

April 16, 1940.

E. GASTON

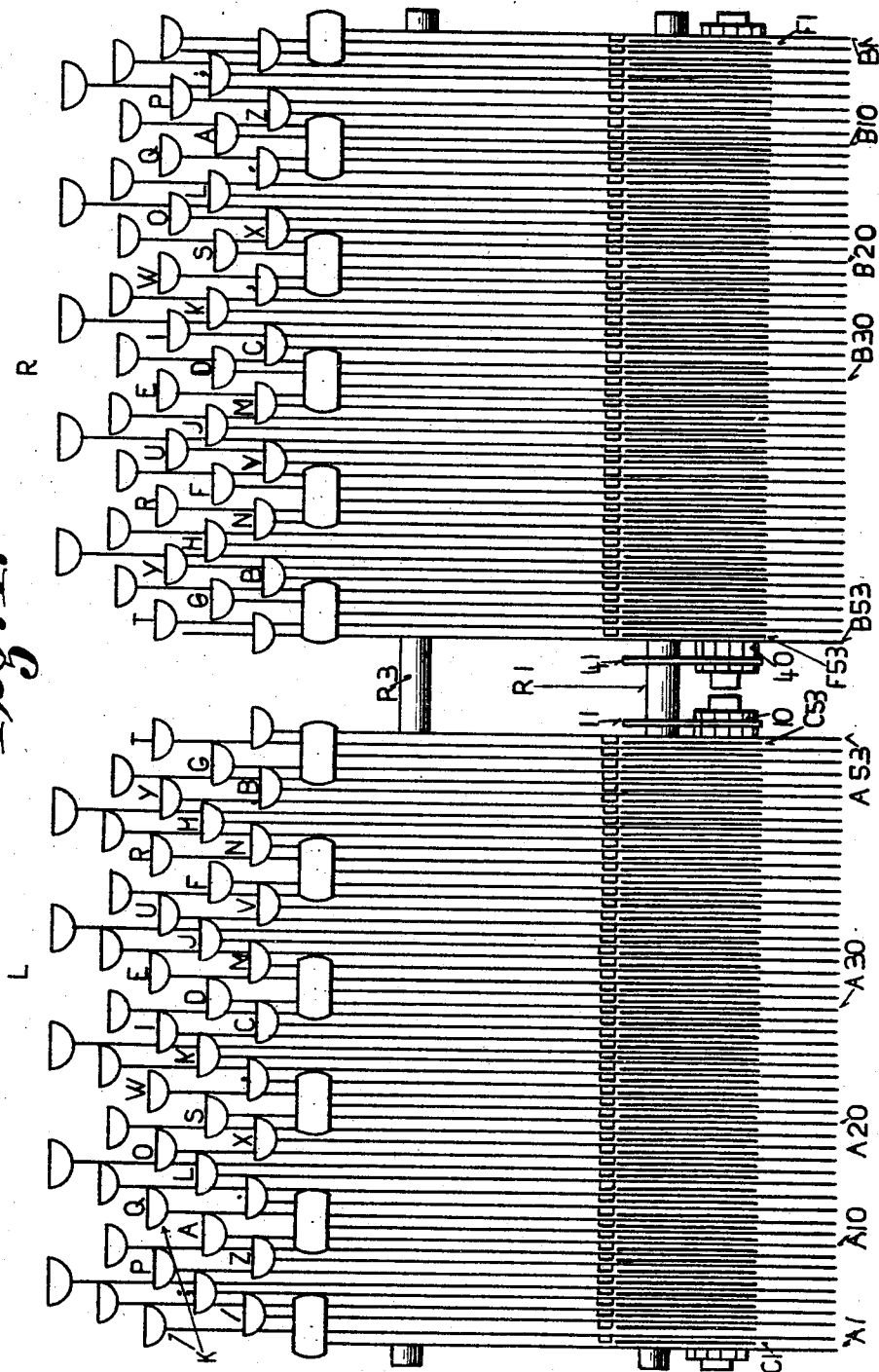
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TYPEWRITING, TYPESETTING, AND SIMILAR MACHINES

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3 Sheets-Sheet 1

Fig. 1.



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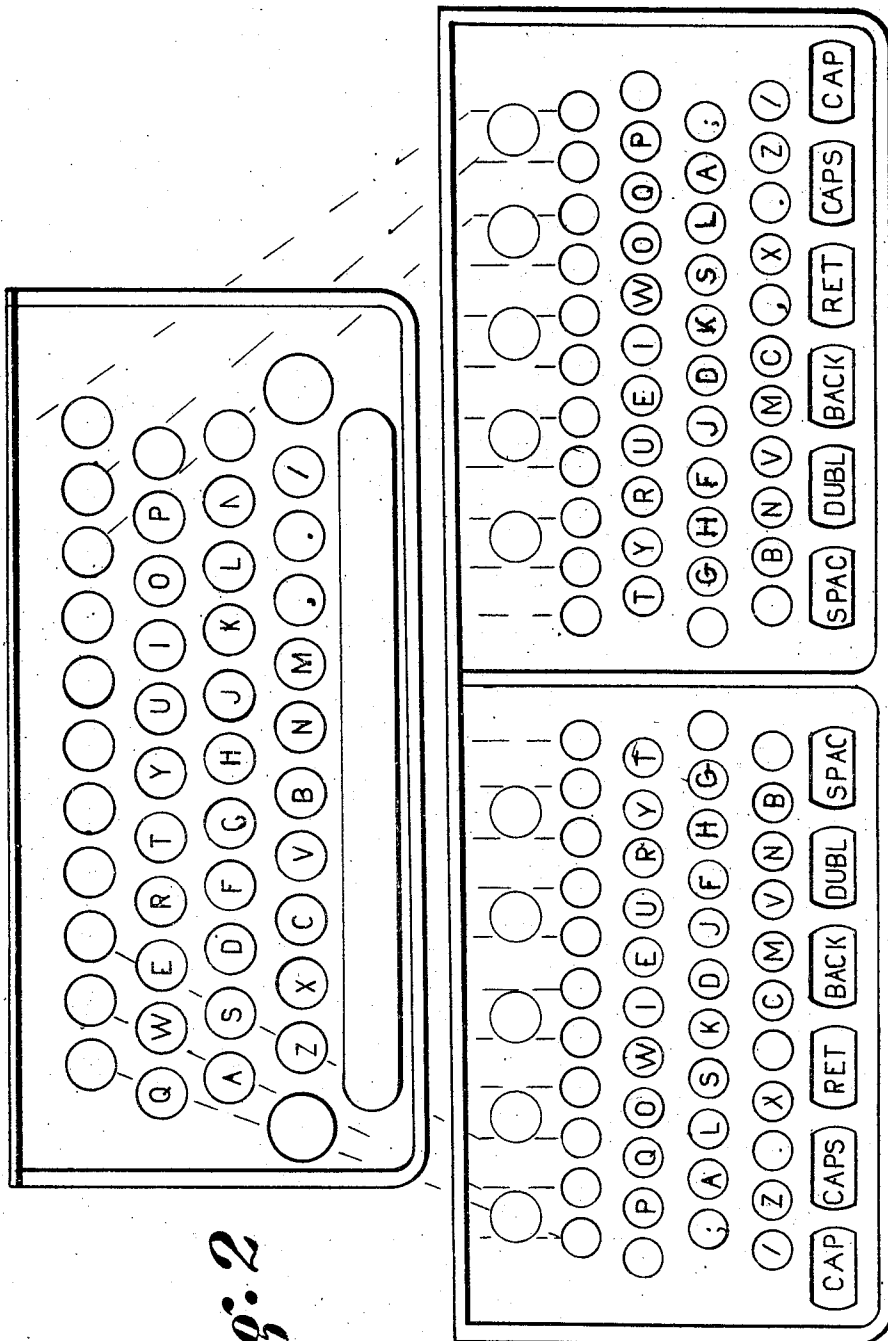
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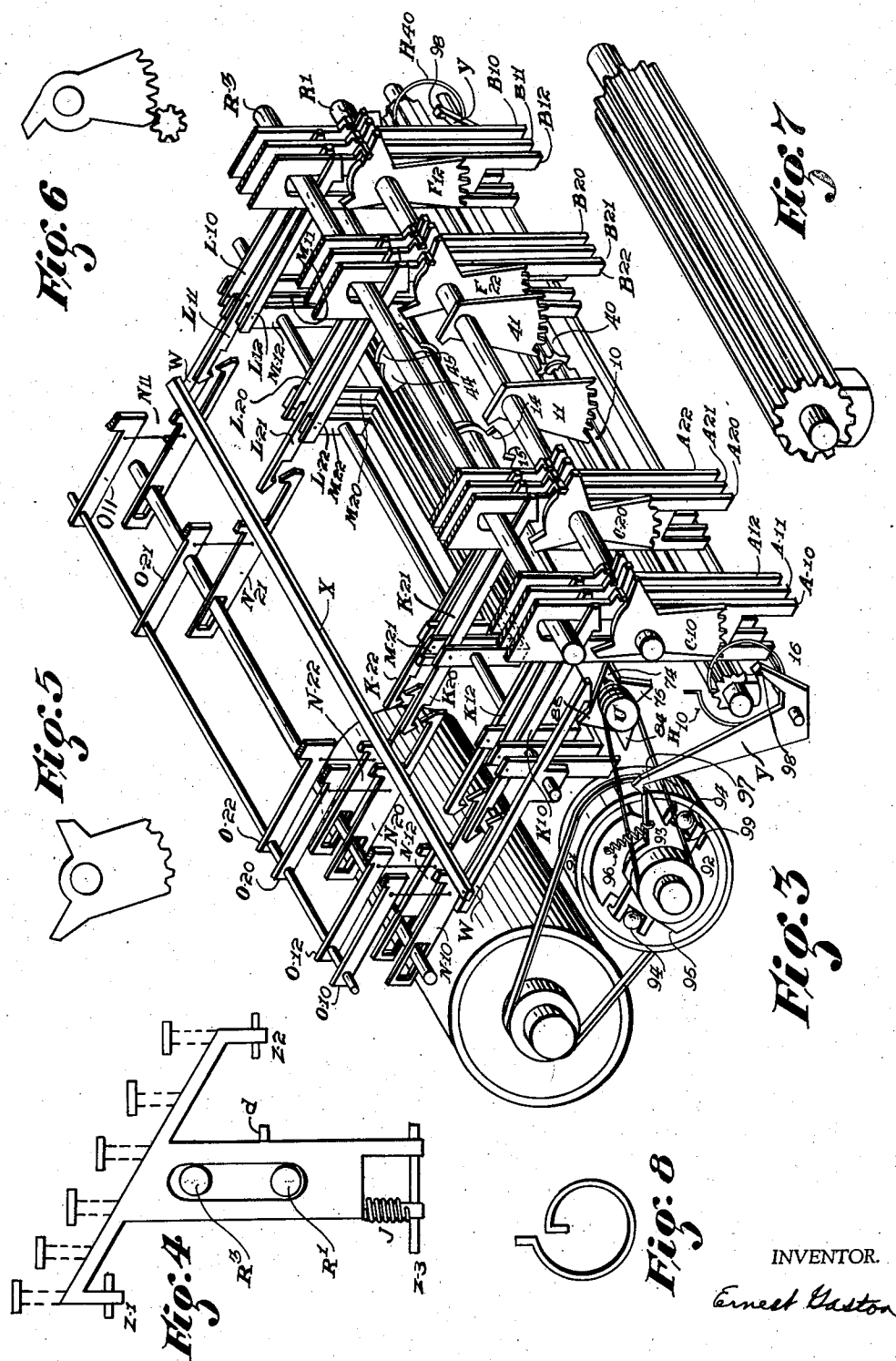
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UNITED STATES PATENT OFFICE

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TYPEWRITING, TYPESETTING, AND
SIMILAR MACHINES

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Application January 14, 1935, Serial No. 1,699

4 Claims. (Cl. 197—1)

My invention relates generally to group-letter writing devices for typewriting, typesetting and similar machines, and in such connection the present device aims to provide a means and a method for bringing about an accelerated speed in its application thereto of typewriting, type-

setting and similar machines.

More particularly the invention provides means for key selecting and key setting with two similar, separate and independently operated keyboards, which makes it possible for the operator to print groups of two, three or four letters at one stroke or motion of the two hands, or to print one or two letters at one stroke or motion of one hand; that is, to set one or two keys at one stroke or motion of one hand, or to set two, three or four keys with one simultaneous and continuous downward stroke or motion of the two hands, and to print in the desired order the respective letters, figures, characters, or to perform the operations represented by such keys. All of which have as their purpose and effect the increase of speed in writing and efficiency in operation, without the use of code, translation, permutation, syllabic or logotype mechanisms or methods.

The keys of the left keyboard are struck by the fingers of the left hand, and the keys of the right keyboard are struck by the fingers of the right hand, and selective parts are thereby set in grooves of pinions, or selectors; and a cam connected to an automatic clutch attached to a power means is released and revolves to actuate feeding gears in mesh with the selectors, to rotate the selectors and to advance the selective parts, to pull connecting levers, to operate the levers of the machine to which attached. No claim is made in this application to machine operators or to clutches.

My invention will be clearly understood from the following detailed description, taken in connection with the accompanying drawings, and wherein:

Figure 1 represents a front elevational view of the two similar keyboards, the left and the right.

Figure 2 is a top view of the same keyboards, with letters, numerals, punctuation marks and operating keys in their relative positions and in relation to the keys of the machine to which it may be attached; and

Figure 3 represents views of certain parts, such as keystems, selective gears, selectors and feed gears which comprise a portion of such keyboards.

Figure 4 represents a side view of a keystem used in series A and in series B; and "d" represents a lug which acts on selective gear; R—1 and R—3 represents supporting rods; Z—1, Z—2 and Z—3 represent supporting racks; J represents spring which holds keystem in operating position.

Figure 5 represents a side view of one of the selective gears of series C—1 to C—53 and of series F—1 to F—53.

Figure 6 represents a side view of feeding gears 11 and 41.

Figure 7 represents selector pinions numbers 10 and 40.

Figure 8 represents selector springs H10 and H40.

Continuing the description of the invention and referring in detail to each individual part, like parts bearing like indicating numerals, in Figure 1, the keystems A—1 to A—53 represent the keystems of the left keyboard as indicated generally at L. The keystems B—1 to B—53 represent the keystems of the right keyboard as indicated generally at R. A—1 and B—1 represent the same character, A—10 and B—10 represent the same character, and likewise each pair of keystems in the A and the B series bearing the same numeral represent the same character, or the same operation of the machine.

In Figure 3 are shown stems A—10 and A—20, gears C—10 and C—20, and a pinion 10, or an elongated gear, representing parts of the left keyboard. There are also here illustrated keystems B—22 and B—12, gears F—22 and F—12, and pinion 40, representing parts of the right keyboard. As the stems of each keyboard are forced or pressed downwardly by the fingers, operable connection is established between the keyboards and the machine to which attached or made a part thereof. I consider the elements enumerated above to be parts of the keyboards, and when the word keyboard is referred to, it is understood to mean such parts.

In Figure 1 the keystems in series A—1 to A—53 represent the keystems of the left keyboard, and keystems in series B—1 to B—53 represent the keystems of the right keyboard. All keystems are supported horizontally by the same rods R—1 and R—3, and held vertically by the same racks Z—1, Z—2 and Z—3, and each keystem is held or forced into position perpendicularly by an individual spring J at the bottom of each keystem.

In order to show the working parts more clearly the frame, supporting parts and springs are

omitted. In an actual machine an individual spring would be attached to each of the keystems in series A and B, also to each of the selective gears in series C and F, and also to each of the cross levers in series M, and also to each of the slidable levers in series N, and also to each of the levers in series O, to hold the parts while not in operation and to return them to rest position after they are released from action.

Each keyboard has one key for each typebar and for each operation of the machine. The arrangement of the keys, however, is susceptible of alterations to suit conditions. For instance, in Figure 2, I show an arrangement of letters, characters, et cetera, on the right keyboard, while on the left keyboard these characters are in inverse relation. While these keyboards are each complete, thus arranged, the positions of the letters may be altered. The purpose of this inverse relationship of the keyboards is to facilitate operation, as it is instinctive and habitual, unless otherwise trained, in all movements of the hands to use similar fingers of the two hands to perform similar operations.

The keyboards are designed to be used as a part of new group-letter writing machines, or machine operators, or as an attachment for typewriting, typesetting and similar machines of standard makes, with such changes in connecting links as may be necessary for the particular machine to which it is attached.

The two keyboards may be operated separately, alternately or simultaneously. When one keyboard is used separately, the other keyboard is idle and has no effect on the operation. When the keyboards are used alternately, that is, first one and then the other, the characters represented by the keyboard struck first will be printed before the characters represented by the keyboard struck later. When the keyboards are used simultaneously, the characters represented by the left keyboard will be printed before the characters represented by the right keyboard. Whether the keyboards are used separately, alternately or simultaneously, each keyboard is capable of receiving, regardless of the other keyboard, one stroke on one key from one finger of the hand, which is called herein the "staccato" stroke. And each keyboard is capable of receiving, regardless of the other keyboard, two strokes on two keys from one continuous downward slurring movement of two fingers of one hand, the key representing the character to be printed first being struck slightly in advance of the key representing the character to be printed next, which is called herein the "legato" stroke.

By the use of the staccato stroke and of the legato stroke singly or together, these groups are possible: one letter can be printed by one staccato stroke on either keyboard; two letters can be printed by two staccato strokes, one staccato stroke on each board, or two letters can be printed by one legato stroke on either board; three letters can be printed by one legato stroke on one board and one staccato stroke on the other keyboard; and four letters can be printed by two legato strokes, one legato stroke on each board.

In the operation of the device and in the application of the method herein involved: to select and set four keys, or four selective parts, so they will operate and transfer the strokes in the same order as the four characters are to be printed which they represent, strike by the simultaneous and continuous downward move-

ments of the two hands the four keys which represent the four characters, striking the two keys representing the first and second characters in a slurring, or legato, manner with two fingers of the left hand on the left keyboard, striking the key which represents the first character, as key A—10 for instance, slightly before striking the key which represents the second character, as key A—20, and at the same time striking the two keys representing the third and fourth characters in a slurring, or legato, manner with two fingers of the right hand on the right keyboard, striking the key which represents the third character, as key B—12, slightly before striking the key which represents the fourth character, as B—22.

Key A—10 will force selective gear C—10 in mesh in the first groove of selector 10 of the left keyboard and will advance selector 10 one space, and key A—20 will force selective gear C—20 in mesh in the second groove of selector 10, and will advance selector 10 and gear C—10 one space farther, and will leave the gear C—10 one space in advance of gear C—20. Key B—12 will force selected gear F—12 in mesh in the first groove of selector 40 of the right keyboard, and will advance selector 40 one space, and key B—22 will force selective gear F—22 in mesh in the second groove of selector 40, and will advance selector 40 and gear F—12 one space farther, and will leave gear F—12 one space in advance of gear F—22.

This operation completes the selecting, arranging and setting in the desired order the selective parts C—10 and C—20 in the selector 10 and the selective parts F—12 and F—22 in the selector 40; and the selectors hold the selective parts in operating positions to transfer the strokes in the order of C—10, C—20, F—12 and F—22 through connecting means to a machine operator, a typewriter, or to other suitable printing means.

As the keystems A—10 and A—20 force gears C—10 and C—20 to mesh with and rotate pinion 10 and keystems B—12 and B—22 force gears F—12 and F—22 to mesh with and rotate pinion 40, the pinions 10 and 40 lift at the point of contact 98 the escapement lock Y, and Y releases at the point 97 the bent lever 93 of the automatic clutch, and the spring 96 advances lever 93 and the friction balls 94—94 held in slots of 93, and the friction balls 94—94 lock the inner core 92 with the outer revolving drum 91, and the drum 91 rotates inner core 92 and by means of the belt 99 the inner core 92 rotates the cam U, in Figure 3. The cam arm 14 lifts feeding gear 11 which is in mesh with the pinion 10, and advances one space the pinion 10 and gears C—10 and C—20 in mesh with the pinion 10; gear C—10 pulls draw-link K—10 and K—10 pulls slide lever N—10 under striking lever X; and at the same instant cam arm 74 in Figure 3, actuates the striking lever W which forces lever X to pull lever N—10, and lever N—10 to pull lever O—10 of the machine operator, typewriter, or other machine, and thereby to print the first letter or to transfer the first stroke to the machine to which attached.

Then cam arm 15 lifts feeding gear 11 and advances one space the pinion 10 and gears C—10 and C—20; gear C—20 pulls draw-link K—20, and K—20 pulls slide lever N—20 under striking lever X; and at the same instant cam arm 75 actuates the striking lever W which forces lever X to pull lever N—20, and

lever N—20 to pull lever O—20 of the machine operator, typewriter, or other machine, and thereby to print the second letter or to transfer the second stroke to the machine to which attached.

Then cam arm 44 lifts feeding gear 41 which is in mesh with pinion 40, and advances one space pinion 40 and gears F—12 and F—22 also in mesh with pinion 40; gear F—12 pulls draw-link L—12, cross lever M—12, draw-link K—12, and K—12 pulls slide lever N—12 under striking lever X; and at the same instant cam arm 84 actuates the striking lever W which forces lever X to pull lever N—12, and lever N—12 to pull lever O—12 of the machine operator, typewriter or other machine, and thereby to print the third letter, or to transfer the third stroke to the machine to which attached.

Then cam arm 45 lifts feeding gear 41 and advances one space the pinion 40 and gears F—12 and F—22; and gear F—22 pulls draw-link L—22, cross lever M—22 and draw-link K—22, and K—22 pulls slide lever N—22 under striking lever X; and at the same instant cam arm 85 actuates the striking lever W which forces lever X to pull lever N—22, and lever N—22 to pull lever O—22 of the machine operator, typewriter or other machine, and thereby to print the fourth letter or to transfer the fourth stroke to the machine to which attached.

The cam arms rotate beyond the feeding gears 11 and 41, also beyond the striking lever W, and pinion 10 is pulled back into its original position by spring H—10 and pinion 40 is pulled back into its original position by spring H—40, and pinion 10 forces gears C—10 and C—20 back out of mesh, and pinion 40 forces gears F—12 and F—22 back out of mesh; and the two keyboards are clear to receive another group of strokes.

As the fourth and final letter is printed, and as the automatic clutch core 92 and the cam U complete one revolution, the lever 93 strikes at the point of contact 97 the escapement lock Y; and the lever Y holds lever 93 and the friction balls 94—94 out of locking position between the outer drum 91 and the inner core 92, and the inner core 92 and the cam U attached thereto by the belt 99 are stopped. And the cam-clutch device is ready to transfer another group of letters or strokes through the machine.

There are twenty-three other possible combinations in which these same four characters could be arranged, but any one combination can be as simply and as easily written by the method described; that is, by striking in legato manner the two keys on the left keyboard which represent the first and second letters, and at the same time striking in legato manner the two keys on the right keyboard which represent the third and fourth letters. The reversed order of the same four letters would be written by striking in legato manner keys A—22 and A—12 on the left keyboard and by striking at the same time in legato manner the keys B—20 and B—10 on the right keyboard.

To print any group of three letters strike by the simultaneous and continuous downward movements of the two hands the three individual keys which represent the three letters, striking the two keys representing the first and second characters in a legato manner with two fingers of the left hand on the left keyboard, striking the key which represents the first character, as A—10, slightly before striking the key which represents the second character, as A—20, and at

the same time striking the key which represents the third character in a staccato, or separate, manner with one finger of the right hand on the right keyboard, as key B—12; or to write the same three characters, by striking the key which represents the first character, as A—10, in a staccato manner on the left keyboard, and by striking at the same time in a legato manner the two keys on the right keyboard which represent the second and third characters, as keys B—20 and B—12; and the device will operate as described in printing four letters, and will print the letters in the order desired; and all parts will be returned to their original positions.

To print any group of two letters, strike with one continuous downward movement of either hand on either keyboard the two individual keys representing the two characters in a legato manner, as keys A—10 and A—20 on the left keyboard, or the keys B—10 and B—20 on the right keyboard; or to print the same two characters, strike by the simultaneous and continuous downward movements of the two hands the two keys which represent the two characters, striking in a staccato manner the key of the left keyboard which represents the first character as key A—10 and at the same time striking in a staccato manner the key of the right keyboard which represents the second character, as key B—20; and the machine will operate as described in printing the four letter group, and will print the letters in the desired order, and all parts will be returned to their original positions.

To print one letter, strike with either hand on either keyboard the individual key representing the letter desired, by striking in a staccato manner key A—10 on the left keyboard, or by striking in a staccato manner key B—10 on the right keyboard; and the machine will operate as described in the four letter group, and the letter will be printed and all parts will be returned to their original positions.

While I have shown and described a practical working embodiment of my invention, I desire it understood that the particular means employed in the keyboard construction is only an illustration of how the principle may be carried out, and that the present construction is capable of modifications, alterations and changes in keeping with the intent of the invention and within the scope and meaning of the claims appended hereto.

What I claim as new is:

1. A group-letter writing device of the character described and adapted for use in connection with a typewriting machine, which comprises two similar and complete independent keyboards operating as a unit; each of said keyboards having a plurality of keys and keystems, a plurality of gear segments operably associated with said keystems, a pinion gear for locking and rotating said gear segments when meshed therein by key strokes, a plurality of links operably associated with said gear segments and with corresponding levers of the typewriting machine as a connecting means between the two keyboards and the typewriting machine, an escapement mechanism controlled by said pinion gears, a cam mechanism with intermittent connection with a constantly revolving power means through a clutch mechanism controlled by said escapement mechanism, means associated with said pinion gears and actuated by said cam-clutch mechanisms to transmit strokes from said gear segments to the typewriting machine, and means to return moving parts

of the device to their original rest positions after completion of the operation.

2. A group-letter writing device of the character described and as claimed in claim 1, each
5 of said keyboards having one individual key and keystem for each key lever of the machine to which attached.

3. A speed writing device of the character described and adapted for use in connection with
10 a machine operator including in combination a device comprising two similar and independent keyboards operating as a unit, each of said keyboards having a plurality of keys and keystems and including one individual key and keystem
15 for each key lever of the machine to which attached, a plurality of selective parts operably associated with said key stems, a selector means for locking said selective parts when registered therein by said key stems, a plurality of links
20 operably associated with said selective parts as

connecting means between the keyboards and the machine to which attached, an escapement mechanism controlled by said selectors, a cam mechanism actuated by a clutch mechanism controlled
5 by said escapement mechanism and intermittently connected with a power means, and means associated with said selectors and actuated by said cam-clutch mechanisms to transmit strokes from said selective parts to the machine to which
10 attached, and means to return moving parts of the device to their original rest positions after completion of the operation.

4. The combination of two similar and independent keyboards operable as a unit as claimed in claim 3, the letters and other indicia of the
15 keys of one keyboard being in reversed order from right to left from the keys of its companion keyboard.

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