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ALINEMENT DEVICE FOR TYPE WRITING MACHINES.

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1,066,749.

Patented July 8, 1913.

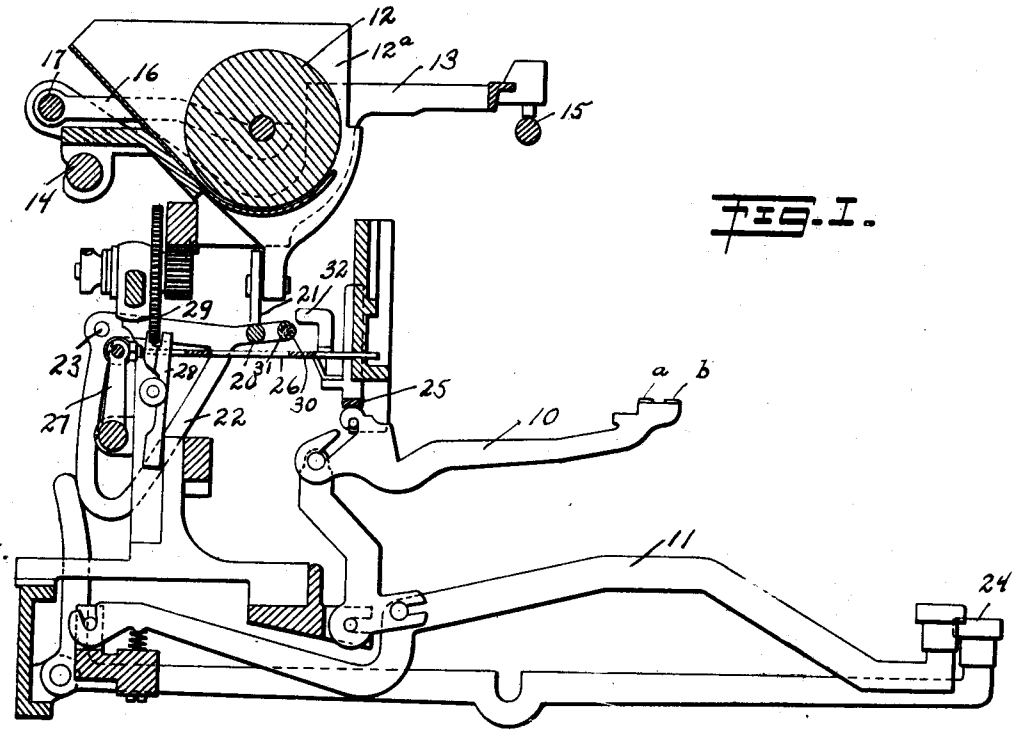


FIG. 1.

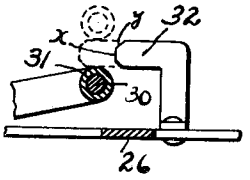


FIG. 2.

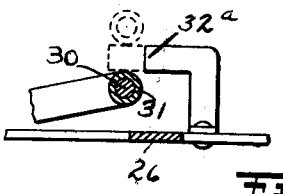


FIG. 3.

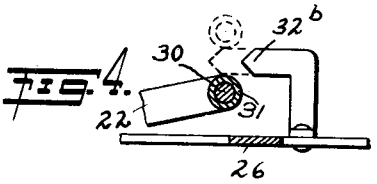


FIG. 4.

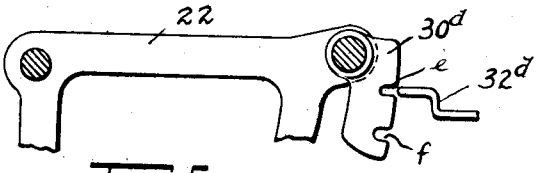


FIG. 5.

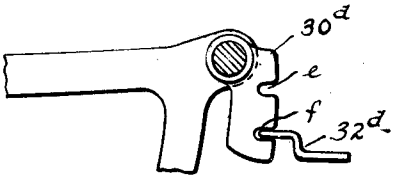


FIG. 6.

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ALINEMENT DEVICE FOR TYPE-WRITING MACHINES.

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Application filed January 20, 1913. Serial No. 743,068.

To all whom it may concern:

Be it known that I, ROBERT E. NAUMBURG, a citizen of the United States, residing in New York city, in the county of New York and State of New York, have invented a new and useful Improvement in Alinement Devices for Type-Writing Machines, of which the following is a specification.

This invention relates to typewriting machines, and its object is to prevent faulty alinement, due to improper actuation of the shifting mechanism or improper correlation of the shifting and printing mechanisms.

This invention comprises alinement-insuring means, which prevents the type mechanism striking the paper when the part operated by the shift key is in transit or in an intermediate position. This it may accomplish either by interposing a positive stop, so as to arrest the type-carrier before it reaches the printing point, or by forming one or both of the contacting portions with a beveled surface or edge, so that the printing mechanism cams, or tends to cam, the shiftable part to proper position by the time the type strikes the paper. The invention thus comprises an element, which is normally movable by the printing mechanism in the printing operation, and an element, which, during normal or proper operation of the writing machine, is out of the path of the first element, but which, by virtue of these elements being relatively movable by the shift mechanism, is caused to intercept the said element while the shifting operation is being performed and until and unless the shiftable part is in one of its printing positions. As already indicated the elements may be formed so that the printing movement is positively arrested, or they may contact with a glancing blow, so that the energy applied to the type action tends to cam the shift mechanism to proper position. The particular means by which the elements are moved relatively to each other by the shift mechanism and one of them is moved by the printing mechanism in its normal operation may be varied. I prefer, however, to mount one or both of the coöperating elements directly on parts customarily present in a writing machine. Further, it is not necessary that both of the elements be of special formation as it will be obvious that one of them might be only a surface or portion of such usual part.

In the construction which I regard as the best embodiment of my invention the coöperating element is shiftable across the path of the element moved by the printing mechanism, and the parts are so proportioned that the normally reciprocating element clears the obstacle in any of the printing positions but encounters it if the obstructing element has not been moved entirely to one side or other of such path. Obviously, the reverse of this would be to shift the normally reciprocating element laterally of its path with respect to a stationary obstacle. Such obstacle may be a positive stop or abutment having openings through which the normally reciprocating element can pass or into which it can enter at the several positions controlled by the shift key; or, clearly, this arrangement might be reversed, so that the part with the recesses or openings would be the normally reciprocating part.

The construction in which the coöperating element is moved across the path of the normally reciprocating element, or vice-versa, is especially desirable in forms of writing machines in which a shift movement and a printing movement are at right angles to each other, or approximately so, since such movements can be availed of directly. Finally, instead of operating the normally reciprocating element directly by the printing mechanism I prefer to operate it by the universal bar or letter-space mechanism, which is actuated whenever a type-key is struck.

The accompanying drawings illustrate the invention as embodied in a machine in which the platen is shifted up and down, and the escapement or universal device moves forward and backward, but it will be understood that it is not necessarily limited to such construction. In these views:

Figure 1 is a sectional side view of a typewriter embodying the invention; Figs. 2, 3 and 4 are sectional side views, on an enlarged scale, showing different forms of the coöperating elements of the alinement-insuring means, the full lines indicating the normal rest positions thereof and the dotted lines indicating the shifted position of one

element and the reciprocating movement of the element operated by the printing mechanism; Fig. 5 is a similar view of another form of these elemnts, the parts being shown in normal rest positions; and Fig. 6 is a view of the same parts, the element 30^d being in shifted position and the element 32^d in the position to which it is moved rearward by the operation of the printing mechanism.

These views show only those portions of a writing machine which are essential for the understanding of the present invention. Parts not shown may be of any usual or approved construction.

The numeral 10 indicates one of a series of type-bars operated by its key lever 11, so as to swing upward and backward against the platen 12. The latter is mounted on a carriage 13, which is guided at 14 and 15 on the frame of the machine. The platen is carried by arms 16, pivoted at 17 to the carriage, and adapted to be swung upward with the platen for the purpose of enabling either of the characters *a*, *b* on the type-bar to print. By means of a vertically-movable rail 20, on which travels a roller 21 carried by said arms, the rail 20 is fixed at its ends to rockable arms or frames 22, which are located at opposite sides of the machine and pivoted about an axis 23. The said frames 22 are oscillated in any suitable manner from a shift key indicated at 24.

A universal bar, indicated at 25, is located so as to be encountered and moved rearward by any one of the type-bars. The universal bar is supported and guided in any suitable or usual manner, and to it is secured a fore and aft reciprocating frame or member 26, which, at its rear end, is pivotally connected to a rocker frame 27. The universal bar member 26 is adapted on its rearward movement to contact with a dog rocker 28, carrying the usual loose and rigid dogs to coöperate with the escapement wheel 29. The rocking frame 27 has suitable connection with the space bar at the front of the key-board (not shown.)

The alinement-insuring means I have shown in the form of a horizontal rod 30, carried by the rocking frames 22 of the shift mechanism and extending across the interior of the machine; this rod preferably carrying a rotatable sleeve or anti-friction roller device 31. The other element of the alinement device is shown in the form of a lug or projection 32 on the fore and aft movable frame 26. The end face of this projection may be perpendicular, as shown at 32^a in Fig. 3, so that on contacting with the part 30, 31 the universal bar member, and therefore the type-bar, would be positively brought to rest before the type reached the paper. As illustrated I may, however, bevel the end of the element, both above and below the center, as indicated at 32^b in Fig. 4, so that if the element 30, 31 be encountered in an intermediate position the element 32, if moved with sufficient force, will cam the platen to proper position before the impact of the type occurs. Another construction is shown in Figs. 1 and 2 and designated 32, the same having a vertical end face *x*, having a length equal to part only of the shift movement, and beveled surfaces *y* at the corners occupying the remainder of the width of the traverse of the element 30. With this construction, if the shift mechanism be substantially in the middle of its movement, so that considerable energy would be required to move the platen to proper position, the type-bar and escapement-operating device are brought to a dead rest, but if the platen is only slightly out of position the member 30, 31 will be contacted by one of the inclined surfaces *y*, so that the platen is cammed the short distance necessary to restore or move it to the desired position.

It will be clear that the form and manner of mounting and operation of the coöperating elements of the alinement-insuring means are susceptible of wide variation. Thus, it is clear that the part 32 (or 32^a, 32^b) and the part 30 might be reversed. Figs. 5 and 6 show a form of these parts in which the element 30^d is a stop having faces or edges perpendicular to the path of reciprocation of the element 32^d and has slots or openings *e*, *f*, corresponding to normal and shifted positions respectively, which receive the end of the element 32^d when the shift is in proper condition. It will be obvious that either of these elements may be the one which is normally reciprocated by the printing mechanism.

In any of those forms in which the type is arrested before it prints, the stop is so located that the universal bar is brought to rest before it moves far enough to remove the dog normally engaged with the escapement rack from engagement therewith. Thus, the carriage will not space and it will not be necessary to back-space before again striking the type key to print the character.

It will be seen that my invention not only prevents the printing of a character when the shift mechanism is in improper condition, but also serves to lock the shifted part against return to normal position after the type has reached a point at or near the paper. This is because the element 30 or 30^d when in its upper position, which is the position for printing capitals, cannot descend even though the finger be taken off the shift key after the element 32, 32^a or 32^b has passed beneath it or into one of the slots. Thus, if the platen has been shifted the op-

eration of the printing mechanism serves to hold it against return when the type is printing or about to print.

While I have illustrated my invention in connection with one shift, it will be obvious that it is equally applicable to two shifts.

What is claimed as new is:

1. In a typewriting machine having type mechanism, a platen, letter-space mechanism actuated by the type mechanism, and mechanism for relatively shifting the type mechanism and platen, alinement-insuring means comprising coöperating elements relatively movable by the operation of the shift mechanism, one element being movable by the letter-space mechanism, and the other element being adapted to intercept or clear such movement according as the shifting operation is partial or complete.

2. In a typewriting machine, the combination with type-bars, a platen, mechanism for relatively shifting the type-bars and platen, and a universal bar, of an element movable by the universal bar, and an alinement-insuring device coöperating with said element through the operation of the shift mechanism so as to be out of the path of said element when said mechanism is properly operated and at other times to intercept the same.

3. In a typewriting machine, the combination with printing mechanism, a platen, a shift key for moving one of these two parts to different printing positions, and letter-space mechanism operated by the printing mechanism, of alinement-insuring means comprising an element on one of the parts of the letter-space mechanism, a coöperating element out of contact with the first-mentioned element during normal operation of the printing mechanism, and means whereby operation of said shift key causes the second element to intercept the path of movement of the first in the interval of shifting from one printing position to another.

4. In a typewriting machine, the combination with printing mechanism, a platen, mechanism for shifting one of these two parts to different printing positions, and letter-space mechanism operated by the printing mechanism, of alinement-insuring means comprising an element movable by the letter-space mechanism, and an element on one of the parts of the shift mechanism and movable thereby across the path of the first-mentioned element.

5. In a typewriting machine, the combination with printing mechanism, a platen, mechanism for shifting one of these two parts to different printing positions, and letter-space mechanism operated by the printing mechanism, of alinement-insuring means comprising an element on a part of the letter-space mechanism, and an element on one of the parts of the shift mechanism and movable thereby across the path of the first-mentioned element.

6. In a typewriting machine, the combination with type-bars, a platen, and mechanism for shifting one of these parts to different printing positions, of a universal bar member, and an alinement-insuring device movable by the operation of said shift mechanism so as to obstruct the universal bar device when the shiftable part is in transit.

7. In a typewriting machine, the combination with type-bars, a platen, mechanism for relatively shifting the same, and a universal bar, of alinement-insuring means comprising an element moved directly by the universal bar, and an element moved directly by a part of the shift mechanism across the path of the first-mentioned element.

8. In a typewriting machine, the combination with letter-space and shift mechanisms having movements substantially at right angles to each other, of alinement-insuring means comprising elements relatively movable by said movements so as to be out of engagement during normal operation but to be intercepted one by the other if the letter-space mechanism is operated when the shift mechanism is in an intermediate position.

9. In a typewriting machine, the combination with printing mechanism, paper-holding means, mechanism for shifting one of these parts for different printing positions, and letter-space mechanism, of a catch controlled by said letter-space mechanism so as to hold the shiftable part in position.

10. In a typewriting machine, the combination with printing mechanism, paper-holding means, and mechanism for shifting one of these parts from normal position to a different printing position, of a universal bar, and a detent operated thereby to hold the shiftable part against return to normal position.

11. In a typewriter having printing mechanism and shift mechanism, means for preventing the alinement being affected by operation of the shift mechanism, comprising an element reciprocated backward and forward by the printing mechanism, and an element moved up and down by the shift mechanism and adapted to intercept the reciprocated element in event of the shift mechanism being out of position.

12. In a typewriter, the combination of printing mechanism, paper-holding means, shift mechanism for relatively shifting said printing mechanism and paper-holding means, letter-space mechanism operated by the printing mechanism, and stop means

controlled by the operation of the shift mechanism for arresting the printing mechanism and the letter-space mechanism before either can become effective in event of the shift mechanism being in an intermediate stage of its operation.

In witness whereof I have signed my name in the presence of two subscribing witnesses.

ROBERT E. NAUMBURG.

Witnesses:
G. H. EMPEY,
MAURICE HOTCHNER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."