

(No Model.)

2 Sheets—Sheet 2.

J. BECKER.

TYPE WRITING MACHINE.

No. 350,717.

Patented Oct. 12, 1886.

Fig. 4.

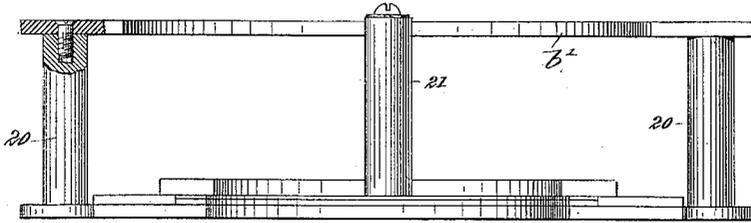


Fig: 5.

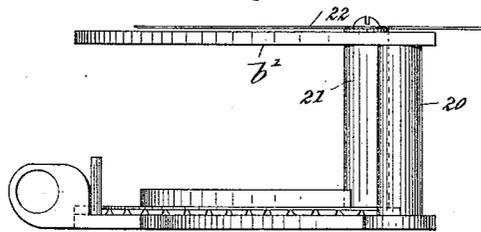


Fig: 6.

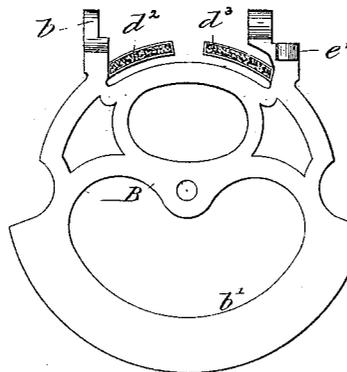


Fig: 7.

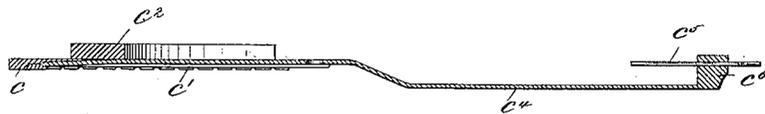


Fig: 8. 6



Witnesses:

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UNITED STATES PATENT OFFICE.

JOHN BECKER, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE WORLD TYPE WRITER COMPANY, OF PORTLAND, MAINE.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 350,717, dated October 12, 1886.

Application filed January 20, 1886. Serial No. 159,117. (No model.)

To all whom it may concern:

Be it known that I, JOHN BECKER, of Boston, county of Suffolk, and State of Massachusetts, have invented an Improvement in Type-Writers, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object to construct a simple and efficient type-writer.

In this my invention an index-plate is mounted to slide freely and to work upon a feed-bar. The index-plate has pivoted upon it a type-carrying segment having a lever by which to operate it, the said lever corresponding with the index-plate to insure the correct placing of the type which it is desired to use. A segmental piece of rubber, having type molded thereon, is secured to the type-carrying segment. The paper to be printed is fed upon and over a bed by a manually-operated feed-roll. A printing-lever, pivoted to one side of the index-plate near the feed-bar, has at its under side a projection, which, when depressed, strikes and forces the type upon the paper lying on the said bed. A rocking lever extending lengthwise of the machine is loosely connected with and so as to operate the printing-lever, the said lever being controlled by a spring to thereby normally keep the printing-lever in its elevated position. A feed-dog, loosely pivoted to the printing-lever, engages the feed-bar, and as the printing-lever is operated the feed-dog is made to engage the next tooth of the feed-bar, thereby moving the index-plate and its attached parts forward. The feed-dog is disengaged from the feed-bar by the operator, and is employed as a lever to return the index-plate and its attached parts to their normal position to commence to print at the left-hand side of the paper. Various other details are also shown for inking the type, spacing, and centering the type-carrying segment, &c., which will be hereinafter more fully described.

Figure 1 shows in perspective a type-writer constructed in accordance with this invention; Fig. 2, a rear side view thereof; Fig. 3, a section taken in the dotted line *xx*, Fig. 1, and Figs. 4 and 5 different views of a modification to be referred to; Fig. 6, a plan view of the index-plate detached; Fig. 7, a detail of the

type-carrying segment, and Fig. 8 an enlarged detail of the rubber-type segment.

The frame-work A is of suitable construction to support the working parts. The paper-feeding roll *a*, preferably of rubber and mounted upon the shaft *a'*, has its bearings in the frame-work A extended lengthwise of the machine. A thumb-piece, *a''*, having in this instance four arms, is mounted upon the shaft *a'*, by means of which said shaft is rotated, and by turning the said thumb-piece to bring one or another arm into a certain position—as, for instance, a vertical position—the feed-roll will be rotated a definite distance to thus properly space the lines to be printed. A guard, *a'''*, attached to the frame-work A at opposite ends directly above the paper-feeding roll, serves to keep the paper in contact with the roll, and also serves as a rest or support upon which other portions of the machine bear. A feed-bar, *a¹*, having ratchet-teeth *a⁵*, is fixed to the frame-work A at opposite ends of the machine, as at *a⁶ a⁷*, thereby lying parallel with the paper-feeding roll *a*.

The index-plate B, provided with guide-arms *b*, is mounted to slide freely upon the feed-bar *a¹*, said index-plate being herein shown as cast in approximately circular form, (see Fig. 6,) the guide-arms *b* projecting outward therefrom. That portion *b'* of the said index-plate B most remote from the feed-bar *a¹* presents a series of letters or characters such as it is desired to print by the machine.

The type-carrying segment C is pivoted upon a stud, *C'*, located at the center of the index-plate, said type carrying segment consisting of a segmental frame, *c*, having a segmental piece of rubber, *c'*, preferably vulcanized thereto, and the segmental centering device *c²*, secured to the said segment by the screws *c³*. The segmental piece *c'*, interposed between the frame and the centering device *c²*, and preferably vulcanized to the said frame, consists of rubber having letters or characters molded upon its under side, as at 50, corresponding with the letters or characters represented upon the surface of the index-plate at *b'*. An operating-lever, *c⁴*, preferably cast integral with the type-carrying segment C, extends therefrom, passing beneath the index portion *b'* of the index-plate B, (shown in Figs. 1 and 3,) and a pin, *c⁵*, attached to an upright

or projection, e^6 , at the extreme end of said operating-lever e^4 , extends over the said index portion b' of the index-plate to register with any letter or character thereon as the operating-lever is moved.

The type or characters upon the type segment c' are arranged in reverse order to the characters upon the index portion b' of the index-plate, so that as the operating-lever is moved and its pin c^5 made to register with a certain letter, the corresponding letter of the type-segment c' will be brought into printing position. The paper to be printed is fed by a portion of the frame-work of the machine, the said bed extending parallel with the said feed-roll a over the bed-plate d , forming a portion of the frame-work of the machine, the said bed extending parallel with the said feed-roll a and feed-bar a^4 . The index-plate B, near the feed-bar a^4 , (see Fig. 6,) is provided with pad or inking-surface $d^2 d^3$, which may contain any suitable ink and the types are caused to come in contact with said inked surface, as will be hereinafter described.

A printing-lever, e , pivoted on a stud, e^1 , at one side of the index-plate B and near the feed-bar a^4 , has at its under side a lug or projection, e^2 , and two flat springs, $e^3 e^4$, which, as the printing-lever is depressed, bear upon the rubber-type segment c' , the flat springs bringing the type in contact with the inked surfaces $d^2 d^3$, while the lug or projection e^2 forces the type in contact with the paper. A rocking bar, f , of bail shape, is attached to two collars, 2, 3, mounted to rock upon the feed-bar a^4 and controlled by a spring, f' , said bail-shaped rocking lever passing through a loop or eye, f^2 , attached to the upper side of the printing-lever e , thereby forming a loose connection that the printing-lever e may be raised and lowered by the movements of the rocking lever f , and also permitting the printing-lever and its attached parts to move freely laterally on said rocking lever.

A feed-dog, g , is loosely pivoted to the rear side of the printing-lever e , the said dog engaging by gravity the ratchet-teeth a^5 of the feed-bar a^4 , the parts being so arranged that when the printing-lever is in its elevated position the feed-dog will just engage one tooth, and as the printing-lever is depressed the feed-dog will force the printing-lever and the index-plate, to which it is attached, and all its connecting parts forward one tooth, so that when the printing-lever is again elevated the feed-dog will engage the next tooth, thus feeding the type-carrying devices forward step by step until a line is completed.

The feed-dog g is disengaged from the feed-bar a^4 by the operator and employed as a hand-lever at the completion of each line printed, or when it is desired to return the printing devices to the normal position to print upon the left-hand side of a sheet.

The printing-lever e is provided with a headed adjusting-screw, m , and as said lever is depressed by the rocking lever to strike the type and cause it to make an impression the under side of the head of the said adjusting screw

strikes a pin, m' , attached to the frame or index plate B, thereby limiting the downward movement of the printing-lever while depressing the rubber-type segment; but to depress the printing-lever e only so far as to cause the feed-dog to engage the next tooth of the feed-bar a^4 without depressing the rubber-type segment, to thereby leave a space, as between words, for instance, a spring-plate, n , secured to and projecting from the upper side of the printing-lever e , is employed, and when the lever e is depressed by bearing upon this spring-plate it (the said lever) descends only far enough to actuate the dog, the spring yielding and reaching the guide-arm b , and thus arresting the descent of the lever before the head of the adjusting-screw descends far enough to come into contact with the stop-pin m' .

The centering device, before referred to, consists of a metal segment, c^2 , secured upon the type-carrying segment, and is provided with a series of countersunk holes, 4, and a pin, 5, is attached to the under side of the printing-lever e , which, when the latter is depressed, enters one of the holes 4, and if the hole be not presented in just its correct position, the pin 5 will strike one side of or the countersunk portion of the hole, thereby throwing the type-carrying segment into its correct position that the pin may enter the hole.

The rocking lever f being free to rock upon the feed-bar a^4 , and the index-plate being also free to move upon said feed-bar, the entire rocking parts may be upturned upon the feed-bar to expose the paper upon the bed.

The operation may be briefly stated, as follows: The sheet of paper is placed between the feed-roll a and guard a^3 , as shown in Fig. 1. The operating-lever e^4 is then turned until the pin c^5 registers with the desired letter to be printed, the type-carrying segment being thereby correspondingly moved. The bail-shaped rocking lever f is then depressed, causing the printing-lever e to strike the type-segment c' and force the type into contact with the paper. During the time the rocking lever f is being depressed the feed-dog g is pushing against one tooth of the ratchet-toothed feed-bar a^4 , and thereby moving the entire printing devices forward; but just before the rocking lever f has become entirely depressed the feed-dog arrives at its limit of movement, so that the entire parts are at rest while the letter or character is being printed. The rocking lever f is then released, when the spring f' returns the same to its normal position, and by the loose connection with the printing-lever e said lever is also returned to its normal position, and the feed-dog g , being loosely connected with the printing-lever, is therefore raised, that it may drop, by gravity, ahead of the next tooth of the feed-bar preparatory to again feeding the parts forward. When it is desired to have the machine feed and not print, as for a space between words, the spring-plate n is depressed, to thus partially depress the printing-lever, as described, and when it is desired to

return the entire printing mechanism to the left-hand side of the machine, as at the commencement of a line, the feed-dog *g* is disengaged and employed as a hand-lever which is grasped by the operator. To gage the relative distances between different lines the thumb-piece *a*² is turned to present one of the arms to a certain fixed position—as upright, for instance—and as each arm is respectively carried to the upright position the feed-roll *a* will feed the paper forward a definite distance.

By the employment of an operating-lever as herein described no shadow is cast upon the index-table of the index-plate to cause the operator to hesitate or to make mistakes.

The rubber-type segment 50 is provided with deep grooves or recesses, as at 6, (see detail Fig. 8,) between the type portions, that the type may be forced through the cut-away portion of the index-plate somewhat independent of each other in order that a type next the type being printed may not come in contact with the paper to blur the same.

The rubber-type segment having the grooves described is of special importance, as it obviates the necessity of the employment of bearing or projecting surfaces upon which those letters—each side of the letter being printed—bear, such bearing-surfaces in immediate proximity to the letter being struck or printed being of disadvantage owing to the fact that as the type-segment is moved before the printing-lever is lifted the rubber type bears upon the sharp edge of such bearing-surfaces, thereby destroying the efficiency of the rubber-type plate.

Referring to the modification, Figs. 4 and 5, the index portion *b*' of the index-plate is mounted upon legs or standards 20, thus extending in the arc of a circle similar to the type-segment, and the said type-segment has an upright, 21, carrying a pen or a pointer, 22, which co-operates with the index-plate *b*', thus making a somewhat more compact form of machine, which is especially desirable for shipping purposes.

I have herein shown a rubber-type segment provided with projecting type properly spaced, and having deep grooves or recesses, 6, between the said type, whereby the type may be operated independently of its neighbors on either side; but such segment I do not herein claim, as the same is embodied in an application filed by me September 3, 1886, Serial No. 212,577.

I claim—

1. In a type-writer, the movable index-plate, the type-carrying segment pivoted thereon, and the operating-lever for moving the type carrying segment, combined with an

independent printing-lever pivoted to the index-plate and constructed and arranged to bear upon the type-segment to print when depressed, substantially as described.

2. In a type-writer, the movable index-plate, the type-carrying segment pivoted thereon, and the operating-lever for moving the type-carrying segment, combined with a printing-lever pivoted to the index-plate, a lug, *e*², and an adjusting-stop, *m*, carried by said printing-lever, all substantially as and for the purpose set forth.

3. In a type-writer, the feed-bar and movable index-plate mounted thereon, combined with the pivoted printing-lever and rocking lever for operating said printing-lever, the axial centers of the pivots of said printing-lever and rocking lever being at right angles with relation to each other, so that the printing-lever may be parallel with and move back and forth upon the rocking lever, all substantially as described.

4. In a type-writer, the feed-roll and guard, combined with the feed-bar, and movable index-plate mounted to move laterally and to rotate on said feed-bar and normally bearing upon said guard, said index-plate being constructed and arranged to support the printing mechanism and its co-operating parts, all substantially as described.

5. In a type-writer, the index-plate and type-carrying segment pivoted thereon, and the centering device mounted upon said type-carrying segment and having a series of holes, 4, combined with the printing-lever having the centering-pin 5, to enter the said holes 4, all as set forth.

6. In a type-writer, the movable index-plate, and the type-carrying segment pivoted thereon, combined with the pivoted printing-lever, the feed-dog, and feed-bar, the spring-plate *n*, attached to said pivoted printing-lever, and a limiting-stop for the said plate *n*, all substantially as described.

7. In a type-writer, the movable index-plate, and inking pads or cushions, and the type-segment to be brought in contact with the inking pads or cushions, combined with the pivoted printing-lever, and the springs *e*³ *e*⁴, to bear upon the type-segment as the printing-lever is depressed, substantially as described.

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

JOHN BECKER.

Witnesses:

B. J. NOYES,
C. M. CONE.