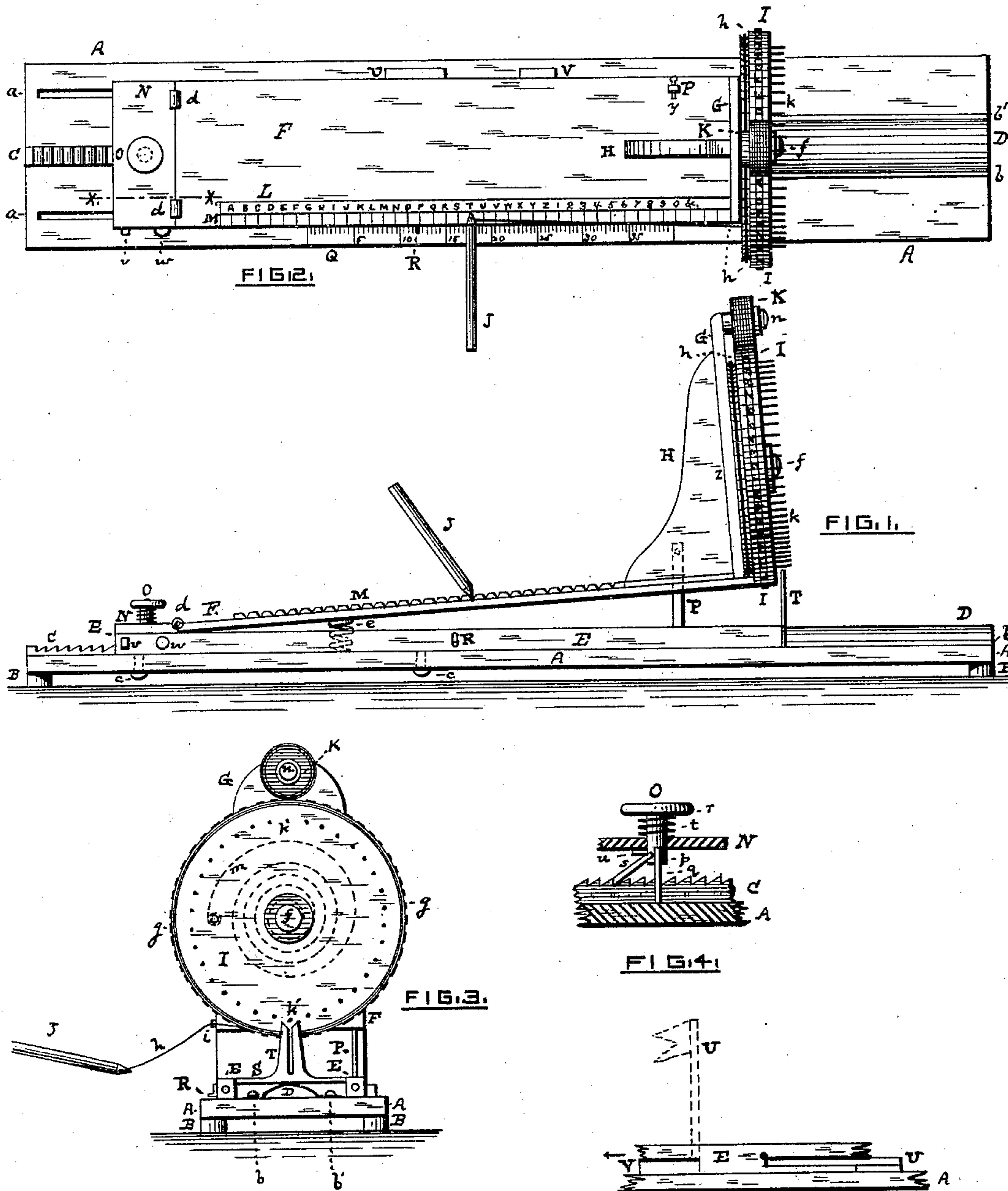


(No Model.)

W. R. PERCE.
TYPE WRITING MACHINE.

No. 285,840.

Patented Oct. 2, 1883.



WITNESSES.

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TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 285,840, dated October 2, 1883.

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To all whom it may concern:

Be it known that I, WARREN R. PERCE, of the city and county of Providence, in the State of Rhode Island, have invented a new and useful Improvement in Typographs or Type-Writing Machines; and I declare the following to be a specification thereof, reference being had to the accompanying drawings.

Like letters indicate like parts.

Figure 1 is a side elevation of my improved type-writer. Fig. 2 is a top plan of the same. Fig. 3 is an end elevation. Figs. 4 and 5 are detail views.

In the drawings, A represents the base of the machine, supported at its four corners by feet B. Two parallel grooves, *a a*, are cut longitudinally through said base A, and extend about two-thirds the length thereof. A ratchet-bar, C, extends longitudinally on the central line of the base A, about half the length thereof. At the right-hand end of the base, and on its central longitudinal line, is the printing-bed D, in shape like the longitudinal section of a cylinder, and having its round surface uppermost. On each side of the printing-bed D are wires *b b'*, fastened at their ends to the base A and extending the whole length of the printing-bed D.

A sliding carriage, E, consisting of two long bars united at both ends, moves longitudinally upon the base A, being held thereon by means of screws *c c*, the shanks of which pass through the base A from below up through the grooves *a a* and into said bars. The carriage E sustains a key-board, F, which is hinged to it near its left-hand end by the hinges *d d*. Said key-board F thus forms a lever, and has a vertical motion, being normally elevated by the spiral spring *e*.

At its free end the key-board F has a fixed standard, G, which is strengthened by a brace, H, and supports a type-wheel, I, which by this connection has a vertical movement. The type-wheel I turns upon an axis, *f*, and consists of a wheel having on its periphery a type-band, *g*, preferably of india-rubber, and on which are formed the types of the letters, numerals, and other characters to be imprinted. Back of the type-band the wheel is grooved to contain the cord *h*. On the front of the wheel I, and on the line of each radius of the types,

respectively, is a pin, *k*, set at a right angle thereto. The wheel I is turned in the direction of the movement of the hands of a watch by the cord *h*. This cord, passing over said wheel in its groove, is fastened therein at one end, passes through a loop, *i*, and is drawn by the pointer or pencil J, attached to its free end. The reverse motion of the wheel, when the tension of the cord *h* is released, is automatically caused by the uncoiling of a spring, *m*, (shown in dotted lines in Fig. 3,) which is inserted in a suitable recess on the back of the wheel I, and fastened at its inner end to the hub of said wheel, and at its outer end pinned to the standard G, near the edge thereof, at the point marked *z* in Fig. 1. The standard G also supports an ink-wheel, K, which turns very loosely on its axis *n*. The ink-wheel should be made of a heavy material, in order that it may bear with sufficient weight upon the band of the type-wheel I. It has on its periphery a band, *o*, of felt, which should be kept well saturated with an ink containing glycerine enough to keep it in a moist condition. The ink-wheel K revolves by friction upon the band of the type-wheel I, with which it is always in contact.

Along the front of the key-board is the index L, having marked on it at regular intervals the letters and other characters which the machine can print, and corresponding to each a V-shaped notch, M, is made in front of said index L.

At the end of the carriage opposite to the type-wheel is the fixed cross-piece N, through the center of which the feeder O extends vertically downward. This feeder O (shown in side elevation in Fig. 4, on section-line *x* of Fig. 2) consists of a bar, *p*, supported by and traveling between vertical posts, *q*, and having a disk-shaped head, *r*. At the lower end of the bar *p* is a swinging pawl, *s*, pivoted to said bar, the outer end of which pawl freely engages with the ratchet C. A spiral spring, *t*, confined between the head *r* and cross-piece N, keeps the feeder O normally in its elevated position. A stop-pin, *u*, limits the action of said spring. When the carriage is withdrawn from right to left in returning, the pawl is raised by a trip or lever, *v*, the hand of the operator in the meanwhile seizing the knob *w*.

The rise of the key-board F is limited by the post P, which extends upward from the rear bar of the carriage E, passes through a slot of said key-board, and has a cross-pin, *y*, at its top.

On the front of the base A is the register Q. An indicator, R, fastened to the front bar of the carriage E, as it moves with said carriage over said register, shows the progress of the machine as actuated by the feed-motion. Across the advancing end of the carriage E is the cross-bar S, having at its center a vertically-slotted guide, T, with a flaring mouth.

On the rear bar of the carriage E, and fastened to it, is the signal U, turning on a pin-pivot fastened to its corner and entering said bar. On the base is the block V. As the carriage is advancing, the signal is dragged horizontally, as shown in Fig. 5, until the indicator R has traveled, say, to 35 on the register, at which time the forward and pivoted end of the signal U is butted against the end of the block V. The next movement of the feeder causes the signal U to mount the block V and to stand upright, as shown in dotted lines in Fig. 5, in which position it continues during the remainder of the advance movement of the machine.

Having thus specified the parts of my improved type-writer, I will proceed to describe the operation of the machine.

The sheet of paper to be printed upon is passed under the wire *b*, over the printing-bed D, and under the wire *b'*. It is there confined sufficiently while a line is being printed upon it. To get the spaces between the lines I simply slide the paper forward with the hand the desired distance. The paper freely slides over the printing-bed and beneath the confining-wires. I use a printing-bed having a cylindrical surface, because it will allow the contact of the type-wheel only at a single point, and thus insures the impression of only the desired letter, whereas a plane surface would receive the impression of portions of the adjacent letters as well. The ink-wheel is saturated with ink applied by a camel's-hair brush to its felt band, and as it revolves in contact with the type it keeps them wet for printing. To get the lateral spacing between the letters I use the feeder O, which is operated by the forefinger of the left hand. In commencing to print a line the carriage should be carried to the left as far as possible, bringing the indicator R to the zero-point of the register Q. After each impression of the selected type, I depress the feeder O, which crowds the pawl *s* against the tooth of the ratchet-bar C, and forces the carriage and its appurtenances to move forward one space along the grooves *a a*. The feeder O, when relieved of the pressure of the hand, rises by the force of the spring *t*, withdraws the pawl *s* from its former engagement until it drops by its own gravity into the next tooth of the ratchet. In printing I hold the pointer J, like a pencil, with the right

hand, and insert its point in the slot M in front of the letter or character of the index L which I wish to print. The pointer J pulls the cord *h* and causes the type-wheel I to revolve until the type corresponding to the selected letter or character comes to the position indicated by *k'* in Fig. 3. As soon as the pointer has entered said slot and brought the desired type to position, as described, I press with the pointer the key-board F downward. The type-pin *k'* now descends into the vertical slot of the guide T, and prints upon the paper. As I lift the pointer J, the key-board F rises by force of the spring *e*, and the pin *k'* clears the slot of the guide T. The wheel I is then free again to revolve in either direction, and I bring the pointer J to the notch M of the next character to be imprinted, still farther dragging the cord *h* if the next letter is to the left-hand of that previously printed, or letting the wheel I reel in the cord *h* by the uncoiling of the spring *m* if the next letter chosen is to the right-hand side of the letter last printed. The motion in operating my machine is therefore the alternate depression of the left and right hands, the one descending as the other ascends, so that I do not advance the machine until after the type rises from the paper, and I do not depress the type until after the feeder has advanced a new space for the imprint. After a line is printed, I trip the pawl *s* and move the carriage to the left for another line.

The use of the signal U is to automatically give the alarm that I am approaching the end of a line—say to within five spaces. As it flies up in front of the operator, he cannot help seeing it, without giving it any special attention, and he then knows whether he can finish his word on that line or must divide it by a hyphen. If I desire to see any portion of the printed page covered by the machine, I withdraw the pin *y* and bring the key-board F to a vertical position upon its hinges *d*, thus exposing the whole length of the printing-bed.

It has been common hitherto to make the printing mechanism of a type-writer stationary and to have the paper fed to it by a carriage; but by making the printer to glide over the paper, as the hand of a writer does, I simplify the construction and obtain equally good results.

As the forward screws, *c c*, are inserted about midway the length of the carriage, the forward ends of the carriage pass over the paper without obstruction when advanced by the feed-motion.

Instead of using a rubber type-band on a rigid printing-bed, I may use metallic type upon an elastic printing-bed, obtaining color from an interposed ink-ribbon; but as the type would be brought into position in the same manner, it is obvious that such modification would be within my invention.

Instead of a cord *h*, a small flexible chain may be preferred, as being free from all liability to stretching by repeated use.

I claim as a novel and useful invention and desire to secure by Letters Patent—

1. In a type-writing machine, a hinged key-board, F, having a vertical movement, and provided with an index, L, and notches M, and supporting a type-wheel, I, which is turned by a cord, *h*, and pointer J, to bring a chosen type into position to print, such position being obtained by the engagement of the end of said pointer with the particular notch M which corresponds with said chosen type, substantially as described.

2. In a type-writing machine, the combination of the vertically-movable key-board F, having the index L and notches M, the type-wheel I, having the type-band *g*, spring *m*, cord *h*, and pointer J, and the friction ink-wheel K, substantially as described.

3. In a type-writing machine, the combination, with the base A, having a printing-bed, D, of a carriage, E, adapted to be moved upon said base by means of a pawl and ratchet, and a movable type-wheel, I, supported upon said carriage, substantially as described.

4. The base A, having a fixed ratchet, C, in combination with the carriage E and its cross-piece N, the bar *p*, head *r*, spring *t*, pawl *s*, pin *u*, and posts *q*, arranged to advance the type-writing mechanism over the printing-bed, substantially as described.

5. The improved type-writer herein described, consisting of the base A, having grooves *a a*, ratchet C, printing-bed D, and wires *b b'*, the carriage E, screws *c c*, cross-piece N, the feeder O, the cross-bar S, having slotted guide T, the hinged key-board F, having an index, L, and notches M, and supporting an ink-wheel, K, and a grooved type-wheel, I, the latter wheel being provided with a type-band, *g*, and type-pins *k k'*, and turned by a cord, *h*, and pointer J, and returned by a spring, *m*, all arranged and operating substantially as specified.

WARREN R. PERCE.

Witnesses:

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