hereunto set my hand this second day of November, 1908, in the presence of two attesting witnesses.

JOHN R. ROGERS.

Witnesses:
D. S. KENNEDY,
LUCY E. SMITH.