No. 781,094. PATENTED JAN. 31, 1905.

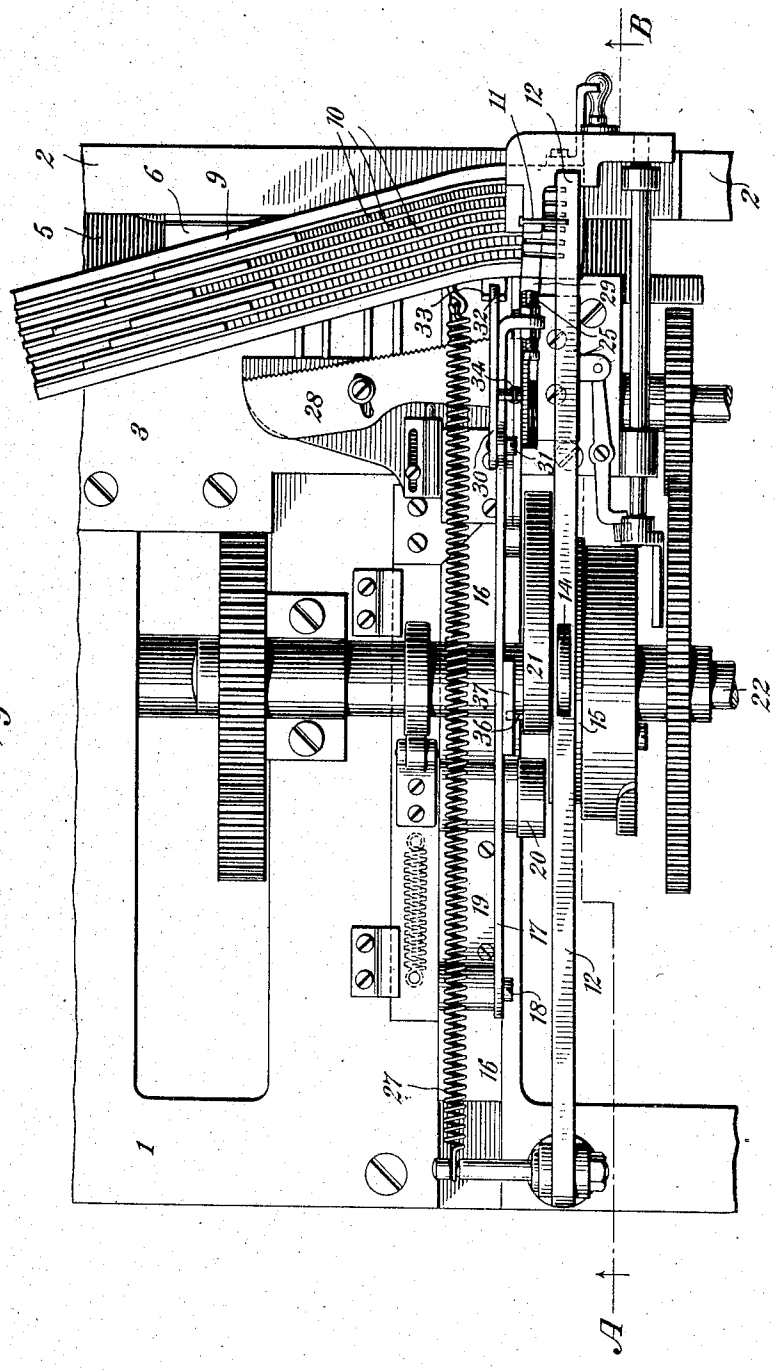
L. E. QUICK.

TYPE JUSTIFYING MACHINE.

APPLICATION FILED NOV. 10, 1902. RENEWED AUG. 12, 1904.

2 SHEETS—SHEET 1.

Fig. 1.



WITNESSES:

C. E. Ashley

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INVENTOR

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By his Attorney,

Frank McClintock

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2 SHEETS—SHEET 2.

Fig. 2.

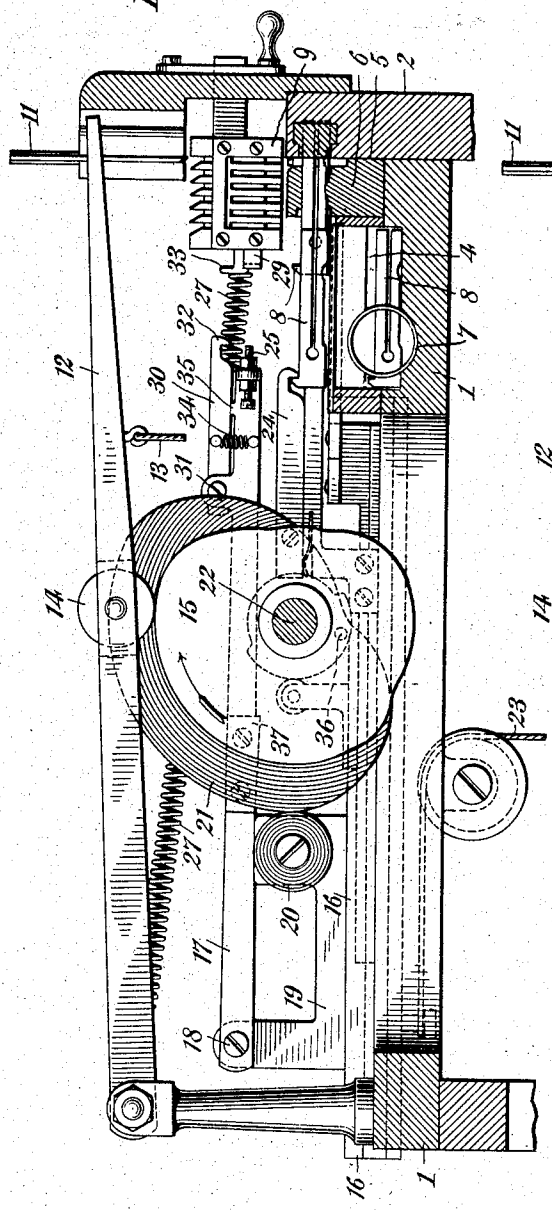
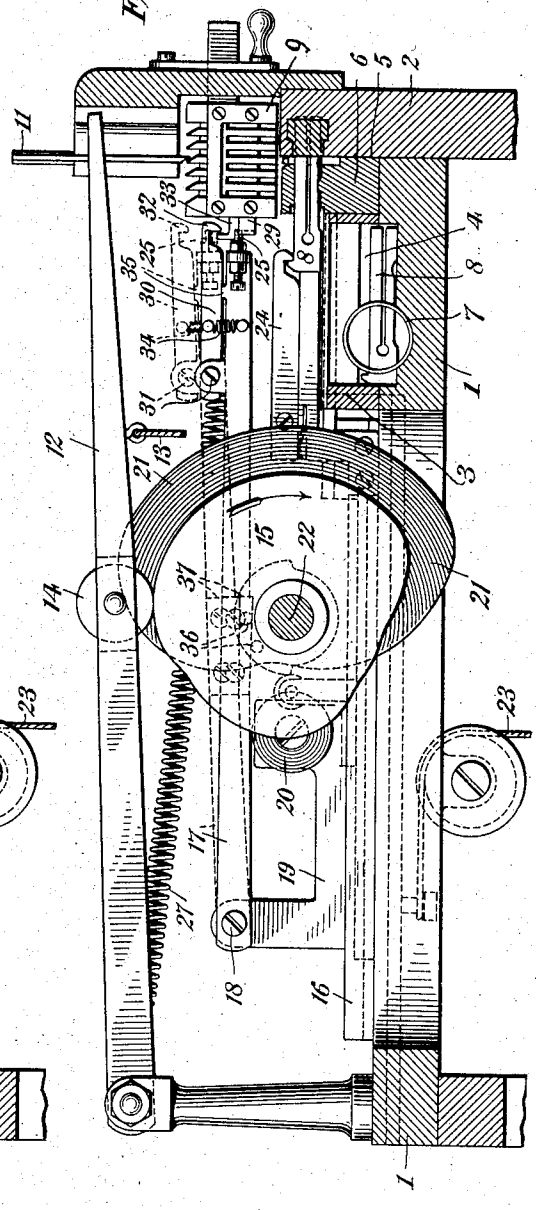


Fig. 3.



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UNITED STATES PATENT OFFICE.

LUDLOW E. QUICK, OF BAYONNE, NEW JERSEY, ASSIGNOR, BY MESNE ASSIGNMENTS, TO ADAM G. NORRIE AND WALTER E. DRUMMOND, OF NEW YORK, N. Y.

TYPE-JUSTIFYING MACHINE.

SPECIFICATION forming part of Letters Patent No. 781,094, dated January 31, 1905.

Application filed November 10, 1902. Renewed August 12, 1904. Serial No. 220,461.

To all whom it may concern:

Be it known that I, LUDLOW E. QUICK, a citizen of the United States, and a resident of Bayonne, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Type-Justifying Machines, of which the following is a specification.

My invention relates to improvements in machines for automatically justifying and spacing lines of type of that class wherein wedge-shaped space-bars are temporarily inserted into the line and thereafter withdrawn one by one and replaced by the usual permanent space-blanks contained in a reciprocating space-rack, and the improvements are particularly adapted to the type-justifying machine shown and described in United States Letters Patent No. 693,145, issued February 11, 1902, to Frank McClintock.

The object of my invention is to provide simple and effective mechanism for limiting and controlling the required reciprocating movement of the space-rack in such a manner as to insure the selection of a space-blank of the correct thickness at all times, and particularly when the machine is operated at a high rate of speed. This object is attained by means of the device shown in the accompanying two sheets of drawings, in which—

Figure 1 is a plan view showing the essential parts of the justifying mechanism proper. Fig. 2 is a sectional elevation along the line A B of Fig. 1. Fig. 3 is a similar sectional view showing the device in action.

Similar reference characters refer to similar parts in each of the views.

The following are the essential elements of type-justifying machines of this character for which my invention is especially adapted, such elements being identical in construction and operation with those shown and fully described in the patent heretofore referred to.

1 is the bed-plate of the machine, and 2 the side plate.

3 is the cap-plate, which covers the space-bar raceway 4 in the bed-plate 1. The space between the side of this cap-plate and side plate forms a track or raceway 5 for the line-holder 6. The space-bar raceway 4 between the bed-plate and cap-plate is provided for the purpose of returning the space-bars after being withdrawn from the line to the storage and ready for use again.

7 is the spring-coil, which is caused to rotate continuously in the usual manner within the raceway and serves to advance the space-bars 8 along the raceway and retain them in position at the storage end for use again.

9 is the space-rack pivoted at a suitable point (not shown in the drawings) in such a manner that its forward end may be freely moved to and fro across the line of type and space-bars contained in the line-holder 6, being nominally held in the position shown in Fig. 2 by the spring 27. The space-rack 9 contains a number of channels 10, each of which contains a supply of space-blanks varying in thickness by any suitable unit.

11 is the space-blank driver, which is caused to force the selected space-blank down out of its channel into the line-holder by means of the lever 12, weighted cord 13, roller 14, and cam 15, as fully described in the patent heretofore referred to.

16 is the space-bar-driver slide, to the inner end of which is secured the space-bar driver 28, which is adapted to be forced against the outer ends of the space-bars 8 and drive them farther into the line of type contained in the line-holder 6, thereby spreading the line of type to the limit of the type-recess in the line-holder.

17 is the space-selecting lever, which is pivoted at 18 to the bracket 19, secured to the space-bar-driver slide 16. The roller 20 is also secured to the bracket 19 and engages the cam 21 on the shaft 22. The weighted cord 23 serves to advance the space-bar-driver slide inward, such movement being controlled by the cam 21, which is so shaped that one revolution causes the slide 16 to advance with the driver 28 engaging the ends of the space-bars and the free end of the space-selecting lever 17 engaging the block 29 on the side of the space-rack, as shown in Figs. 1 and 3.

24 is the space-bar-extracting hook, pivoted to the side of the slide 16, which is adapted to engage the notch in the end of the foremost space-bar and withdraw it from the line as the slide 16 is moved outward.

25 is the adjusting-screw on the free end of the space-selecting lever.

22 is the driving-shaft, which is caused to rotate in the proper and timely manner by means of suitable mechanism, preferably that shown in the patent referred to. The present invention has no connection with the mechanism for causing the required movement of this shaft, and it is therefore not shown or described in this application.

It is essential to the successful and efficient operation of type-justifying machines of this character that the inward movement of the space-bar-driver slide should invariably cause the space-rack to swing over exactly the same distance that the foremost space-bar is driven into the line of type. It has been found in practice that when the justifying mechanism is operated at a speed sufficient to make the machine commercially profitable the momentum of the swinging space-rack will often cause it to move farther than it would be driven by the action of the space-selecting lever, thereby causing a space-channel containing space-blanks of greater thickness than is required to register with the line of type. Such thicker space-blanks often cannot be fully inserted in the line of type by the space-blank driver, causing frequent delay by stoppage of the mechanism. Heretofore the tension of the spring 27 has been relied upon to prevent the momentum of the space-rack from thus carrying it too far to the right. If the spring is made sufficiently strong, however, to always overcome this momentum under all conditions, it will pull upon the space-rack when the space-selecting lever has been raised out of engagement with the space-rack, as shown in Fig. 3, with such force that the free movement of the space-blank driver 16 will be prevented, thereby causing undue wear of the parts and lack of accurate register of the space-blank while being inserted into the line of type in the line-holder.

My invention consists, essentially, of a simple and effective device whereby the space-selecting lever is automatically secured or locked to the space-rack during their simultaneous inward movement and then automatically unlocked at the proper moment, thus making it impossible for the momentum of the space-rack to move it too far to the right at the highest rate of speed. In its preferred construction, as shown in the drawings, the device consists of a short lever 30, pivoted to the space-selecting lever 17 at the point 31 and having a hook 32 at its free end. This hook is adapted to engage with a lip 33, secured to the side of the space-rack 9, whenever the end of the space-selecting lever 17 is caused to abut against the block 29. A light spring 34 is provided having one end secured to the space-selecting lever 17 and the other to the hooked lever 30, which serves normally to hold said hooked lever down with its lower side resting on the stop 35, as shown in the drawings.

The operation of the device is as follows: Whenever the space-bar-driver slide 16 is caused to move inward by the action of the weighted cord 13 and the rotation of the cam 21, the hook 32 on the end of the pivoted lever 30 will engage with the lip 33. At the same time the free end 25 of the space-selecting lever 17 strikes the block 29 on the side of the space-rack. Whenever the space-bar-driver slide has been thus moved inward until the space-bars 8 are, by means of the driver 28, forced into the line of type the required distance to spread out the line to its proper length, the space-bar-extracting hook 24 will engage with the notched end of the foremost space-bar, as shown in Figs. 1 and 3. The space-blank driver 11 will immediately be caused by the lever 12 to force a single space-blank out of that channel of the space-rack which is directly over the line of type such a distance downward that its foot will enter between the types on either side of the space-bar. At the same time the pin 36 on the face of the cam 21 will engage the block 37 on the side of the space-selecting lever 17, and thereupon raise said lever and with it the hooked lever 30 to the position shown by the broken lines in Fig. 3. This movement raises the abutting end of the adjusting-screw 25 above the block 29 to allow the selected channel of the space-rack to be brought exactly in register with the line of type in the usual manner and also releases the hook 32 from its engagement with the lip 33, whereupon the slide 16 is free to be moved outward to its normal position, withdrawing the space-bar entirely from the line, as shown in Fig. 2. As soon as the thin end of the space-bar has been withdrawn from the line the space-bar driver 11 is caused to complete its downward movement, thereby driving the selected space-blank entirely out of the space-rack to its final position in the line of type.

What I claim as my invention is—

1. In a type-justifying machine the combination with a swinging space-rack containing a plurality of channels, of a space-selecting lever adapted to abut against the space-rack and move it laterally, and means for preventing the momentum of the space-rack moving it laterally more than the desired distance, substantially as specified.

2. In a type-justifying machine the combination with a space-rack containing a plurality of channels, of a space-selecting lever adapted to engage said space-rack and move it laterally the desired distance, and means whereby said space-selecting lever and space-rack will

be automatically connected or locked together until the space-rack has been moved laterally to its desired position when they will be disconnected, substantially as specified.

3. In a type-justifying machine the combination with a swinging space-rack containing a plurality of channels, of a pivoted space-selecting lever adapted to engage said space-rack and move it laterally the desired distance, a hooked lever pivoted to the space-selecting lever and adapted to engage a lip on the space-rack until the space-rack has been moved laterally to its desired position, and means whereby the hooked lever will thereupon be automatically disengaged from the lip on the space-rack, substantially as specified.

Signed at New York, in the county of New York and State of New York, this 8th day of November, A. D. 1902.

LUDLOW E. QUICK.

Witnesses:
HENRY THRUSH,
JOHN WATSON.