

(No Model.)

2 Sheets—Sheet 1.

C. E. MERRITT, Dec'd.

F. L. MERRITT, Executrix & J. G. DUNNING, Executor.

TYPE WRITING MACHINE.

No. 465,486.

Patented Dec. 22, 1891.

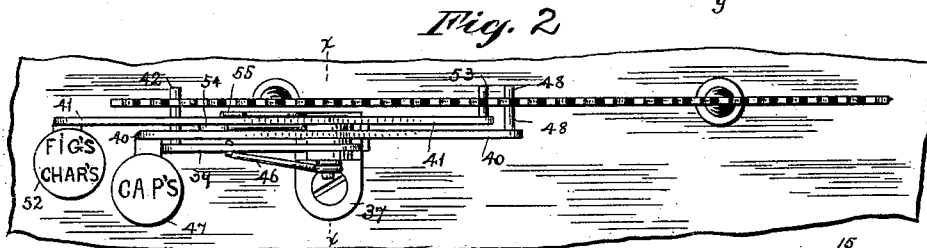
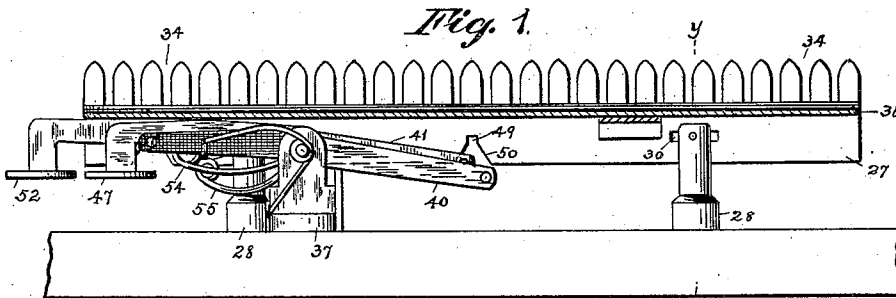
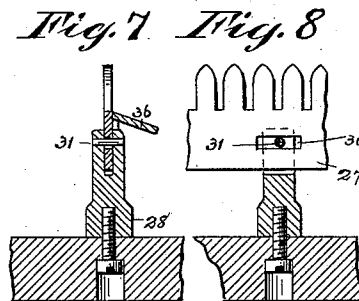
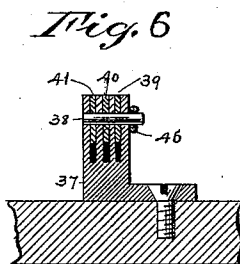
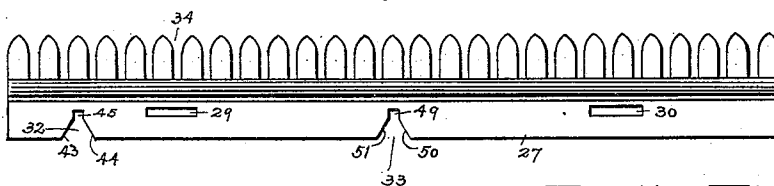
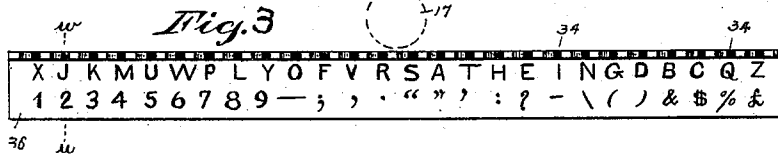
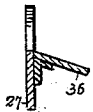


Fig. 4.



Witnesses:
Robt. Smith
Alfred Doyle.

Inventor:
Charles E. Merritt,
By atty. Jacob Felbel

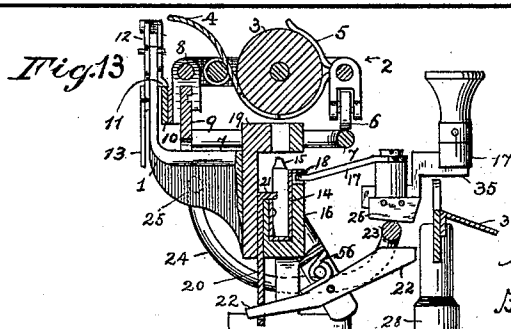
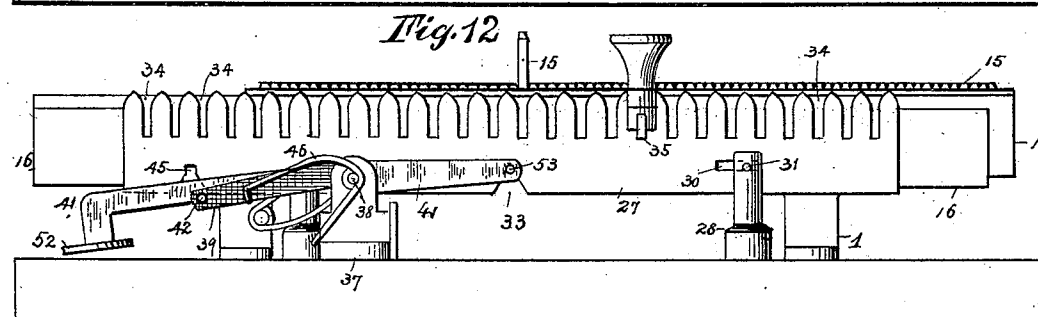
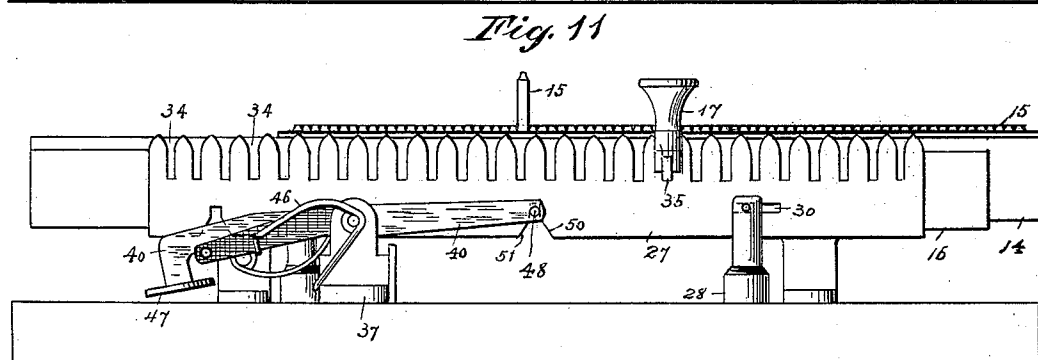
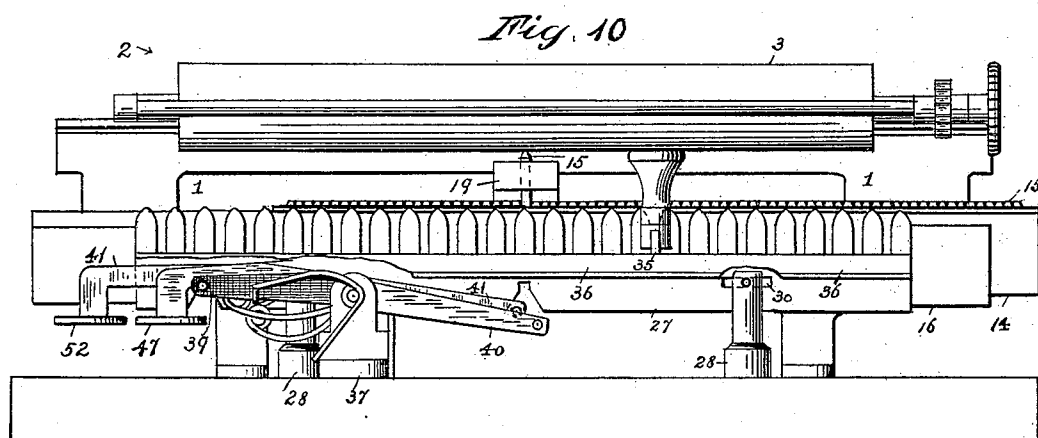
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UNITED STATES PATENT OFFICE.

CHARLES E. MERRITT, OF SPRINGFIELD, MASSACHUSETTS; FANNIE L. MERRITT, EXECUTRIX, AND JAMES G. DUNNING, EXECUTOR, OF SAID CHARLES E. MERRITT, DECEASED, ASSIGNORS TO THE MERRITT MANUFACTURING COMPANY, OF SAME PLACE.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 465,486, dated December 22, 1891.

Application filed December 28, 1888. Serial No. 294,862. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. MERRITT, a citizen of the United States, and a resident of Springfield, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates more particularly to that species of type-writing machines shown and described in Letters Patent No. 421,183, granted February 11, 1890, to Mortimer G. Merritt, and has for its main objects to so improve the construction that the machine may be simplified, may be manipulated with greater facility, and operated at an increased speed.

To these ends my invention consists in the features of construction and combinations and arrangements of parts hereinafter more fully described, and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a front view of a portion of a type-writing machine embodying my improvements. Fig. 2 is a top view of the same. Fig. 3 is a top view of the key-board and character-table detached. Fig. 4 is a section of the same at the line *ww*, Fig. 3. Fig. 5 is a front elevation of the index plate or frame and key-board detached. Fig. 6 is a vertical section taken at the line *xx* of Fig. 2. Fig. 7 is a similar section taken at the line *yy* of Fig. 1. Fig. 8 is a detail sectional view of the index plate and one of its supports. Fig. 9 is a plan view of the type-carrier. Fig. 10 is a front elevation of a portion of a type-writing machine embodying my improvements, showing the shifting key-board and rack or index plate in their normal positions, the key-board being partially broken away to show the operating-keys. Fig. 11 is a similar view omitting some of the parts for the sake of clearness and showing the parts shifted for printing with upper-case type. Fig. 12 is a similar view with parts omitted for the sake of clearness and showing the machine in position for printing the numerals, punctuation-marks,

&c.; and Fig. 13 is a central vertical section of the machine.

In the several views the same parts will be found designated by the same numerals of reference.

1 designates a casting or the main frame; 2, a paper-carriage; 3, the platen thereon; 4, a paper-table; 5, paper-guides; 6, an anti-friction roller traveling upon a rail 7, made part of the frame-work; 8, a yoke on the carriage, supported by a rail 9, made part of the frame-work; 10, a feed-rack connected to the carriage; 11, a feed-dog to engage with said rack and drive said carriage; 12, levers for actuating said feed-dog, and 13 a connecting-link, in practice connected to the universal bar and space-key, as shown in a contemporaneous application of Frank A. Young.

14 is a type-carrier of box-like form, and 15 represents the type arranged in a row therein. Each type is formed with a groove in its shank. The type-carrier is mounted to slide freely in a trough or guide 16, and is provided with a handle portion 17, pivoted at 18 to said carrier.

19 represents a type-guide arranged at the center of the machine and beneath the platen, through which one type at a time may be projected. In line with said type-guide is arranged a reciprocating ejector or plunger 20, provided with a nose or projection 21, adapted to engage with the aforesaid groove in the type, as illustrated at Fig. 13. To the lower end of the ejector is connected one end of a lever 22, whose other end extends forward beneath the universal bar 23, which extends across the entire front of the machine and is pivoted by curved side arms 24 at 25 to the ends of the frame-work.

26 is a heel extending from the handle and arranged above the universal bar to actuate the same, the carriage-feeding mechanism, and the type-ejecting mechanism whenever the handle is vibrated downwardly, all as more fully shown and described in the aforesaid application of Mortimer G. Merritt.

27 indicates the index frame or bar mounted to reciprocate upon two bifurcated supports

28. The index-bar is provided with two slots 29 and 30, which embrace pins 31 on the posts or supports 28, and with two cut-aways or notches 32 and 33. The index-bar is provided with a series of vertical slots or depressions 34, with which engages the centering or locking key or finger 35 of the handle portion.

To the index-bar is attached the key-board 36 or table representing the type employed in the machine. The characters on the key-board are arranged in two horizontal rows, the first row containing all of the letters of the alphabet and the second or bottom row the numerals, punctuation-marks, signs, &c. There are twenty-six characters depicted in each row, and these are arranged in line with the twenty-six notches or depressions 34 in the index-bar. The alphabet row indicates both upper and lower case letters. Hence the entire key-board represents seventy-eight characters.

The type-carrier is provided with seventy-eight separate and independent type, arranged relatively to the key-board and in the following manner: Beginning at the left of the carrier the first type is large or upper-case Z, the next small or lower-case z, and the next the sign £. The next three type are respectively upper-case Q, lower-case q, and the sign %. The next three type are respectively upper-case C, lower-case c, and the sign \$, and this relative arrangement is continued to the extreme right of the carrier, where the last three type are respectively upper-case X, lower-case x, and the numeral 1.

37 designates a bracket screwed to the base-board, in which are mounted upon a common pivot or fulcrum 38 three levers 39, 40, and 41, underlying the key-board. The lever 39 is provided with a pin 42, which extends rearwardly beneath the levers 40 and 41 (through notches on the under sides or edges thereof) and into the notch or cut-away 32 in the index-bar. The bar at the notch 32 is beveled inwardly from its lower edge at each side, as seen at 43 and 44. Above the notch 32 and communicating therewith is another notch 45, which is square or rectangular, and into which the pin 42 is normally seated by a spring 46, pressing up on the under side of the lever 39.

The lever 40 is provided at one end with a projecting head or finger-piece 47, bearing the inscription "Cap's," signifying that it is the capital-letter shift-key. The inner or opposite end of this lever or key is provided with a rearwardly-extending pin 48, which is adapted to vibrate into the notch 33 and into the square notch 49 leading therefrom. The defining-walls 50 and 51 of the notch 33 are beveled or slanted in a manner similar to those of the notch 32.

The lever 41 is provided at its outer end with a projecting finger-piece 52, inscribed in two lines "Fig's" and "Char's," denoting that said lever is the shift-key for the figures or numerals, punctuation-marks, and characters

other than the letters of the alphabet. At the inner end of the lever 41 is provided a pin 53, which projects rearwardly of the machine in line with the notch 33, and which normally stands forward or to the left of the pin 48.

Springs 54 and 55 assist the return of the levers 40 and 41 to first position after having been actuated. In the normal positions of the levers 40 and 41 their inner arms are depressed and the pins 48 and 53 are in position to engage, respectively, with the inclined walls 50 and 51 of the index-bar. When the levers 40 and 41 are in their normal positions, the pin 42 stands in engagement with the square notch 45 and the index-bar and key-board are held in place against movement in either direction. In the normal position of the levers 39, 40, and 41 the machine is adapted to print in lower-case or small letters.

If it be desired now to print the word "eat" in lower-case letters, the type-carrier, by means of the handle, is moved until the key or finger 35 comes opposite the slot or depression 34 in line with the letter e on the key-board, which movement of the carrier will bring the lower-case type e in line or register with the type-guide 19. The handle may then be depressed and the finger or key 35 caused to enter the said slot or depression 34, whereby the type-carrier is locked positively in position and the printing of the selected type only insured. As the handle is depressed the universal bar is carried down and, striking upon the forward arm of the lever 22, raises its rear arm, and with it the ejector or plunger 20, which lifts the e type through the guide until its character is impressed upon the paper previously arranged upon the platen. When the handle is released, a spring 56 returns it, the universal-bar, the lever 22, the type-ejector, and the type all to their initial positions. During the return of these parts to their normal positions the paper-carriage is fed to the left a letter-space distance by any suitable connections between the universal bar and the feed-dog, or by the specific means shown in the said application of Frank A. Young. When the handle has been brought to point to the letter e on the key-board, the printing may be effected without engaging it with the index-plate (although I prefer to do so to center and steady the carrier) by actuating the lever 22 directly or through the intervention of the universal bar. Having printed the letter e and fed the carriage to the left a letter-space, the type-carrier is then moved to the left until the handle points to the letter a on the key-board, when this letter may be printed by proceeding as before described. To print the letter t, then move the carrier to the right until that character on the key-board is reached by the handle and the lower-case type t is brought in line with the center guide or to the printing-point. Then project said type against the paper in the manner before explained. If it be desired to

print the word "eat" in capital letters, simply press down the finger-piece 47, and while holding it with one hand proceed with the other hand to print as before. When the finger-piece 47, is depressed, the pin 42 on the lever 39 is forced down out of the notches 45 and 32, and simultaneously the pin 48 is forced up into the notch 49. On its way up to said notch the pin 48 rides against the bevel-wall or cam-edge 50 and pushes the index-bar and key-board to the right the distance of one type-space. Hence when it is desired to print the letters with the key-board thus shifted the handle or key 35 must be moved to the right a little farther (a distance equal to the width of the type) than was necessary when the finger-piece 47 was in its normal position to permit printing in lower-case letters, in order to have the handle or key 35 come in line or register with the letters marked on the key-board. This movement of the handle to the right to effect a register effects also a movement (in the same direction and to the same extent) of the type-carrier, thus bringing to the printing-point the next type to the left of the one which would be acted upon if the key-board were left in its normal condition. Inasmuch as in the normal condition of the machine only lower-case letters are printed, and inasmuch as immediately in front or to the left of each lower-case letter is arranged its upper-case letter, it follows that when the key-board is shifted to the right, as above explained, and is held there the upper-case letters will be operated upon or caused to print. When the pressure upon the finger-piece is released, the spring returns it to first position. In returning, the pin 48 leaves the notch 49 and the pin 42, ascending, comes in contact with the inclined wall 43 and shifts the index-bar and key-board back to first position. If it be desired to imprint the numerals or punctuation-marks, &c., the finger-key 52 is depressed and the lever 41 vibrated. As the outer arm of said lever is pushed down the pin 42 is carried with it out of the notch 45, and as the inner arm of said lever rises the pin 53 moves against the beveled wall 51 and forces the key-board and index-bar to the left of their normal position a distance of one type-space. Hence to reach the slot or depression in the index-bar which is opposite to the character it is desired to print the handle and the type-carrier must be moved to the left of the normal position of the key-board a distance equal to said type-space, which movement will enable the type containing the numerals, punctuation-marks, and signs to be brought in line with the printing-point, since they are arranged in the carrier to the right of the lower-case letters. When the finger-key 52 is released, the spring returns it to first position, and the pin 53 is carried down and out of the slots 49 and 33. At the same time the pin 42 ascends and, acting against the beveled wall

44, pushes the key-board and index-bar to the right and to their normal positions.

In practice it will be understood that the arrangement of type within the carrier is such that the first, fourth, seventh, tenth, thirteenth, sixteenth, nineteenth, twenty-second, twenty-fifth, twenty-eighth, thirty-first, thirty-fourth, thirty-seventh, fortieth, forty-third, forty-sixth, forty-ninth, fifty-second, fifty-fifth, fifty-eighth, sixty-first, sixty-fourth, sixty-seventh, seventieth, seventy-third, and seventy-sixth type is a capital or upper-case letter; that the second, fifth, eighth, eleventh, fourteenth, seventeenth, twentieth, twenty-third, twenty-sixth, twenty-ninth, thirty-second, thirty-fifth, thirty-eighth, forty-first, forty-fourth, forty-seventh, fiftieth, fifty-third, fifty-sixth, fifty-ninth, sixty-second, sixty-fifth, sixty-eighth, seventy-first, seventy-fourth, and seventy-seventh type is a small or lower-case letter, and that the third, sixth, ninth, twelfth, fifteenth, eighteenth, twenty-first, twenty-fourth, twenty-seventh, thirtieth, third-third, thirty-sixth, thirty-ninth, forty-second, forty-fifth, forty-eighth; fifty-first, fifty-fourth, fifty-seventh, sixtieth, sixty-third, sixty-sixth, sixty-ninth, seventy-second, seventy-fifth, and seventy-eighth type is a numeral, punctuation-mark, or other sign; but this arrangement may of course be varied, so that either the lower-case letters or the numerals or punctuation-marks start at "1" (one) instead of the capital letters, and so on, reversing the order of the several divisions throughout the body of type. In the matter of the arrangement of the type my invention consists in a continuous row of type embracing three different classes—viz., upper-case, lower-case, and figures and signs—so disposed that every third type from or after the first type shall be of the same class or kind. Every third type from the second type shall be of the same class or kind and every third type from the third type shall be of the same class or kind, and so far as this feature of my invention is concerned the type may all be united instead of being separate and independent, as shown, and more or less than seventy-eight type may be employed.

By having the index-bar and key-board connected to move together I am enabled to dispense with fifty-two slots or depressions, and consequently am permitted to have larger slots or depressions in a given length of index-bar, thus not only facilitating the operation and speed of the machine, but rendering the work less trying to the eyes of the operator. In practice the type-bodies are made one-ninth of an inch in width, and the distance between the points of the teeth of the index-bar one-third of an inch.

By having the key-board arranged to be shifted for the fifty-two type embracing the upper and lower case letters of the alphabet I am enabled to dispense with the portrayal of twenty-six characters, and hence the let-

ters may be made larger and the work of the operator thus facilitated, and by reason of the adaptability of the key-board to be shifted I am enabled to arrange the numerals and punctuation-signs, &c., in a row parallel with that containing the alphabet and thus considerably curtail the length of the key-board. It will be understood, of course, that instead of forming the index or centering and holding means, as slots with wide mouths, as shown, the same may be formed as counter-sunk depressions in the manner of previous machines, in which event, in lieu of using the bar-key 35 herein shown, a pin or its equivalent may be employed.

At Figs. 1 and 10 the key-board and index-bar and their actuating keys or levers are shown in their normal positions and the machine is arranged to print in lower-case letters. At Fig. 11 the figures and characters key 52 is omitted to avoid confusion and the upper-case shift-key shown in working position. At Fig. 12 the "capitals" key 47 is omitted to afford a better view and the figures and characters shift-key 52 shown in working position. In Fig. 11 the shift is shown as having been made to the right and in Fig. 12 as having been made to the left. The bar or plate 27 in which the notches 32 and 33 are provided may be arranged to carry either the key-board or the index, or both.

Numerous changes in detail construction and arrangement of various parts may be made without departing from the spirit of my invention, the gist of which has already been indicated.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a type-writing machine, as a shifting means for the key-board and index-bar, the combination of a bar or plate having inclined walls, as 43, 44, 50, and 51, with spring-pressed operating-levers provided with pins 42 and 48, whereby the bar may be shifted to the right of its normal position and returned and to the left of its normal position and returned.

2. In a type-writing machine, the combination of a reciprocatory type-carrier containing a row of type and provided with a handle, an index bar or plate, a locking-key, a key-board, and means, substantially as described, for simultaneously shifting the index-bar and the key-board from and back to their normal positions.

Signed at Springfield, in the county of Hampden and State of Massachusetts, this 13th day of December, A. D. 1888.

CHARLES E. MERRITT.

Witnesses:

J. G. DUNNING,
C. A. BRIGHAM.