

(No Model.)

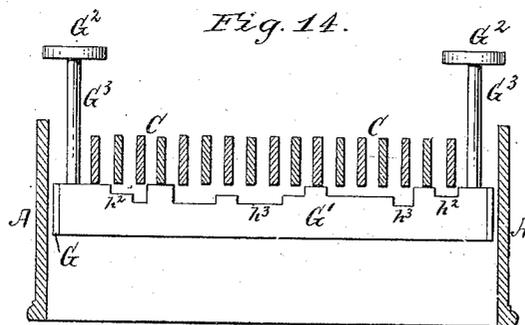
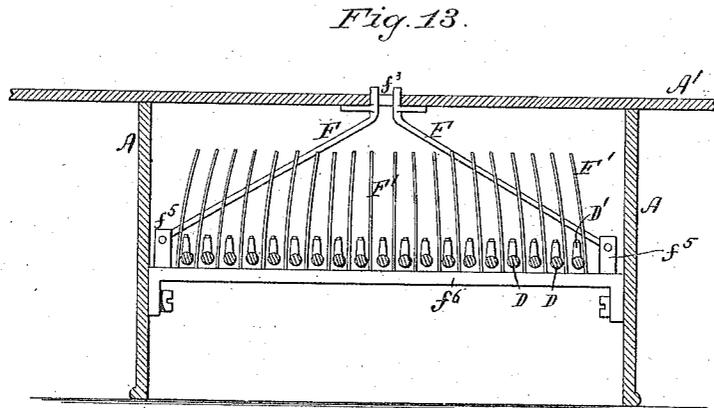
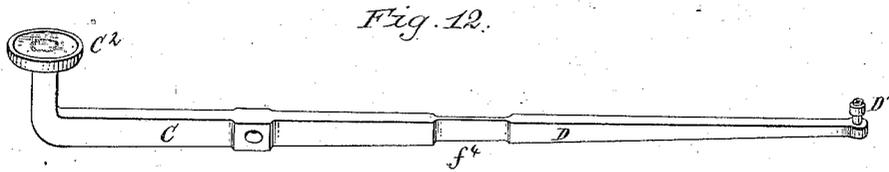
3 Sheets—Sheet 3.

W. H. SLOCUM.

TYPE WRITING MACHINE.

No. 335,972.

Patented Feb. 9, 1886.



Chas. J. Buchheit }
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UNITED STATES PATENT OFFICE.

WILLIAM H. SLOCUM, OF BUFFALO, NEW YORK.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No 335,972, dated February 9, 1886.

Application filed May 5, 1885. Serial No. 164,511. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. SLOCUM, of the city of Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Type-Writing Machines, of which the following is a specification.

This invention relates to an improvement in that class of type-writers in which the types are attached to levers or arms which are actuated by key-levers.

The object of this invention is to improve the mechanism whereby the types are guided to the point of impression; also, to improve the spacing mechanism, and, finally, to improve the construction of the paper-carriage and the devices whereby said carriage is actuated.

My invention consists, to these ends, of the improvements which will be hereinafter fully set forth, and pointed out in the claims.

In the accompanying drawings, consisting of three sheets, Figure 1 is a longitudinal sectional elevation of my improved type-writing machine. Fig. 2 is a horizontal section of the same in line *z z*, Fig. 1. Fig. 3 is a cross-section of the paper-carriage in line *y y*, Fig. 1. Fig. 4 is an elevation of the guides of the type-levers. Fig. 5 is a cross-section in line *w w*, Fig. 1. Fig. 6 is a side elevation of the feed-carriage. Fig. 7 is a top plan view of the paper-carriage. Figs. 8, 9, 10, and 11 are detached perspective views illustrating the construction of the type-levers. Fig. 12 is a perspective view of a modified construction of the type-levers. Fig. 13 is a front elevation showing a modified construction of the guides of the type-levers. Fig. 14 is a cross-section in line *z z*, Fig. 1.

Like letters of reference refer to like parts in the several figures.

A A represent the side pieces of the frame, and A' the top frame, resting on the same and supporting the paper-carriage B and its connecting parts.

C represents the key-levers, arranged side by side between the side pieces, A A, and pivoted on a cross bar or rod, *c*, which is secured to the side pieces, A A. The key-levers C are held in an elevated position by springs *d*, which bear against the under side

of the key-levers and are secured to a cross-piece, *d'*.

*d*² represents tension screws arranged side by side in threaded openings in the cross-piece *d'* and bearing against the under side of the springs *d*, whereby the tension of the latter may be regulated. The upper side of the key-levers C abut against the under side of a cross-bar, C', secured to the side pieces, A A, whereby the upward movement of the levers C is arrested.

C² represents the keys of the levers C, which are secured thereto by soldering or otherwise. The key-levers C are preferably constructed of thin sheet metal—such as brass, tin, &c.—bent to form a bar or lapped, as shown in Figs. 8, 9, and 10, or bent and soldered to form a tube, as represented in Fig. 11, whereby a light and strong bar is formed.

D represents the type bars, forming practically a continuation of the key-levers C, and D' are the type secured to the rear ends of the same. The type-bars D are pivoted or hinged at *e* to the rear ends of the key-levers C by vertical pivots, so that each type-bar can swing in a horizontal plane on the hinge or joint by which it is attached to its key-lever. This hinge is preferably composed, as represented in Fig. 1, of a bifurcated frame, *e'*, which is secured in a socket formed in the inner end of the key-lever, and which frame receives the pivots formed on the upper and lower sides of the outer portion of the type-bar.

The type-bars D are guided in their movements toward and from the point of impression about midway of their length between guides or ways E, formed on a cross-piece, E', which latter is secured to the side pieces, A A. The guides E are formed on the upper side of the cross-piece E', and converge upwardly toward the common point of impression of all the types, the central guide being arranged vertically and the guides on each side of the central guide inclined, so that each guide will direct its key-bar toward the point at which the impression is delivered. Each guide E outside of the central guide is composed of a main inclined portion, *f*, and an upper and lower vertical portion, *f'*, *f''*, so that upon depressing a key-lever C its type-bar D is caused to first move vertically sufficiently to

permit its free or rear end to pass over the next adjacent type and clear the same before the type-bar turns on its pivot e and begins its ascent on the inclined portion f of its guide.

5 By this upward movement the type-bar D is swung on its hinge e until it has reached the end of the incline of its guide and the type presents its face to a guide or throat piece, f^3 , secured centrally in the top frame, A' , below
10 the point of impression; when a further depression of the key-lever moves the type-bar through the upper vertical portion of its guide until its type enters the throat f^3 , strikes the paper, and delivers the impression. The
15 throat f^3 insures the proper centering of each type when it enters the same before it delivers the impression upon the paper.

It is obvious that the center key-lever and type-bar can be rigidly connected, because
20 their movement takes place in a vertical plane.

It is obvious that a flexible or spring bar, f^4 , may be substituted for the hinged joint, for
25 the purpose of connecting the key-lever with the type-bar, as represented in Fig. 12. In this construction the flexible portion f^4 would practically perform the same function as if the parts were jointed and the same result obtained.

30 If desired, the type-bars may be guided toward the impression-point, as shown in Fig. 13, by inclines F , arranged on either side of the center of the machine, instead of an individual guide for each type-bar, as above described, whereby the same result would be
35 obtained. The guide-bars F are secured at their upper ends to the throat f^3 of the top frame, A' , and at their lower ends to posts f^5 f^5 .

40 F' represents fine wire springs, which are secured between the type-bars D to a cross-piece, f^6 , connecting the side frames, A A. The springs F' simply serve to return the type-bars D to their proper places after having
45 been operated upon.

G represents a U-shaped spacing-frame arranged underneath the key-levers C, and which is secured to a rock-shaft, g , journaled in suitable bearings, g' , in the side pieces, A A.

50 G' represents the space-bar connecting the ends of the frame G , and which is held with its upper surface against the under side of the key-levers C by springs g^2 .

G^2 represents the space-key secured to the
55 bar G' by vertical standards G^3 .

g^3 are adjustable stops, which limit the downward movement of the bar G' , and which are secured to the side pieces, A A.

60 g^4 represents a spring-pawl secured to the rear curved portion of the frame G , so as to move therewith, and engaging with its upper end with a ratchet-wheel, H, which latter is secured on a short shaft, h , journaled in bearings h' , formed on the under side of the top
65 frame, A' .

h^2 h^3 are notches or depressions formed in the upper side of the space-bar G' . The notches

h^2 h^3 are made of different depths and arranged underneath the different key-levers in such
70 manner that the levers of the types which require but a single space movement of the carriage—such as *itl*, &c.—stand above the deepest notches h^2 , while the key-levers of the types requiring a double space movement of the carriage—such as N U D, &c.—stand above the
75 shallow notches h^2 , and the key-levers of the types requiring a triple movement of the carriage—such as M W, &c.—rest on the upper side of the space bar G' . It is obvious that the same effect would be produced by making the
80 upper surface of the space-bar G' straight and arranging the key-levers at greater or less distances above the same, so that the key-levers requiring a triple space movement rest directly upon the space-bar and move the latter
85 at once upon being depressed, while the key-levers requiring a double or single space movement stand at varying distances above the space-bar and have a proper amount of dead movement before moving the space-bar. Upon
90 depressing a key-lever requiring a triple space movement of the carriage the space-bar G' immediately takes part in such downward movement and causes the pawl g^4 to ride over a sufficient number of teeth on the ratchet-
95 wheel H to effect the required lateral movement of the carriage B, when the space-frame G is returned to its former position by the springs g^2 . The notches h^2 h^3 permit the key-levers C, arranged above the same, to travel
100 downward a certain distance before they come in contact with the space-bar G' , whereby the pawl g^4 of the frame G is lifted sufficiently to engage over the number of teeth on the wheel H to effect a single or double space movement of the carriage to correspond with the
105 character of the key-lever which has been depressed. By this construction the spacing between the various printed characters is varied in accordance with the space required
110 for the same, whereby the printed matter is caused to assume a neater and more uniform appearance than when the spaces between the various widths of characters are equal.

I represents a horizontal guide-bar arranged
115 in standards i in the top frame, A' . The carriage B is supported and guided at its rear end by collars or sleeves i' , moving on the rod I, and at its front end by a central roller or wheel, i^2 , traversing a track or way, i^3 , on
120 the frame A' .

I' represents a rack-bar arranged between the vertical side frames of the carriage B, and which is capable of slight vertical movement in guides or ways i^4 , formed on the carriage B.
125 The rack-bar I' engages with its lower toothed portion with a screw-wheel, J, which is secured to the shaft h , so as to turn therewith.

j represents a horizontal rock-shaft mounted in bearings j' on the carriage B, and which
130 is provided at one end with a handle or thumb-piece, j^2 , whereby the rock-shaft can be turned.

j^3 represents two short fingers or arms secured to the shaft j , and which engage with

their free ends in openings or slots j^4 , formed in ears j^5 on the upper portion of the rack-bar I' .

K represents spiral springs surrounding the shaft j , and which are secured to the frame B and bear with their free ends upon the arms j^3 , whereby the rack-bar I' is held down upon the frame B and in engagement with the screw-wheel J .

K' represents projections or noses on the bar I' , which rest upon the frame B and limit the downward movement of the rack-bar I' . By turning the thumb-piece j^2 in the proper direction the fingers j^3 will lift the rack-bar I' out of engagement with the screw-wheel J , whereby the carriage is disengaged from the screw-wheel and free to be moved in either direction. Upon releasing the thumb-piece j^2 the springs K return the rack I' to its former position, and cause it to again engage with the wheel J . The carriage B is moved in the proper direction by turning the screw-wheel J by means of the ratchet-wheel H , and pawl g^1 , and space-frame G , as above described.

k represents a detent-pawl, arranged underneath the top frame, A' , and engaging with the ratchet-wheel H .

K^2 represents an inclined toothed bar secured to the top frame, A' .

k' represents a segmental tooth formed on the under side of one or both collars i' of the carriage B , and arranged with its front end immediately in rear of the bar K^2 , as represented in Fig. 1. The tooth k' engages between the teeth of the bar K^2 when the carriage B is lifted or turned upon the rod I , thereby preventing the carriage B from moving on the rod I and insuring a return of the carriage to its former position when the carriage is lowered.

L represents the platen arranged on the frame B of the carriage above the throat f^3 , and composed of a metallic frame or plate, l , which is provided on its under side with an impression-pad, l' , of rubber or other suitable material, which is detachably secured to the frame l , so that it can be renewed when worn out. The frame l is provided at both ends with ears l^2 , which are pivoted at l^3 to a supporting-frame, M . The ears l^2 are provided with segmental slots m , through which pass screws m' , whereby the platen is secured in position in the supporting-frame M . Upon releasing the screws m' the platen can be turned on its pivots to present a different portion of the pad to the types. The supporting-frame M is hinged at one end to the carriage-frame B , as shown at n , Fig. 7, and provided at its opposite end with a thumb-piece, n' , whereby it can be lifted or turned on its pivots.

O O' represent the feed-rollers journaled in bearings in the carriage-frame B , and O^2 O^3 are similar rollers, resting on the rollers O O' and journaled in bearings in the supporting-frame M of the platen.

P represents a ratchet-wheel secured to one end of the shaft m^2 of the front feed-roller, O .

P' represents an elbow-lever pivoted on the shaft m^2 , and having its lower arm, P^2 , extending rearward on one side of the carriage-frame, and which is provided with a pawl, p , engaging with the ratchet-wheel P , while its upper arm, P^3 , extends upward beyond the carriage-frame.

p^2 is a detent-pawl pivoted to the carriage-frame B , and engaging with the ratchet-wheel P .

p^4 represents a nose formed on the curved rear end of the lower arm, P^2 , which supports the latter on a pin, p^5 , secured to the carriage-frame. When the carriage has traversed the required distance and it is desired to return the same to feed the paper forward, the lever P' is turned in the direction indicated by the arrow in Fig. 6, thereby turning the roller O by the pawl p engaging with the ratchet-wheel P , and feeding the sheet of paper by means of the rollers O O' . When this movement of the lever P' takes place, the rear curved end of the arm P^2 comes in contact with the under side of the forward arm of the thumb-piece j^2 of the shaft j , and turns the latter, whereby the rack-bar I' is lifted out of engagement with the screw-wheel J and is free to be brought back. In this manner the paper-carriage is released from its actuating mechanism by the same movement of the elbow-lever P' whereby the paper is fed forward, so that the paper-carriage is free to be moved back on the supporting-bar I .

Q is an adjustable stop secured in an elongated opening in the carriage-frame B , whereby the throw of the elbow-lever P' is regulated, thereby regulating the distance between the lines.

I claim as my invention—

1. In a type-writer, the combination, with a key-lever, of a type-bar jointed to the key-lever and capable of lateral movement with reference to the same, and a guide whereby the type-bar is laterally deflected and directed toward the point of impression, substantially as set forth.

2. The combination, with a series of key-levers, C , of a series of type-bars, D , jointed thereto and capable of lateral movement with reference to the same, and a series of converging guides, E , whereby the type-bars are laterally deflected and guided toward the point of impression, substantially as set forth.

3. The combination, with the key-levers C and type-bars D , flexibly connected therewith, of the guides E , throat f^3 , and platen L , substantially as set forth.

4. The combination, with the key-levers C and type-bars D , jointed to the same, of the guides E , composed of the inclined main portions f and vertical top and bottom portions, f' f^2 , substantially as set forth.

5. The combination, with the carriage B , provided with way i^4 , of the rack-bar I' , ar-

ranged in said ways, the rock-shaft *j*, provided with arms *j*³, connected with the bar *I*, and springs *K*, whereby the bar is depressed, substantially as set forth.

5 6. The combination, with the frame *A'*, provided with a toothed bar, *K*², and guide-rod *I*, of a paper-carriage, *B*, hung on said guide-bar and provided with a tooth, *k'*, adapted to engage with the toothed bar *K*² when the carriage is lifted, thereby preventing lateral displacement of the carriage, substantially as set forth.

10 7. The combination, with the paper-carriage, of the pivoted frame *M* and the segmental platen *L*, pivoted to said frame *M* and secured adjustably therein, substantially as set forth.

8. The combination, with the paper-carriage provided with a stationary segmental platen, of a feed-roller, *O*, provided with a 20 ratchet-wheel, *P*, the rock-shaft *j*, provided with a thumb-piece, *j*², rack-bar *I'*, and screw-wheel *J*, and the elbow-lever *P'*, provided with a pawl, *p*, engaging with said ratchet-wheel and having its rear end adapted to strike the 25 thumb-piece *j*², substantially as set forth.

Witness my hand this 9th day of April, 1885.

WM. H. SLOCUM.

Witnesses:

JNO. J. BONNER,
CHAS. J. BUCHHEIT.