

G. C. BLICKENSBERGER.
TYPE WRITING MACHINE.
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956,879.

Patented May 3, 1910.

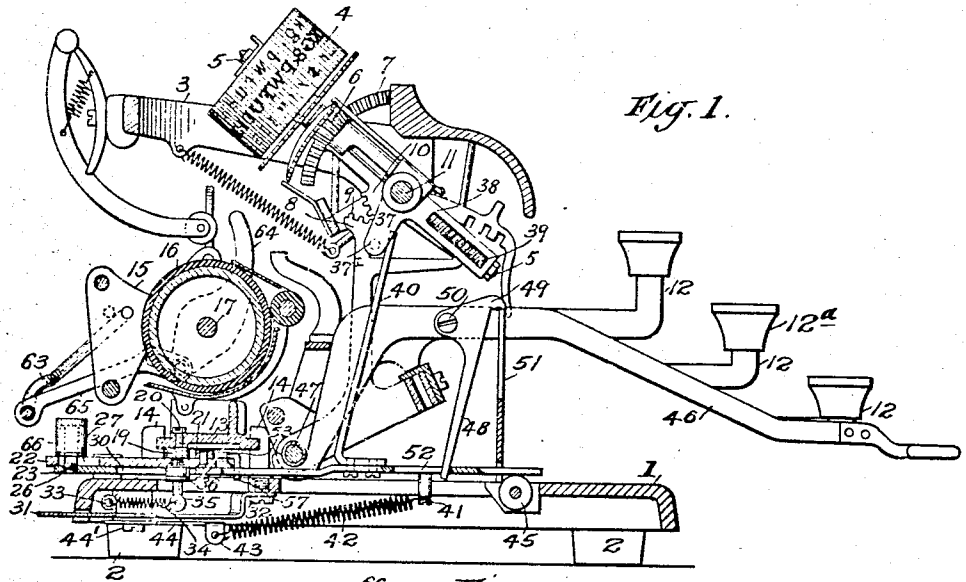


Fig. 1.

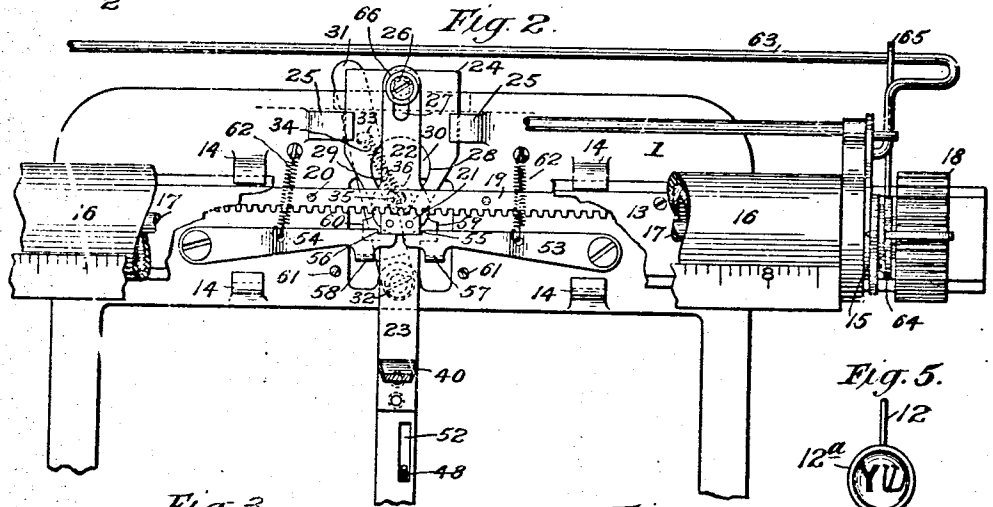


Fig. 2.

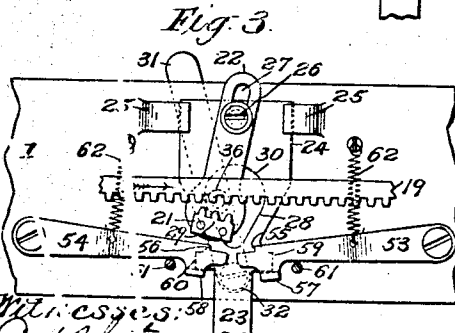


Fig. 3.

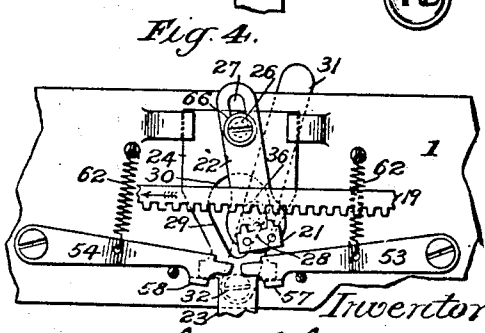


Fig. 4.



Fig. 5.

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UNITED STATES PATENT OFFICE.

GEORGE C. BLICKENSDECKER, OF STAMFORD, CONNECTICUT.

TYPE-WRITING MACHINE.

956,879.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, GEORGE C. BLICKENSDECKER, a citizen of the United States, residing at Stamford, county of Fairfield, and State of Connecticut, have invented certain new and useful Improvements in Type-Writing Machines, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to certain improvements in typewriting machines.

Typewriting machines, as most usually constructed, are arranged to print the characters from left to right. In certain languages, however, such, for instance, as Hebrew, the characters must be printed from right to left, and typewriting machines for the printing of these languages must, therefore, either be specially constructed, so that the step-by-step feed may be the reverse of that usually employed, or must be so constructed that the carriage may be operated to feed in either direction.

The present invention has for its object to produce an improved typewriting machine in which the step-by-step feed of the carriage may be effected either from left to right or right to left, as desired, so that it may be adapted for printing in languages the characters of which are written in opposite directions.

A further object of the invention is to produce a simple, cheap and effective typewriting machine in which the feeding devices will be caused to give the carriage a step-by-step feed in either direction, and in which the change of direction of feed may be readily and easily effected, the machine being thus capacitated for use in writing different languages in which the characters must be printed in reverse directions.

A further object of the invention is to produce a simple, cheap and effective typewriting machine in which the individual keys may be provided with a plurality of characters belonging to the alphabets of languages written in opposite directions, the type mechanism being constructed so that the change from one language to another may be readily and easily effected.

With these and other objects in view, the invention consists in certain constructions, and in certain parts, improvements and combinations as will be hereinafter fully de-

scribed and then specifically pointed out in the claims hereunto appended.

Referring to the accompanying drawings—Figure 1 is a section of one form of typewriting machine embodying the invention, certain parts being shown in elevation. Fig. 2 is a plan view of the step-by-step feeding mechanism illustrated in Fig. 1, the paper carriage being broken away. Fig. 3 is a plan view of the feeding devices illustrated in Fig. 2 arranged to produce movement of the carriage from left to right. Fig. 4 is a view similar to Fig. 3, but with the feeding devices arranged so as to produce movement of the carriage from right to left. Fig. 5 is a plan view of an improved type key which may be employed.

The typewriting machine illustrated in the drawings, and in which the invention is embodied, is a machine of the well-known Blickensderfer type. It will be understood, however, that the invention is not confined to typewriting machines of this type, as it may be embodied in machines differing widely therefrom in construction.

In the particular machine illustrated, there is provided a base, indicated at 1, mounted on feet 2, said base serving to support a frame 3 in which the operative parts are mounted.

In machines of the character to which this invention relates, it is, of course, necessary to provide means whereby the alphabets of either of the two languages which the machine is to write, may be readily employed. This may be effected in various ways, but in the particular machine illustrated, this is effected by making the type or printing mechanism readily removable. As illustrated, the type mechanism consists of a wheel, as 4, removably secured to a shaft 5 in any suitable way, as, for instance, by a staple 5'. The shaft 5 is provided with a gear 6, meshing with two racks, one of which, marked 7, is shown. The movements of these racks are produced from two sectors, one of which, 8, is shown. These sectors are provided with teeth, as 9, which mesh with segments 10 formed on the arms which carry the racks. The shaft 5 passes through a rock-shaft 11 suitably supported in the frame, and the proper movements of the type mechanism are produced from key-levers 12, the depression of each key-lever causing a movement of this rock-shaft 11. The

detail construction of this type mechanism and its method of operation has no bearing on the present invention, and it will not, therefore, be described, but reference is made to Patent No. 583,840, granted to G. C. Blickensderfer, June 1, 1897, in which this construction and its method of operation are fully described.

Each of the type levers 12 carries a key or button, as is usual, these buttons being marked 12^a. In the best constructions, the keys or buttons carry a plurality of characters, as illustrated in Fig. 5, in which the key shown is provided with both Roman and Hebrew letters.

The carriage of the machine may be of any suitable construction. As shown, it consists of a sliding plate 13, the movement of which is controlled by guides 14 mounted on the bed-plate 1. This carriage is provided with the usual standards, one of which is indicated at 15, these standards serving to support the usual paper roll 16. The shaft 17 of this roll is provided with the usual knurled hand-wheel, as 18, for turning the paper roll.

The carriage will be provided with a feeding device by which it may be given a step-by-step movement. While this feeding device may be varied in construction, as shown, it consists of a rack 19 secured to the sliding plate 13 by means of screws, as 20, or in any other suitable manner. A feeder which co-operates with the feeding device on the carriage to effect its step-by-step movement is employed, and this feeder may be widely varied in construction. In the particular construction illustrated, the feeder comprises a toothed block 21 mounted on an arm 22. The devices for giving the block, when the same is employed, its movement may be widely varied in construction. As illustrated, these devices include an actuator which, as shown, consists of a plate 23, the outer end of this plate being enlarged, as indicated at 24, the bed plate being provided with guides 25 which control the movement of this actuator plate. In the particular construction illustrated, the arm 22, before referred to, is mounted on this actuator plate, the connection between the plate and the arm being effected, as shown, by a screw 26 passing through a slot 27 in the arm. It is apparent that by moving the actuator plate forward and back through its guides, the block 21 and arm 22 will be moved into and out of engagement with the rack.

Machines embodying the invention will be provided with means for actuating the feeder, whatever be its construction, to give the feeder a movement after it is engaged with the cooperating feeding device on the carriage to advance the carriage one step, and these means will be of such a character

that the feeder may be given its step-by-step feeding movement in either direction. In the construction illustrated, the means for moving the feeder include a cam mechanism embodying two cams 28, 29. While these cams, when such cams are employed for actuating the feeder, may be variously constructed, in the particular construction illustrated, they are formed by cutting a suitable opening 30 in the enlarged end 24 of the actuator plate.

The particular means by which either one or the other of the cams, when cams are employed, is made operative to move the feeder may be varied. As illustrated, there is provided, for this purpose, a lever 31 pivoted by means of a screw 32, or in any other suitable manner, to the under side of the bed-plate. This lever, in the particular construction illustrated, is provided with an eye 33, to which is secured a spring 34, the other end of this spring being secured in an eye 35 screwed into the under side of the swinging arm 22. In the particular construction illustrated, the stem of this eye 35 carries a cam roll 36. The pivotal point of this lever 32 is so arranged that as the lever is swung it passes the center line of its pivot and the actuating plate, so that the spring 34 draws the feeder into position to be acted upon by one or the other of the cams 28, 29, as the case may be. As the construction is illustrated in Fig. 3, the lever is in position so that the spring 34 makes the cam 29 operative, whereas in Fig. 4, the lever is in such position as to make the cam 28 operative.

Assuming the lever to be in the position shown in Fig. 3, and the actuator plate 23 in its extreme backward position, in which position it will be understood that the feeder block 21 is in engagement with the rack, it will be understood that if the actuator plate 23 is moved toward the front of the machine the screw 26 will move in the slot 27 until it reaches the inner end of this slot, at which time the opening 30 has moved to such a position that the cam 29 is out of contact with the roll 36. A further movement of the actuator plate will, by reason of the engagement of the screw 26 with the arm 22 at the inner end of the slot 27, cause the arm 22 to move inward, so as to disengage the block from the rack. As soon as this disengagement occurs, the spring swings the arm 22 and the block 21 into the position shown in Fig. 3, that is, into the position for a fresh take. As the actuator plate is moved toward the rear of the machine, the arm 22 moves so as to bring the block into engagement with the rack, after which the continued movement of the actuator in the rearward direction causes the cam 29 to bear against the roll 36 and thus advance the rack and carriage one step, in the direction of the arrow shown in Fig. 3.

When the construction is arranged as illustrated in Fig. 4, the movements just described are precisely the same except that the cam 28 is the operating cam and the step-by-step movement of the carriage is in the direction of the arrow shown in this figure.

The movement of the actuator plate may be variously effected. In the particular construction shown, there is loosely mounted on the shaft 11 a bell-crank lever 37, 38, the arm 38 being slotted and being engaged by a pin 39 carried on the shaft 5. Each time a key is depressed to operate the type-wheel, this bell-crank lever 37, 38 will be rocked. The arm 37 of this bell-crank lever carries a pin 37' which engages an upstanding arm 40 secured to the actuator plate. The actuator plate has secured to its under side a pin 41 to which is connected a spring 42, the other end of this spring being secured in an eye 43 formed on an arm 44 secured to the under side of the bed-plate by means of a screw 44', or in any other suitable manner. Each time a key is depressed, the spring 42 is placed under operating tension and when a key is depressed and released, the actuator plate will be reciprocated. For ease in movement, the end of the actuator slide may, if desired, rest on an anti-friction roll 45 suitably journaled in the bed-plate.

In the particular construction illustrated, the spacer consists of a lever 46 which is hooked around a rod 47, this spacer, as well as the type levers, being held in position by certain springs, not shown. The construction of this spacer is, however, fully shown and described in Patent No. 583,840 above referred to. This spacer carries a two-armed lever 48, 49 pivoted at 50 to the spacer. The arm 49 of this two-armed lever hooks over a plate 51 on the front of the machine and the arm 48 engages in a slot 52 in the actuator plate. Each time the spacer is depressed, therefore, the plate will be moved toward the front of the machine by the two-armed lever and the spring 42 placed under operating tension, and after the spacer is released, the plate will be returned by the spring, thus effecting the feeding operation.

If desired, a locking mechanism may be employed which holds the feeding devices and carriage in position after the feed is completed and during the printing operation. While this locking mechanism may be variously constructed, as shown it consists of two pivoted arms 53, 54. The arm 53 is provided with a shoulder 55 and the arm 54 with a shoulder 56, these shoulders being so located as to engage on each side of the block 21 when the feeding movement is completed. These arms 53, 54 are provided with projections 57, 58 which are in the path of lugs or extensions 59, 60 on the actuator plate. As the actuator plate moves toward the front of the machine, in the manner hereinbefore

described, these projections 59, 60, strike the lugs 57, 58, moving the arms backward into the position shown in Fig. 3.

If desired, stops 61 may be employed to prevent excessive movement either of the arms 54, 55, or of the actuator plate, but when these stops are employed, they should be so located as to permit the necessary movement of the actuator plate.

It will be understood that when the parts are in the position shown in Fig. 2, the block 21 rests between the shoulders 55 and 56 of the arms 53, 54, and all the parts are thus rigidly locked in position.

It may be desired, in the particular construction shown, to move the carriage without operating either the keys or the spacing bar, and when this is to be done, the feeding devices should be disengaged. While this may be effected in any desired manner, in the construction shown, the machine may be provided with a swinging bail, as 63, operated from a lever 64 and a slotted arm 65 mounted on one end of the carriage, the construction of this bail and lever and operating connections being fully shown in Patent No. 583,840, before referred to. This bail is arranged to contact with a friction roll 66 mounted on the screw 26 before referred to. When this bail is rocked, the actuator plate will be moved toward the front of the machine, and the feeding devices released in the manner before described.

Changes and variations may be made in the construction herein shown for carrying the invention into effect. The invention is not, therefore, to be limited to the specific construction hereinbefore described and illustrated in the accompanying drawings.

What is claimed is:—

1. In a typewriting machine, the combination with a carriage having feeding means thereon, of a cooperating feeder, means whereby said feeder may be caused to engage with and be disengaged from the means on the carriage, and may be given a step-by-step advancing means to positively feed the carriage during the printing operation, and means whereby said step-by-step advancing movement of the feeder may be caused to occur in either direction whereby the machine is capacitated to write in either direction.

2. In a typewriting machine, the combination with a carriage having a rack, of a cooperating feeding block, means whereby said block may be caused to engage with and be disengaged from the carriage and may be given a step-by-step advancing movement to positively feed the carriage during the printing operation, and means whereby said step-by-step advancing movement of the block may be caused to occur in either direction whereby the machine is capacitated to write in either direction.

3. In a typewriting machine, the combination with a carriage, of a type mechanism, a bank of keys, a spacer, a carriage operating spring, means whereby the operation either of a key or the spacer places the spring under operating tension, carriage advancing means operated by the spring, and means whereby the spring may be caused to advance the carriage in either direction.
4. In a typewriting machine, the combination with a carriage, of a removable type mechanism, a bank of keys, a spacer, a carriage operating spring, means whereby the operation either of a key or the spacer places the spring under operating tension, carriage advancing means operated by the spring, and means whereby the spring may be caused to advance the carriage in either direction.
5. In a typewriting machine, the combination with a carriage, of a type mechanism, a bank of keys, a spacer, a carriage operating spring, means whereby the operation either of a key or the spacer places the spring under operating tension, a feeder actuated by the spring, and means including a cam whereby the spring may be caused to actuate the feeder to move the carriage in either direction.
6. In a typewriting machine, the combination with a carriage having a feeding device thereon, of a feeder, means including a cam mechanism whereby the feeder may be engaged with and disengaged from the feeding device on the carriage and given advancing movements to effect a step-by-step feed of the carriage, and means for effecting a relative positioning movement between the feeder and the cam mechanism, whereby the advancing movements of the feeder may be caused to occur in either direction.
7. In a typewriting machine, the combination with a carriage having a feeding device thereon, of a feeder, means including a cam mechanism whereby the feeder may be engaged with and disengaged from the feeding device on the carriage and given advancing movements to effect a step-by-step feed of the carriage, and means for shifting the position of the feeder with respect to the cam mechanism to cause the advancing movement of the feeder to take place in either direction.
8. In a typewriting machine, the combination with a carriage having a rack, of a feed-block, means including an actuator for causing the feed-block to be engaged with and disengaged from the rack on the carriage and given advancing movements to produce a step-by-step movement of the carriage, and means whereby the feed-block may be caused to give the carriage a movement in either direction.
9. In a typewriting machine, the combination with a carriage having a rack, of a swinging feed-block, means including an actuator for causing the feed-block to be engaged with and disengaged from the rack on the carriage and given advancing movements to produce a step-by-step movement of the carriage, and means controlled by the actuator whereby the feed-block may be caused to give the carriage a movement in either direction.
10. In a typewriting machine, the combination with a carriage having a feeding device thereon, of a feeder, an actuator for the feeder, two cams controlled by the actuator, means for operating the actuator, and means for causing either of the two cams to cooperate with the feeder, whereby the feeder may give the carriage a step-by-step advancing movement in either direction.
11. In a typewriting machine, the combination with a carriage having a feeding device thereon, of a feeder, an actuator, a spring for controlling the actuator, a bank of keys, a spacer, means whereby the operation of either a key or the spacer places the spring under operating tension, two cams controlled by the actuator, and means whereby either cam may be caused to cooperate with the feeder, whereby the feeder may effect a step-by-step advancing movement of the carriage in either direction.
12. In a typewriting machine, the combination with a carriage having a rack, of an actuator, a swinging feed block mounted thereon, two cams controlled by the actuator, a spring for operating the actuator, a bank of keys, a spacer, means whereby the operation either of a key or the spacer places the spring under operating tension, and means for positioning the block, so that it will be operated on by either cam, whereby the carriage may be fed in either direction.
13. In a typewriting machine, the combination with a carriage having a rack, of an actuator, a slide, a feed block, a bank of keys, a spacer, connections between the keys and the slide and the slide and the spacer, a cam controlled by the actuator for moving the feed block in one direction, a second cam controlled by the actuator for moving the feed block in the opposite direction, and means for positioning the block so that it may be operated upon by either cam.
14. In a typewriter, the combination with a carriage having a rack, of a feeder, means for actuating the feeder, so that it may positively give the carriage a step-by-step movement in either direction, and a locking device for holding the feeder in engagement with the rack during the printing operation.
15. In a typewriter, the combination with a carriage having a rack, of a feeder, a slide on which the feeder is pivoted, two cams

controlled by the feeder, means for causing either cam to operate in connection with the feeder, whereby the carriage may be given a step by step advancing movement in either direction, and a locking device for holding the feeder in engagement with the rack during the printing operation.

In testimony whereof, I have hereunto set my hand, in the presence of two subscribing witnesses.

GEORGE C. BLICKENSDECKER.

Witnesses:

A. WHITE,

S. E. BROWN.