

J. J. HUMMEL.
 OPERATING KEYBOARD FOR TYPE SETTING MACHINES.
 APPLICATION FILED DEC. 28, 1910.

997,131.

Patented July 4, 1911.

3 SHEETS—SHEET 1.

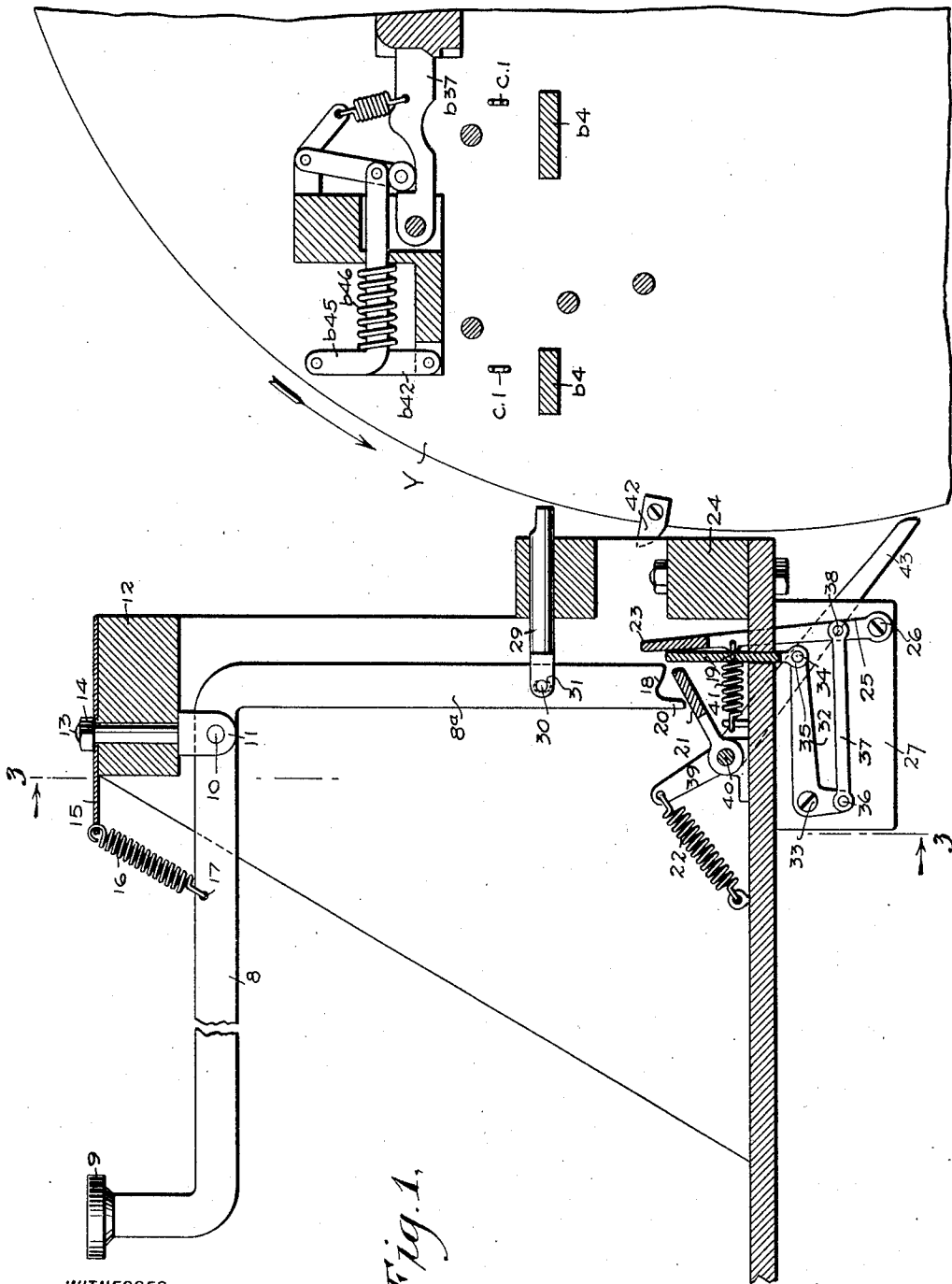


Fig. 1.

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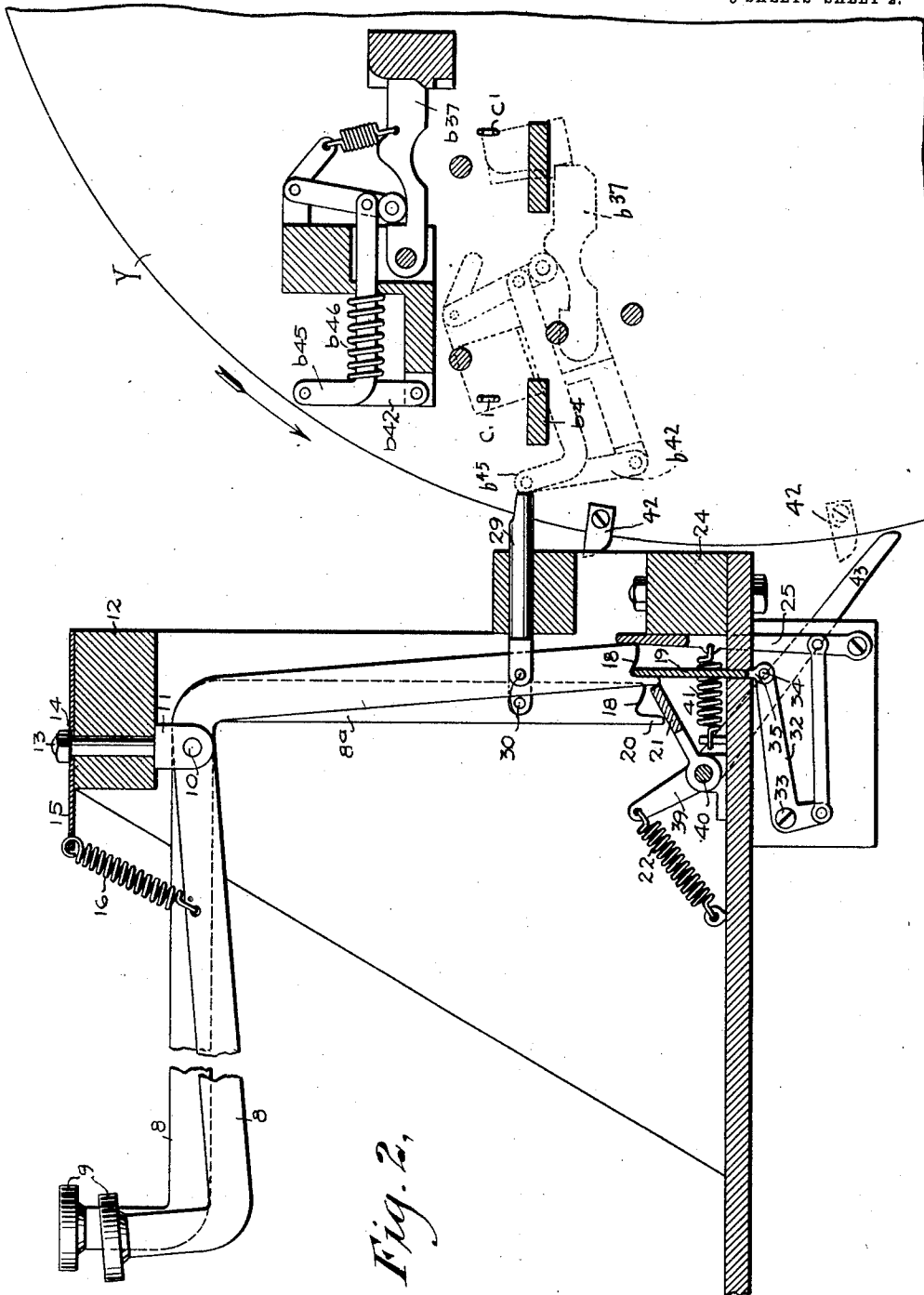


Fig. 2.

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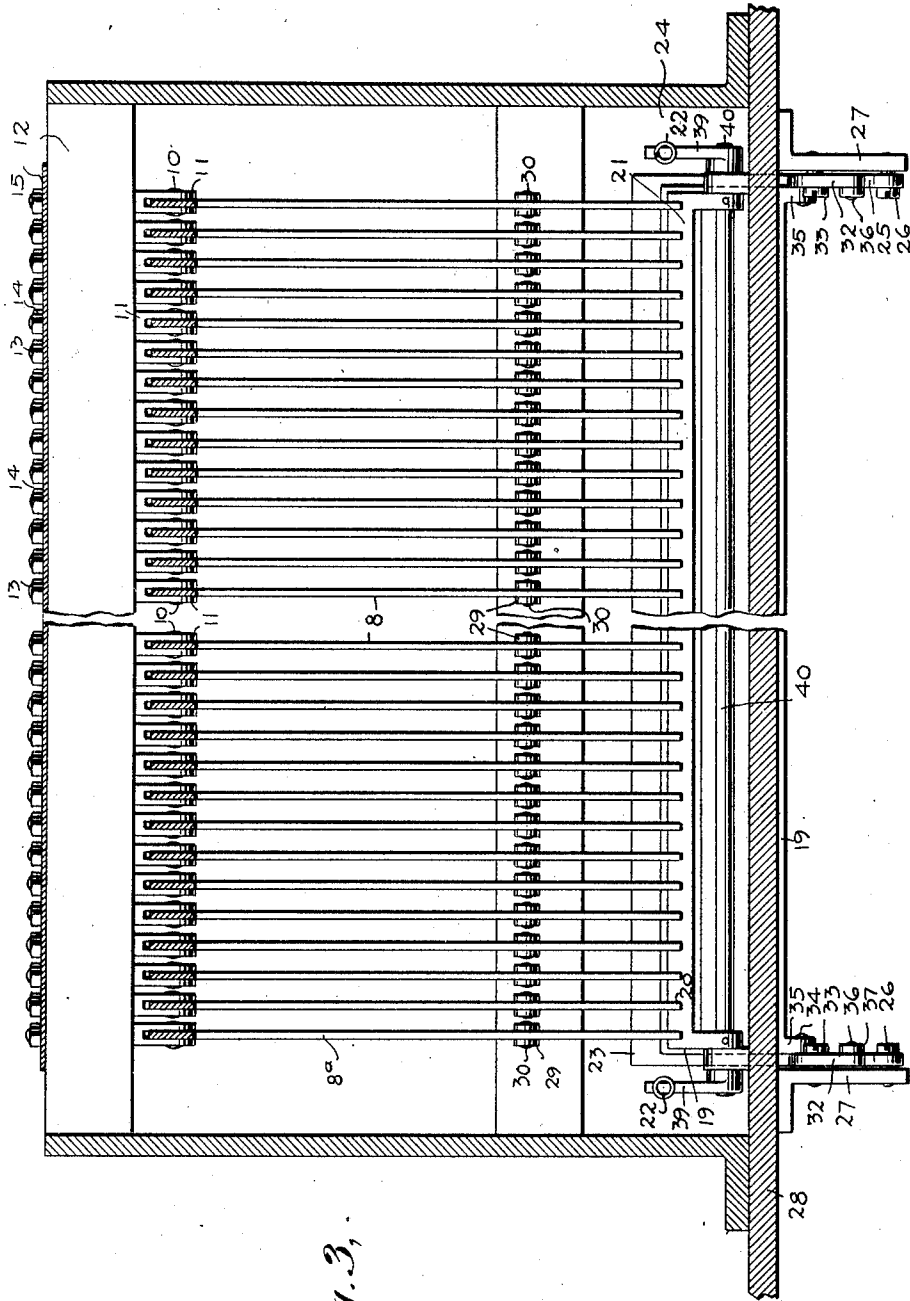


Fig. 3.

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OPERATING-KEYBOARD FOR TYPE-SETTING MACHINES.

997,131.

Specification of Letters Patent.

Patented July 4, 1911.

Application filed December 23, 1910. Serial No. 599,663.

To all whom it may concern:

Be it known that I, JOHN J. HUMMEL, a citizen of the United States, and a resident of Spokane, in the county of Spokane and State of Washington, have invented a new and Improved Operating-Keyboard for Type-Setting Machines, of which the following is a full, clear, and exact description.

In an application for patent upon an improved type setting machine, filed by me the 4th day of February, 1910, and bearing Serial No. 541,963, a mechanism is disclosed having as a structural feature a rotary frame embodying a series of track frames for supporting and guiding type carriers which extract and convey type from a font magazine, and deposit the same in a stick or other line forming device. In the disclosure referred to the carriers are arrested in their flight in line with certain of the magazines containing type of the character selected. The mechanisms for arresting the carriers are characterized by a plurality of levers or latches which may be interposed or set in the path of the carriage mounted on the track adjacent to the said latches. In the machine shown and described in the above mentioned application a keyboard and key operating mechanism therefor is disclosed.

The present invention is more particularly an improvement upon the keyboard and mechanism therefor. Reference is here made to the former application as disclosing the means for and method of operating the type setting mechanism to which the present invention refers.

Among the principal objects which the present invention has in view are: to provide a simple efficient and durable mechanism for rapidly operating the keys of a keyboard to arrest the said carriers in their flight and in a manner to provide against conflict in the selection of the said type; to provide a locking mechanism whereby the mentioned conflict is avoided; and to provide a simple, efficient and rapidly locked key-releasing mechanism arranged to produce a necessary interval of time between the operations of the keys in harmony with the operation of the above mentioned rotary track mechanism supporting the type carriers.

With the above objects in view the present invention consists principally in construct-

ing and arranging the keyboard in such manner that as each key is manipulated by the operator there is disposed a releasing member in the path of the latches for arresting the type carriers, which member operates the first latch succeeding the projection of the said member.

It further consists in forming on the rotary track frame a releasing device, by the operation of which the interference member is retracted prior to the next successive track and carrier being alined with the said interference member of the keyboard mechanism.

It further consists in forming a locking mechanism the operation whereof prevents the advancement of a second interference member.

One embodiment of the present invention is disclosed in the structure illustrated in the accompanying drawings, in which like characters of reference denote corresponding parts in all the views, and in which—

Figure 1 is a vertical cross section of a keyboard mechanism constructed and arranged in accordance with the present invention, showing the key bars and locking mechanism therefor in normal position; Fig. 2 is a view similar to the preceding view, showing one of the key bars in an operative and locked position; and Fig. 3 is a vertical longitudinal section of a keyboard constructed and arranged in accordance with the present invention, the section being taken on the line 3—3 in Fig. 1.

In the drawings herewith there is shown a series of key bars 8, 8. Each of the key bars 8 is provided with an index pad 9, and is pivoted at 10 in guide brackets 11. The brackets 11 are fixedly attached to a cross bar 12 by means of a screw threaded bolt 13, on the end whereof is screwed a nut 14. The bolts 13 and nuts 14 hold in place an anchor plate 15. The plate 15 is suitably perforated at the outer edge where the same overhangs the bar 12 to receive in holding relation the springs 16 with which each of the bars 8 is provided. The springs 16 are anchored to the bars 8 by being inserted through a perforation 17 in the said bar 8. The bars 8 are downwardly extended, as shown best in Figs. 1 and 2 of the drawings, to form a vertical section 8^a, at the lower end whereof is formed a recess 18, within which an interference member or a locking plate 19 is inserted when the section 8^a is thrown forward, as shown in Fig. 2 of the

drawings, by depressing the pad 9 connected with any one of the key bars 8.

It is the plate 19, which, by interposition in the path of the lower ends of the extensions 8^a, prevent the resetting of succeeding key bars after each of the said key bars is depressed. When the plate 19 is lifted into the recess 18 of the key bar which is operated, it is then in the path of the lower ends of the extensions 8^a of each of the key bars 8. In forming the recesses 18 a rearwardly disposed lip 20 is formed, which lip overrides a latch plate 21, depressing the same from the position shown in Fig. 1, the returning spring 22 yielding to permit the said latch plate to be thus depressed. The forward movement of the section 8^a of the bar 8 forces the fender bar 23 forward in the path of the section 8^a until the said fender bar is arrested by a framing bar 24.

The fender bar 23 is mounted on lever arms 25, 25, which arms are pivoted at 26, 26 in brackets 27, 27 extended below the bed plate 28 of the keyboard. The purpose of the fender bar 23 is twofold, first to arrest the section 8^a of the key bar 8 and to regulate the advancement of a pin bolt 29 with which each of the key bars 8 is provided. Each of the pin bolts 29 is provided with a pivot pin 30 which extends through the section 8^a of the key bar and through an elongated slot 31 formed in each of the bars.

The second purpose of the fender bar 23 is to lift the locking plate 19 to the upper portion of the recess 18, to prevent thereby the retraction of the section 8^a of the key bar 8, and to hold rigidly in its advanced position the pin bolt 29. The mechanism by which this is effected consists in a bell crank lever 32 which is mounted on a pivot screw 33 secured in the brackets 27. The bell crank lever 32 is provided with a long and a short arm. To the long arm is pivoted at 34 the end of the plate 19, eyeleted extensions 35 being formed at the ends of the said plate for connection with the said bell crank lever 32. The short arm of the bell crank lever 32 is pivoted at 36 to a link bar 37. The link bar 37 is pivotally connected at 38 to the lever arms 25, 25 supporting the fender bar 23.

It will be seen by reference to the drawings that as the fender bar 23 is forced by the key bars 8 from the position shown in Fig. 1 to the position shown in Fig. 2 of the drawings, the lever arms 25, 25 are moved with the fender bar, drawing through the link 37 upon the short arm of the bell crank lever, causing the long arm thereof to lift the locking plate 19. The upper edge of the recess 18 is shifted to provide a rubbing surface for the plate 19 as the same rises and contacts with the moving section 8^a.

When in the course of operation the key bar has caused the fender bar 23 to impinge

upon the framing bar 24, and has extended the pin bolt 29 connected with it, forward, as shown in Fig. 2 of the drawings, the plate 19 will rest in the upper portion of the recess 18 firmly, locking positively the key bar 8 and pin bolt 29 connected therewith in set position.

When the key bar 8—8^a has thus moved the fender bar 23 and locking plate 19 into the position shown in Fig. 2 of the drawings, it will be remembered that the latch plate 21 has been depressed by the lip 20 until the bar 23 is arrested by the bar 24. In this position the lip 20 has passed over the latch plate 21, and the spring 22 immediately acting upon the plate 21 through the arms 39 and the pivot shaft 40, lifts the depressed end of the latch plate in position to the rear of the lip 20, thereby locking the key bar 8—8^a and pin bolt 29 firmly in position until and after the said latch plate is depressed.

When the latch plate 21 is depressed, a spring 41 is permitted to retract the arms 25, 25 and the fender bar 23 connected therewith. In retracting the fender bar 23 the key bar 8—8^a is immediately returned to its normal position, the spring 16 assisting therein. The return of the fender bar 23 and arms 25 to the position shown in Fig. 1 of the drawings, thus accomplished by the spring 41, rocks the bell crank lever 32 on its pivot screw 33 to effect a depression of the plate 19, this plate moving smoothly out of the path of the section 8^a of the key bar 8.

The latch plate 21 is removed from locking engagement with the lip 20 of the key bar 8 by one of the cam plates 42 with which is provided the disk Y of the rotary frame of a typesetting machine such as disclosed in a patent hereinafter identified. The cam plates 42 are disposed on the edge of the disk Y in definite relation to the plunger b^{45} and link b^{42} , which plunger and link, together with the spring b^{40} , operate to set the latch b^{37} to arrest the carriers mounted on the guide rails b^4 , b^4 on which they are reciprocated by the chains c^1 , c^1 . This group of instrumentalities is fully disclosed in the application for Patent No. 541,963 above referred to. The relation between the group of instrumentalities thus mentioned and described is substantially that shown in Fig. 2 of the drawings, where by reference to the dotted position it will be observed that the pin bolt 29 has released the latch b^{37} , which, in its subsequent action effects the arrestation of the carrier as disclosed in the former application. It will also be observed that the cam plate 42 at this time has not impinged upon the lever 43, which is an extension of the arm 39. Immediately the plunger b^{45} passes out of contact with the pin bolt 29 the cam plate 42 impinges upon and deflects the lever 43 to rock the

shaft 40 and the arm 39 connected therewith. In rocking the shaft 40 the latch plate 21 is depressed from contact with the lip 20 of the key bar 8 which has been set in locked position. The depression of the latch plate 21 effects the release of the lip 20 and the key bar 8, which is immediately returned to its normal position by the spring 16, the spring 41 aiding therein while retracting to the position in Fig. 1 the fender bar 23.

The succession of the operations between the setting of the latches \bar{b}^{37} by the bolt 29 and the release of the key bar 8 by the deflection of the lever 43 may be as close as practicable.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In combination with a type setting machine embodying a rotary frame having a latch mechanism for engaging type carriers movable lengthwise of said frame, of a keyboard, comprising a plurality of key operated members extensible into the path of said latch mechanism; an interference member operable by each of said key members for interposition in the path of all the other of said key members; a latch to prevent the return of said key members; and releasing devices disposed on said rotary frame for withdrawing said latch from locking position.

2. In combination with a type setting machine embodying a rotary frame having a latch mechanism for engaging type carriers movable lengthwise of said frame, of a keyboard, comprising a plurality of key operated members extensible into the path of said latch mechanism; an interference member operable by each of said key members for interposition in the path of all the other of said key members; an operating mechanism for interposing said interference member in the path of said key members embodying a fender plate disposed in the path of and to be moved by said key members when advanced; a latch to prevent the return of said key members; and releasing devices disposed on said rotary frame for withdrawing said latch from locking position.

3. In combination with a type setting machine embodying a rotary frame having a latch mechanism for engaging type carriers movable lengthwise of said frame, of a keyboard, comprising a plurality of key bars pivotally mounted and each having a vertical extension; a member mounted on said vertical extension adapted for interposition in the path of said latch mechanism; an interference member operable by each of said key bars for interposition in the path of all the other of said key bars; an operating mechanism for interposing said interference member in the path of said key bars embodying a fender plate disposed in the path of and to be moved by said key bars when ad-

vanced; a latch to prevent the return of said key bars; and releasing devices disposed on said rotary frame for withdrawing said latch from locking position.

4. In combination with a type setting machine embodying a rotary frame having a latch mechanism for engaging type carriers movable lengthwise of said frame, of a keyboard, comprising a plurality of key bars pivotally mounted and each having a vertical extension; a member mounted on said vertical extension adapted for interposition in the path of said latch mechanism; a plurality of pin bolts pivotally attached to each of said key bars and at the lower end of the vertical extensions thereof, and extensible into the path of said latch mechanism; an interference member operable by each of said key bars for interposition in the path of all the other of said key bars; an operating mechanism for interposing said interference member in the path of said key bars embodying a fender plate disposed in the path of and to be moved by said key bars when advanced; a latch to prevent the return of said key bars; and releasing devices disposed on said rotary frame for withdrawing said latch from locking position.

5. In combination with a type setting machine embodying a rotary frame having a latch mechanism for engaging type carriers movable lengthwise of said frame, of a keyboard, comprising a plurality of key bars pivotally mounted and each having a vertical extension; a member mounted on said vertical extension adapted for interposition in the path of said latch mechanism, said extensions each having at the lower end thereof a depending lip; an interference member reciprocally mounted to extend into the path of said lip and into the path of the extensions of each of said key bars to prevent the swing thereof; an operating mechanism for interposing said interference member in the path of said key bars embodying a fender plate disposed in the path of and to be moved by said key bars when advanced; a latch to prevent the return of said key bars; and releasing devices disposed on said rotary frame for withdrawing said latch from locking position.

6. In combination with a type setting machine embodying a rotary frame having a latch mechanism for engaging type carriers movable lengthwise of said frame, of a keyboard, comprising a plurality of key bars pivotally mounted and each having a vertical extension; a member mounted on said vertical extension adapted for interposition in the path of said latch mechanism, said extensions each having formed at the lower end thereof a recess having a horizontally extended upper wall and a rearwardly depending lip; an interference member reciprocally mounted to extend in the path of

said lips and in the path of the extensions of each of said key bars to prevent the swing thereof; an operating mechanism for lifting said interference member in the path of
 5 each of said lips and in bearing relation to the horizontal wall of said recesses; a latch to prevent the return of said key bars; and releasing devices disposed on said rotary
 10 frame for withdrawing said latch from locking position.

7. In combination with a type setting machine embodying a rotary frame having a latch mechanism for engaging type carriers
 15 movable lengthwise of said frame, of a key-board, comprising a plurality of key bars pivotally mounted and each having a vertical extension; a member mounted on said
 20 vertical extension adapted for interposition in the path of said latch mechanism, said extensions each having formed in the lower end thereof a recess having a horizontally
 25 extended upper wall and a rearwardly depending lip; an interference member reciprocally mounted to extend into the path of said lips and into the path of the
 30 extensions of each of said key bars to prevent the swing thereof; an operating mechanism for lifting said interference member into the path of each of said lips and in bearing
 35 relation to the horizontal wall of said recesses; a spring actuated latch adapted for interposition in the return path of said key bars and having an arm extended toward
 40 said rotary frame; and a plurality of projecting members mounted on said rotary frame to operatively impinge upon said arm to throw said latch to release said key bars.

8. In combination with a type setting ma-

chine embodying a rotary frame having a latch mechanism for engaging type carriers 40
 movable lengthwise of said frame, of a key-board, comprising a plurality of key bars
 pivotally mounted and each having a vertical extension; a member mounted on said
 45 vertical extension adapted for interposition in the path of said latch mechanism, said extensions each having formed in the lower end thereof a recess having a horizontally
 50 extended upper wall and a rearwardly depending lip; an interference member reciprocally mounted to extend in the path of said lips and into the path of the extensions
 55 of each of said key bars to prevent the swing thereof; an operating mechanism for lifting said interference member into the path of
 60 each of said lips and in bearing relation to the horizontal wall of said recesses; a spring actuated latch adapted for interposition in the return path of said key bars and having
 65 an arm extended toward said rotary frame; and a plurality of projecting members mounted on said rotary frame to operatively impinge upon said arm to throw said latch
 to release said key bars, said projecting members being disposed in said rotary frame to
 impinge upon said arm immediately succeeding the set of the said latch mechanism by
 said key bars.

In testimony whereof I have signed my name to this specification in the presence of
 70 two subscribing witnesses.

JOHN J. HUMMEL.

Witnesses:

HAROLD G. STERN,
 JAMES McANDREW.