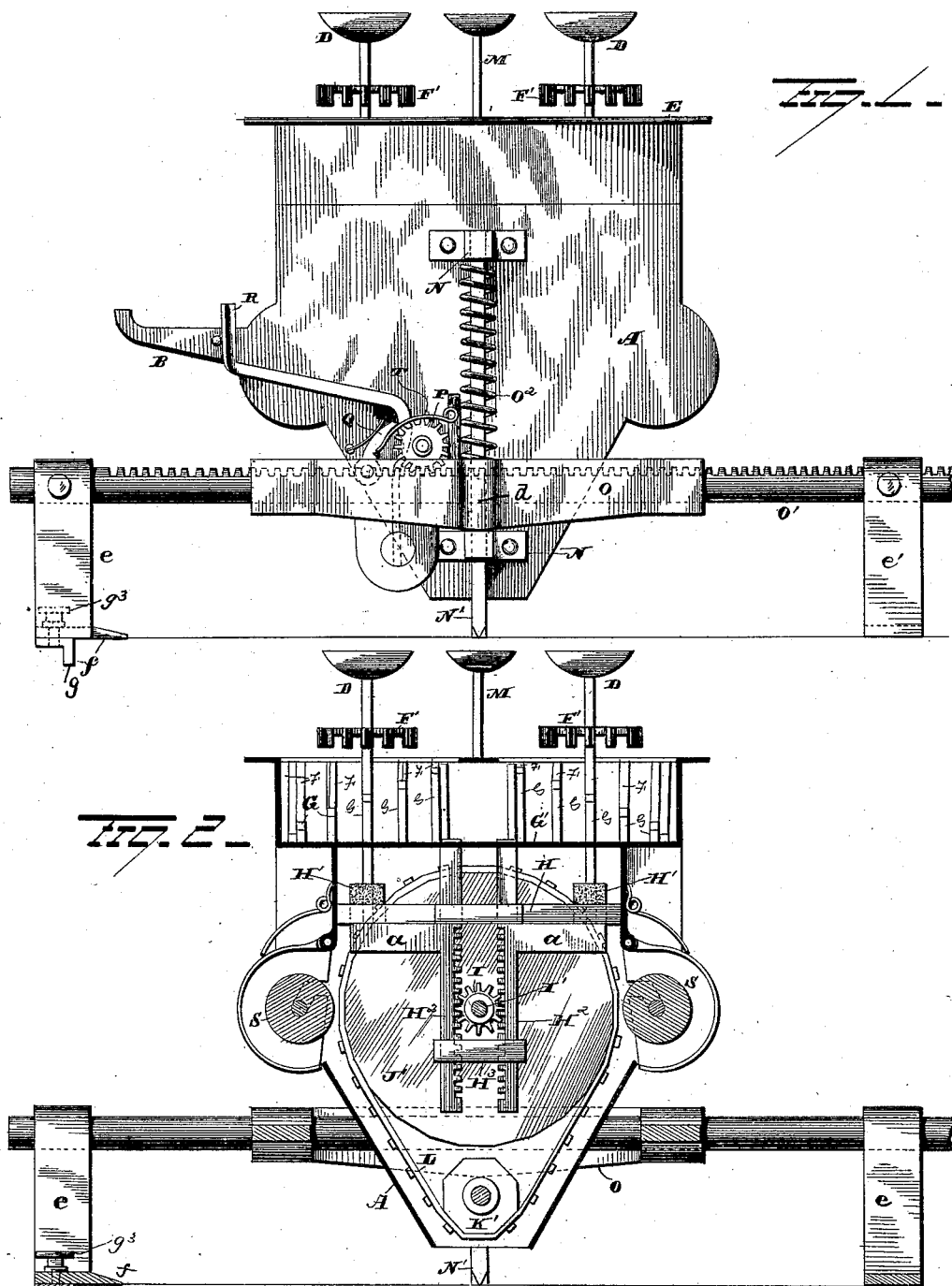


2 Sheets—Sheet 1.

No. 347,373.

Patented Aug. 17, 1886.



9. WITNESSES

Nottingham
Geo. F. Downing.

INVENTOR

Willis J. Perkins
By ~~Leggett~~ Leggett
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(No Model.)

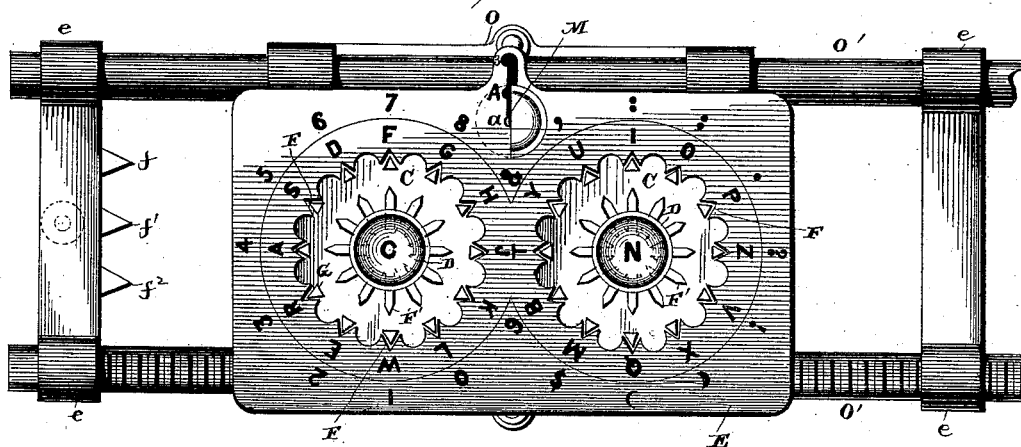
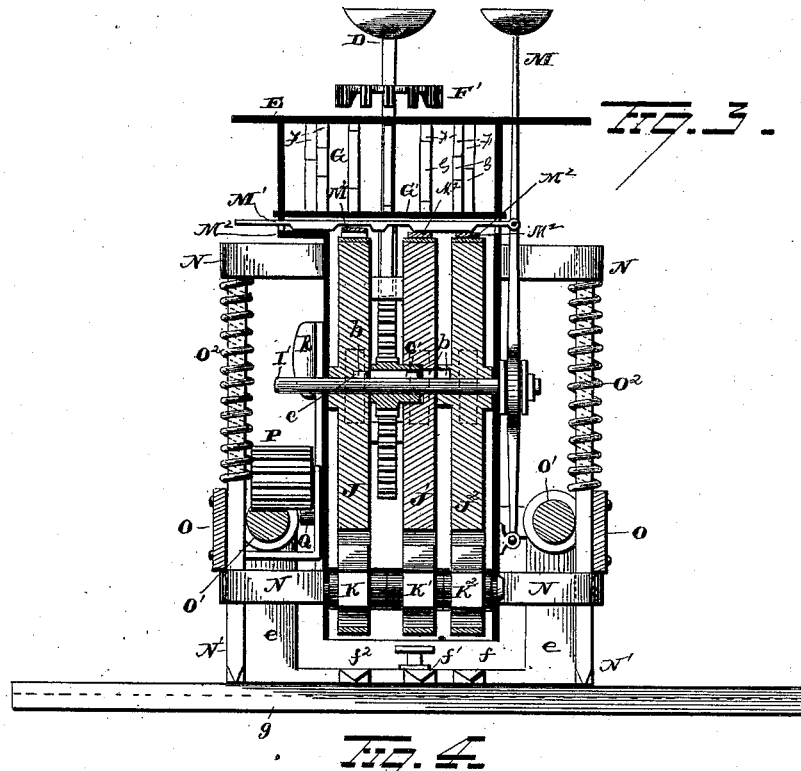
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W. J. PERKINS.

TYPE WRITING MACHINE.

No. 347,373.

Patented Aug. 17, 1886.



WITNESSES
Wm. Nottingham,
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UNITED STATES PATENT OFFICE.

WILLIS J. PERKINS, OF GRAND RAPIDS, MICHIGAN.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 347,373, dated August 17, 1886.

Application filed August 4, 1884. Serial No. 139,642. (No model.)

To all whom it may concern:

Be it known that I, WILLIS J. PERKINS, of Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Type-Writers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in type-writers, the object of the same being to dispense with the complicated and numerous parts now employed in the manufacture of type-writers. A further object is to provide a machine adapted to move over the material being printed upon, thereby enabling it to be employed in book-keeping and for other purposes where it is impossible to employ the stationary type-writer. A further object is to provide a type-writer combining simplicity and economy in construction with durability and efficiency in use; and with these ends in view my invention consists in the parts and combinations of parts, as will be more fully described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is an enlarged view in side elevation of my improved type-writer. Fig. 2 is a longitudinal vertical section of the same. Fig. 3 is a vertical transverse section, and Fig. 4 is a plan view.

A represents a metallic casing, preferably of the shape shown, and provided with an open lower end, which latter rests slightly above the material being printed upon. This casing is provided on one end with a thumb support, B, formed integral therewith, and on its upper surface with the dial-plate E, on which the letters, numerals, and punctuation-marks are printed or engraved, and with one or more circular openings, C, (preferably two) through which the keys D pass. By providing two openings the vertical movement of the keys is considerably lessened, and I am enabled to arrange the letters, numerals, and marks in larger circles and separate them a distance sufficient to prevent confusion. These letters, numerals, and marks are preferably arranged in circles around the openings, and the openings C in the plate are bounded by the vertical V-shaped guides F, which extend from the plate G' upwardly, for the purpose of guiding

their respective pointers F' during the downward movement of the keys. These pointers are rigidly secured to the keys D and point toward their respective guides F, and as the keys are flexibly secured in position at their lower ends they can be inclined laterally sufficiently far to move any one of the pointers into its respective guide.

G are stops of irregular length, on a line with the V-shaped guides F and secured to the plate G', and adapted to regulate the limit of downward movement of the keys. Each stop represents a large and small letter and a numeral or a large and small letter and a punctuation-mark, and is arranged relatively to the letters on the endless bands, so that by moving one of the keys downwardly and laterally until the pointer opposite the letter A on the dial-plate strikes the stop below said pointer, one of the belt-carrying wheels will be turned until the letter A (if the wheel carrying the large letters is in gear) on the belt comes opposite the opening in the lower end of the case. Then, by continuing the pressure on the key, the casing is moved downwardly until the type comes in contact with the material to be printed on and leaves the impression thereon.

H is a longitudinal bar secured at its ends to the ends of the casing and provided with openings, through which pass the perforated rubber cushions H'. The keys D pass downwardly through enlarged openings in the plate G', and are secured to the rubber cushions H, and the latter are rigidly secured at their lower ends to the laterally-extending arms α of the rack-bars H². These rack-bars are guided by the box H³, secured to the casing, and engage the pinion I, loosely secured to the shaft I'.

From the foregoing it will be seen that by moving the key laterally, as before described, and then releasing it, the rubber cushion H' instantly throws the key to a vertical position.

J, J', and J² are three wheels, loosely mounted on the shaft I' and operated by the pinion I, and K, K', and K² are smaller wheels with angular peripheries, located below and in line with the wheels J, J', and J². Each pair of wheels is embraced by a belt, L, one of which is preferably provided with large letters, one with small letters, and the other with numerals and punctuation-marks.

As before stated, the letters, numerals, and marks correspond with their respective stops, G, and hence, by moving one of the keys laterally and downwardly until it strikes a stop, the letter, numeral, or mark corresponding to said stop will be presented at the lower open end of the casing. After the finger is released from the key the rack-bars H^2 and keys are returned to their normal position by a spring or springs, and hence the wheels and type are moved in an opposite direction until they reach their normal position, which brings the grooves b of the hubs of the wheels J, J', and J² in a line. The shaft L is adapted to be moved longitudinally by the lever M, and is provided with the splines c , one of which is always in engagement with a groove in the pinion I, while the other is in engagement with one of the wheels J, J', or J². The groove b in the wheel J opens from the inner face of the wheel, the groove b in the wheel J' passes through the entire length of the hub thereof, and the groove b of the wheel J' opens inwardly. Suppose, for the sake of illustration, that the shaft is moved inwardly to the position shown in Fig. 3. Then the spline c thereof will engage the groove in the wheel J, while the spline c' will rest in the groove in the pinion I, and hence the movement of either key will turn the wheel J. Now, by withdrawing the shaft slightly the spline c will enter the groove in the pinion and the spline c' the groove in the wheel J', and hence the wheel J' will be operated. By moving the shaft still further the spline c' will leave the groove in wheel J' and enter wheel J², while the spline c still remains in the elongated hub of the pinion. To prevent the bands from slipping while in motion, and also to prevent the bands from moving when they should remain stationary, I have pivoted the notched bar M' to the lever M. The notches in this bar permit the flat springs M² to rise above the bands and permit the bands to turn without interference, while the depending portions of said bar hold the springs in contact with the bands and prevent the bands not in use from turning. Thus it will be seen that any one of the belts can be quickly thrown into position and operated by its key.

The upper end of the lever M rests in a slot formed centrally in the dial-plate. This plate is also provided with notches opening into the slot, for the purpose of holding one of the wheels locked to the shaft and preventing the accidental displacement of the parts.

The casing A is provided on opposite sides with the bearings which embrace the rods N', and permit the casing to move or slide on said rods. These rods rest on the paper and in line with the letter being printed, and form the entire support for the casing, and pass through the bearings d of the rectangular carriage O, mounted on the parallel rods O'. Springs O² encircle the rods N' between the upper surface of the carriage and upper bearing, N. When the casing is depressed, the springs are com-

pressed, and as soon as the pressure on the casing is relieved the springs force the casing up to normal position. The rods O' are rigidly secured at one end to the standard e' , and are supported at their opposite ends by the standard e , adjustably secured thereto. The standard e is provided with three pointers, f , f' , and f'' , one for each type-band, and with a square or straight-edge, g , adjustably secured by set-screw g^2 to its lower edge. This straight-edge can be placed in contact with one edge of the material printed on, and the rods turned so as to direct the casing in an inclined direction, either up or down, as desired. One of the rods O' is provided with teeth, with which the pinion P, journaled in bearings on the carriage O, engages. This pinion P projects inwardly beyond the sides of the carriage, and is operated by the spring-actuated pawl Q, pivotally secured to the casing. When the casing is pushed down, and the lever R, which holds the pawl out of contact with the pinion, moved by the operator toward the rods N' the pawl Q is released and permitted to move toward the pinion, and when the casing comes to a stop the pawl rests slightly under the pinion. When the downward pressure on the casing is removed, the casing is forced upwardly by the springs O², and the pawl comes in contact with the pinion P and turns the latter a sufficient distance to space the words. The spacing between the letters of a word is controlled or regulated by the thumb lever R, pivoted at its lower end to a bracket depending from the carriage. This lever is bent, as shown, and is adapted, when in the position shown, to engage the pawl and prevent the pawl Q from entering deeply between the teeth of the pinion P, and consequently only permits the pawl to engage the pinion sufficiently to move the carriage to space the letters.

Saerspring-pressed inking-rollers journaled in the ends of the casing and moving in contact with the type-belts.

The operation of the device is as follows: The machine, which is exceedingly light, is placed over the book or paper, and the carriage moved until the rods N' come opposite the position to be occupied by the first letter. When the casing is in an elevated position, as shown in Fig. 2, a blank portion of the printing-band is exposed to the paper or other surface to be printed upon, and hence, when the casing is depressed for the purpose of spacing between sentences, the spacing between letters and words of a sentence being accomplished by the lever R, before explained, the wheel carrying capital letters is thrown into gear and the impression made. The machine is now moved toward the top of the sheet until the middle pointer, f' , comes opposite the letter imprinted on the paper. The lever M is now moved outwardly one notch, which throws the middle wheel in gear. This wheel is operated in the same manner, and so on continuously. The machine is prevented from moving on the parallel rod O' by the spring T,

rigidly secured to a post on the carriage O. This spring rests in contact with the pinion and prevents the same from moving when the pawl is not in engagement therewith. The operator can see the letter after the casing rises, and hence he is enabled to compose as he writes, and is able at all times to see the last letter and word, and consequently avoid the possibility of making mistakes.

If desired, I can employ one or more inking-rollers on either side, and in this way use one color of ink for capitals and another for small letters and numerals; or different colored inks can be used on opposite sides of a roller, if so desired.

It is evident that slight changes may be made in the form and arrangements of the several parts described without departing from the spirit and scope of my invention; hence I do not wish to limit myself strictly to the description herein set forth; but,

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

1. In a type-writer, the combination, with a stationary support consisting, essentially, of parallel rods and supporting legs or blocks, of a movable casing or frame carrying an endless band having raised characters thereon, a key, and devices connecting the key and printing-band, whereby the movement of the key imparts a rotary movement to the printing-band, substantially as set forth.

2. In a type-writer, the combination, with a stationary support consisting, essentially, of parallel rods and supporting-legs, one of said rods being provided with teeth, of a movable carriage mounted on the stationary support, a pinion journaled to the carriage and engaging the teeth of the rod, a movable casing or frame operating the pinion and carrying an endless band having raised characters thereon, a key, and devices connecting the key and band, whereby the longitudinal movement of the former imparts a rotary movement to the latter, substantially as set forth.

3. The combination, with a stationary support consisting, essentially, of parallel rods and supporting-legs, of a carriage located between and embracing both of said rods, a movable casing or frame mounted on said carriage, springs for yieldingly supporting said casing, an endless band having raised characters thereon located within the casing or frame, a key, and devices between the key and endless band for imparting a rotary movement to said endless band, substantially as set forth.

4. In a traveling type-writer, the combination, with a printing-band having raised characters thereon, of a key and intermediate devices, substantially as described, connecting the key and printing-band, whereby a longitudinal movement of the key imparts a rotary and vertical movement to the printing-band.

5. In a type-writer, the combination, with a casing or frame and large and small carrying-wheels, of endless type-bands mounted on said

wheels, a key, and intermediate devices, substantially as described, connecting the key and wheels, whereby the band is moved.

6. In a type-writer, the combination, with a printing-band and a key for turning said band, of a series of stops, each of which represents a character on the printing-band, and devices, substantially as described, for imparting movement from the key to the printing-band, substantially as set forth.

7. The combination, with the parallel rods and legs or blocks supporting said rods, of a movable carriage mounted on said rods, a vertically-movable casing or frame carrying a printing-band having raised characters thereon, the said band adapted to project below the casing or frame, and devices, substantially as described, for operating the printing-band.

8. The combination, with a slideway and a straight-edge adjustably secured to said slideway, of a casing or frame supported on said slideway and printing devices located within said casing or frame.

9. The combination, with an elevated slideway consisting, essentially, of two parallel rods supported on legs, a carriage mounted thereon, and the vertical rods secured to the carriage and terminating on a line with or slightly above the lower faces of the rod-supporting legs, of the casing or frame loosely supported on the rods and springs bearing against the casing or frame and the carriage.

10. In a type-writer, the combination, with a series of printing-bands, a shaft, and a series of band-carrying wheels loosely mounted on said shaft, of a clutch for locking any one of the series of wheels to the shaft and a lever for imparting a longitudinal movement to the shaft, substantially as set forth.

11. In a type-writer, the combination, with a series of printing-bands, a shaft, and supporting-wheels mounted on the shaft, of a locking-clutch whereby either wheel can be locked to the shaft, a lever for moving the shaft, a bar operated by the lever, and friction-brakes adapted to be moved in contact with the bands.

12. In a type-writer, the combination, with a printing-band, a carrying-wheel, and a pinion, of rack-bars engaging the pinion on opposite sides, and keys for moving the rack-bars.

13. In a type-writer, the combination, with a slideway having a series of pointers, of a movable casing or frame and a series of printing devices located thereon, each pointer being arranged in a line with its respective printing device.

14. In a type-writer, the combination, with a slideway, a casing or frame mounted on the slideway, and printing devices, substantially as described, located within the casing or frame, of a rod or pointer connected with the casing or frame, for indicating the position of the character being printed.

15. In a type-writer, the combination, with a printing-band and a dial-plate, of a key and connecting mechanism, substantially as described, between the key and band.

16. In a type-writer, the combination, with
a printing-band, of an operating-key mounted
on a flexible base and connecting mechanism,
substantially as set forth, between the key and
5 printing-band.

17. In a type-writer, the combination, with
a printing-band, a dial-plate, and a series of stops
differing in height, of a vertically and later-
ally movable key having a series of laterally-
10 projecting pointers, and connecting mechan-
ism, substantially as set forth, between the
key and printing-band.

18. In a type-writer, the combination, with

a printing-band, a dial-plate, stops differing
in height located below the dial-plates, and 15
guides leading from said dial-plate to the stops,
of a printing-band, a key, and connecting
mechanism, substantially as set forth, between
the key and printing-band.

In testimony whereof I have signed this 20
specification in the presence of two subscrib-
ing witnesses.

WILLIS J. PERKINS.

Witnesses:

GEORGE COOK,

S. G. NOTTINGHAM.