

Oct. 28, 1952

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2,615,980

PRINTING TELEGRAPH APPARATUS

Filed March 11, 1948

2 SHEETS—SHEET 1

FIG. 1

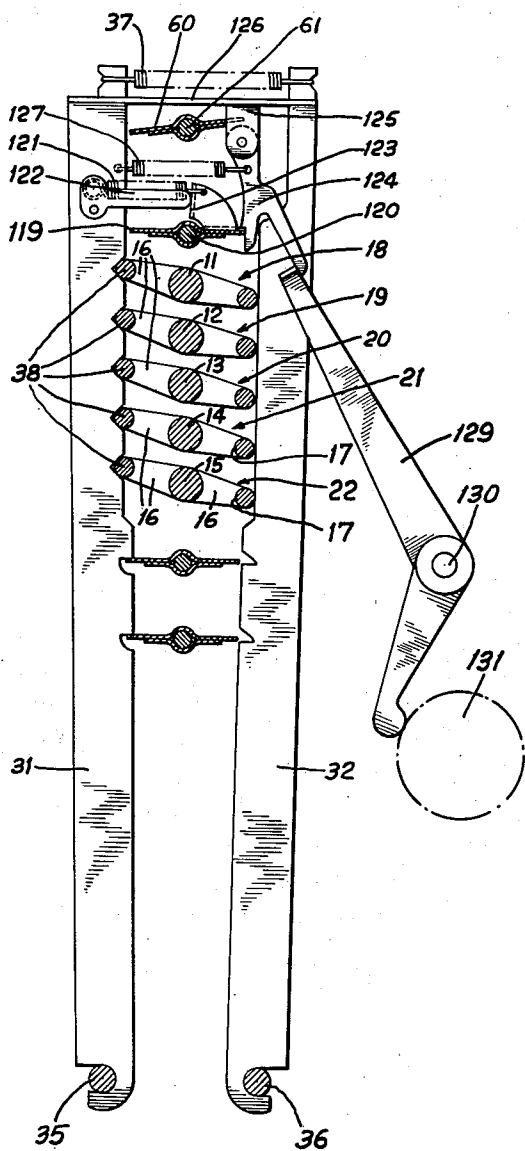
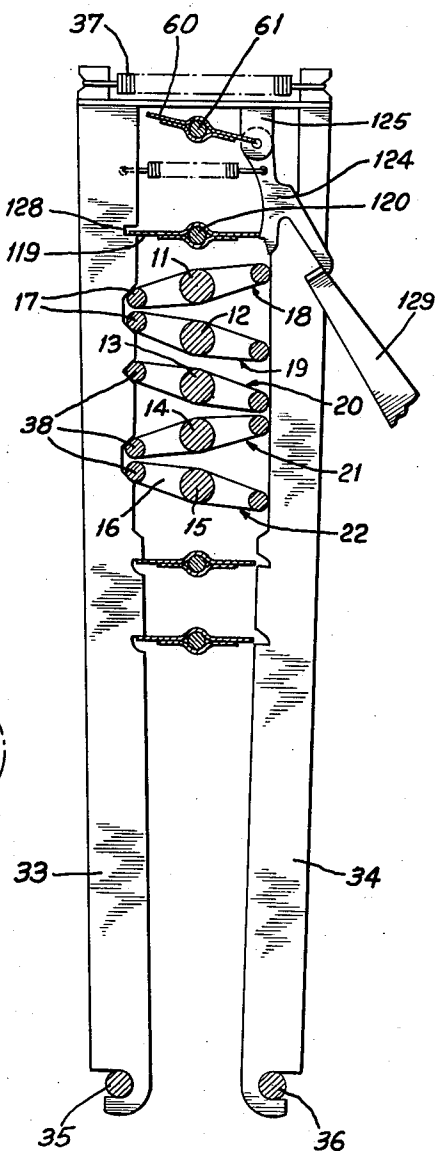


FIG. 2



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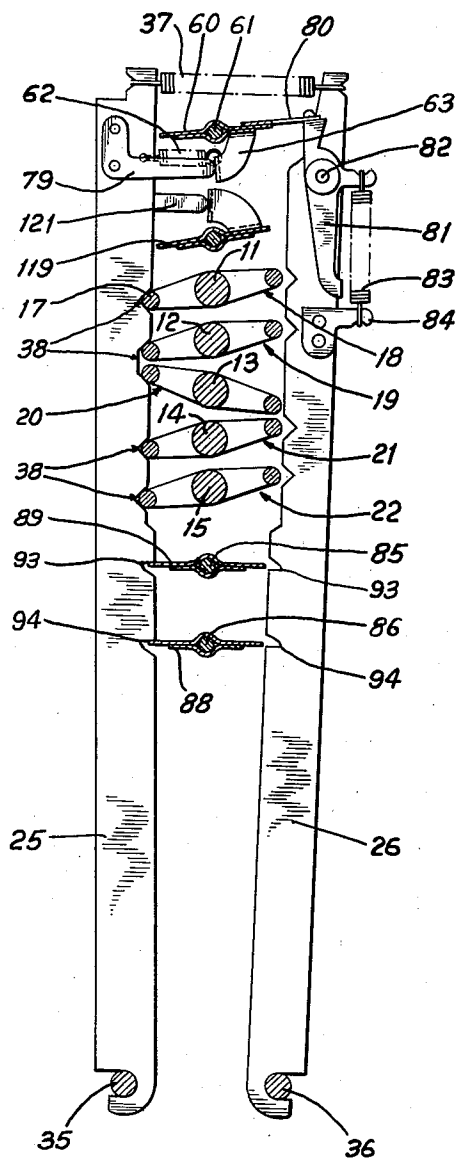
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2 SHEETS—SHEET 2

FIG. 3



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PRINTING TELEGRAPH APPARATUS

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In Great Britain March 14, 1947

8 Claims. (Cl. 178—33)

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This invention relates to printing telegraph receivers.

For efficient handling of telegraph traffic in business offices and public services, many functions must be provided in a printing telegraph receiver in addition to those required to print and space the characters. It has long been the practice to provide function levers which are selectable for the performance of the several functions required and to arrange that some of these levers are selectable upon the receipt of the figure shift signal followed by the signal representing the particular function required, others being selectable in either shift.

There is now an increasing demand for provision of more functions than can be provided only by the use of a five-unit code (or a code which consists of a larger number of units but has its limitations owing to the number of permutations thereof that can be used, such as the seven-unit security code used for certain radio circuits) and using only figure and letter shift positions. Accordingly it has been proposed to make certain functions selectable upon the receipt of three successive signals, that is, the figure shift signal, a secondary shift signal (such as the all-blank signal) and the signal representing a function.

According to a feature of the present invention, there is provided a printing telegraph receiver comprising means operative in response to any one of three different shift signals to condition the receiver to cause a subsequent signal to have a different effect according to which of the three shift signals was last received.

According to another feature of the invention there is provided a printing telegraph receiver comprising means operative in response to letter shift and figure shift signals, to condition the receiver into a lower case and upper case condition respectively, and thus to cause any one of a plurality of different signals to have correspondingly different effects, according to whether the receiver is in said lower case or upper case condition, and also comprising means operative in response to a secondary shift signal received when the receiver is in either lower case or upper case condition, to condition the receiver to cause a subsequent received signal to have an effect different from that which it has when the receiver is in either lower or upper case condition.

This secondary shift signal may conveniently be the all-blank signal since this latter is the only signal to which an international significance has not so far been allotted.

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The invention considerably extends the range of functions to be performed in response to appropriate signals that can be provided. In the present development of receivers it is preferred to arrange that the secondary shift signal shall cause only the immediately following signal to have an effect that is different from that due to some signal if the previously received shift signal were the letter-shift or figure-shift signal. To take an example, a given signal following the secondary shift signal may be the tabulate signal. This tabulate signal is then effective to cause the type carriage in a page printer to be traversed to the beginning of a new margin. A signal representing a figure or a letter following on the tabulate signal will restore the receiver to the condition it was in before receipt of the secondary shift signal, and a letter or figure (as the case may be) will be printed. This arrangement saves considerable transmission time in many cases and virtually extends the number of functions that are performed in both the lower and upper case condition of the machine.

An embodiment of the invention will now be described with reference to the accompanying drawings in which:

Figs. 1 and 2 are views partly in section of the function selecting mechanism in a printing telegraph receiver shown in different position in the two different figures showing a secondary case shift member in one position; and

Fig. 3 is a view showing this last mentioned member in the other position;

Referring to the drawings, these show the function selecting mechanism as disclosed in my co-pending application No. 761,523, filed July 17, 1947, and the manner in which it is arranged to carry out the present invention.

Five horizontal shafts 11-15 are journaled at each end in bearings (not shown) in the framework of the machine. Fixed to each shaft are rods 16 and mounted on the rods are rollers 17, parallel to the shafts, each shaft with its rollers constituting a code function-selector-member, so that for the five unit code there are five code-function-selector-members 18-22. Each of these five code-function-selector-members 18-22 is movable into one or the other of two different positions according to the nature (marking or spacing) of a corresponding code element of the signal in the manner described in my said co-pending application. In Fig. 1 all the members 18 to 22 are shown in the positions into which they are set by spacing signal elements, whilst in Fig. 2 members 18 and 20 are shown in mark-

ing positions and in Fig. 3 members 18, 19, 21, and 22 are shown in marking position.

The members 18-22 may be regarded as vanes pivoted along their longitudinal axes. Instead of being made continuous however, the series of rods 16 is adopted for the sake of lightness.

Co-operating with the code-function-selector-members 18-22, are function-members 25, 26, Fig. 3; 31, 32, Fig. 1; 33, 34 Figure 2. These function-members are levers pivoted on rods 35, 36, and are arranged in pairs on opposite sides of the code-function-selector-members 18-22. Each pair is connected together at the upper ends of the levers by a spring 37 for each pair so that the levers are spring-urged towards the members 18-22.

The levers 25, 26, 31 to 34 are cut with a series of notches 38 with saw tooth edges. Any notch on a lever is cut in a position so that it is opposite a roller 17 when the corresponding code-function-selector-member is in marking or spacing position respectively. Thus, any particular lever will be free to be moved by its spring 37 for one particular setting of the members 18-22. Each of the members 18-22 when set according to the marking or spacing condition of its corresponding code element, retains its setting until the corresponding code element in a subsequent received signal is of different character. Consequently, on a repetition of the same signal all the members 18-22 remain undisturbed. When however, any one of the members 18-22 moves into another position on a subsequent setting, the function lever that is in selected position will be forced away from the members 18-22, the rollers 17 ensuring a smooth camming action with the minimum of friction.

The function members 25, 26, 31-34 serve directly or indirectly to cause the various functions to be performed.

The functions themselves are carried out by means of cams, carried on various cam sleeves, driven through clutches from shafts constantly driven by a motor.

The function levers may act either to control the release of a particular cam to perform the corresponding function or to control the position of an interponent that causes a cam that is invariably released to perform the particular functions. Certain function levers are allotted to be selected when the letter shift and figure shift signals respectively are received and these function levers control the position of a shift vane 60, fixed to a horizontal shaft 61, mounted similarly to the shafts 11-15 with its axis in the same vertical plane. The letter shift position of vane 60, is as shown in Figure 2 and the figure shift position in Figs. 1 and 3. The manner in which this vane 60 is moved into one or other of its two positions by the selection of the corresponding function levers and the manner in which this position places the receiver in the lower or upper case condition are fully described in my said copending application. The vane 60 constitutes a shift function selector member. A finger 79 carried by the lever 25 abuts against the arm 63 on the vane 60, and this vane is tilted into the position shown in Fig. 3, in which position an extension 89 thereon rides onto the shoulder of a latch 81 and thereby rotates this latch through a small angle about a pivot 82. The pivot 82 is mounted on lever 26, and the latch 81 is held against the tension of a spring 83, which is stretched between an arm of the latch and an arm 84 fixed to lever 26.

A second shift function-selector-member is also provided in the form of a vane 119. Lever 31 is the secondary shift function member and is provided with notches 38 corresponding to an "all-blank" signal consisting of five successive spaces which is used as the secondary shift signal. When lever 31 moves into position shown in Fig. 1, vane 119 carried on a rotatable shaft 120 is pressed into a horizontal position, as shown, against the tension of a spring 121 by a finger 122 attached to lever 31 and acting on an extension 123 projecting upwards from vane 119. Shaft 120 is parallel to and in the same vertical plane as the shafts 11-15 and 61. A latch 124 is pivotally mounted on a bracket 125, fixed to a part 126 of the framework of the machine, which part is also formed with comb guides for the function levers 31-34 etc. Latch 124 is pulled to the left by a spring 127 attached to function lever 31 and when vane 119 is pressed into the horizontal position, it snaps under the latch and is retained as shown in Fig. 1.

Each of the special function levers selectable following the secondary shift signal such as lever 33 (Fig. 2), is provided with a slot 128 so that the lever can move inwards when vane 119 is in the horizontal position.

A lever 129 mounted on a pivot 130 has one end cooperating with the latch 124 while the other end is held against a cam 131 carried on the translator cam sleeve (not shown). This cam rotates lever 129 clockwise once in each revolution, immediately before each change of setting of the code function selector members to withdraw the latch 124 from engagement with the vane 119 and then allows it to fall back.

If the secondary shift lever 31 is in selected position, the latch 124 when it falls back re-engages vane 119 and holds it in horizontal position. The next following setting of the code-function-selector-members 18-22 is then effective to select a special function lever such as 33, Fig. 2 since vane 119 is retained in horizontal position and permits the lever 33 to move into selected position, the slot 128 being in alignment with the edge of vane 119. Upon the latch 124 now being lifted by the lever 129 the vane 119 can move slightly in the notch 128 so that when the latch 124 is allowed to fall back it does so into the position shown in Fig. 2. If now the setting of members 18-22 in accordance with the next following signal changes so that the lever 33 is cammed to the left in Fig. 2, by the rollers 17 coming out of the notches 38 in said lever, the vane 119 will be immediately tilted back by the spring 121 to its original position shown in Fig. 3 because the lever 33 will free the vane 119 before another special function lever moves far enough towards selected position for the slot 128 in the latter to engage vane 119. The consequence of this is that the selection of a function following the selection of the all-blank lever 31 is effective for one feature only but any lever such as 33 which is selected following the all-blank signal can remain in the selected position in the event of repetitions of the same signal as many times as may be desired, since on repetition of the same signal, no change occurs in the setting of members 18-22, the edge of vane 119 remaining within the slot 128 of lever 33.

It will be noted from the drawings that the selection of special function levers such as 33 is independent of the position of the case shift-function-selector-member 60. Whatever posi-

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tion this member is in, it is immediately effective after the special function has been performed.

The above-described arrangement provides the following six facilities with a five-unit code:

1. Selection and printing of twenty-six characters in the letter shift position of the apparatus. No function members are selected in response to the receipt of signals representing any of these characters. The selection and printing of characters are performed by means of apparatus that forms no part of the present invention and is therefore not described herein.

2. Selection and printing of ten numerals and fourteen signs in the figures-shift position of the apparatus. Again, no function members need be selected in response to the receipt of signals representing any of these characters, unless some particular function may be required to be performed incidental to the printing of the character. In this latter case, a function member is selected in response to the particular setting or settings of the code-function-selector-members 18-22 representing the character or characters and the setting of the case shift vane 60 in figure shift position, the vane 119 being in unset position.

3. Selection of two functions, viz the release of the "answer back" mechanism, and the actuation of a calling bell by the movement of two respective function members selected by the setting of the vane 60 in figure shift position and the respective settings of the code-function-selector-members 18-22, the vane 119 being in unset position.

4. Selection of letter-shift, figure shift and secondary shift function members by means of appropriate settings of the code-function-selector-members 18-22 with the vane 60 in either letter shift or figure shift position, and the secondary shift vane 119 in either position.

5. Selection of carriage return, line feed and character space function members by means of appropriate settings of the code-function-selector-members 18-22 with the vane 60 in either position and the secondary shift vane 119 in unset position.

6. Selection of any number of special function members up to twenty-six with the vane 60 in either position and the secondary shift vane 119 in set position.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed I declare that what I claim is:

1. Printing telegraph receiver operative in response to any of three different shift signals to condition said receiver to respond differently to an incoming signal depending upon which of said different shift signals preceded said incoming signal, comprising a code-function-selector-member for each code element of the signal, cam operated mechanical means for setting each of said members into one or other of two positions in accordance with the corresponding element of each signal, a primary shift selector-member and a secondary shift selector-member, means for causing the setting of said code-function-selector-members in accordance with letter shift or figure shift signals to position said primary shift selector member correspondingly, mechanical means for causing the setting of said code-function-selector-members in accordance with a secondary shift signal to position said secondary shift selector member, and mechanical means selectively responsive to the combined

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settings of said code-function-selector-members and said primary and secondary shift selector members to select different of a plurality of functions to be performed in the receiver.

2. Printing telegraph receiver according to claim 1 in which said code-function-selector-members and said primary and secondary shift members are in the form of vanes all parallel and each adapted to be rotated into one or other of two different angular positions to selectively actuate said means for selecting functions to be performed, and means for selectively causing particular combinations of settings of said vanes to cause the movement in one direction of corresponding of said function selecting means.

3. Printing telegraph receiver comprising a plurality of code-function-selector-members, one for each element of the code, cam operated mechanical means for setting said function-selector-members in accordance with received signals, means operative upon the setting of said function-selector-members to select any one of a first plurality of functions to be performed, mechanical means operative upon the setting of said function-selector-members in accordance with a figure shift signal followed by their setting in accordance with any one of a plurality of subsequent signals to select a corresponding one of a second plurality of functions to be performed and mechanical means selectively operative upon the setting of said code-function-selector-members in accordance with a secondary shift signal followed by their setting in accordance with any one of a plurality of subsequent signals to select any one of a third plurality of functions to be performed.

4. Printing telegraph receiver comprising a plurality of code-function-selector-members, one for each element of the code, cam operated mechanical means for setting said function-selector-members in accordance with received signals, mechanical means operative upon the setting of said function selector-members in accordance with a figure shift signal followed by their setting in accordance with any one of a plurality of subsequent signals to select a corresponding code of a plurality of functions to be performed and mechanical means selectively operative upon the setting of said function selector members in accordance with a secondary shift signal followed by their setting in accordance with any one of a plurality of subsequent signals to select a corresponding one of another plurality of functions to be performed.

5. Printing telegraph receiver comprising a plurality of code-function-selector-members, one for each element of the code, cam operated mechanical means for setting said code functions selector members in accordance with three different shift signals, viz, a letter shift signal, a figure shift signal, and a secondary shift signal, mechanical means operative upon the setting of said members in accordance with either a letter shift signal or a figure shift signal and subsequently upon their setting in accordance with any one of a first plurality of signals to cause the selection of a corresponding one of a first plurality of functions to be performed, mechanical means operative upon the setting of said members in accordance with a figure shift signal and subsequently upon their setting in accordance with any one of a second plurality of signals to cause the selection of a corresponding one of a second plurality of functions, and mechanical means selectively operative upon the setting of said members in accordance with a secondary

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shift signal and subsequently upon their setting in accordance with any one of a plurality of signals to cause the selection of a corresponding one of a third plurality of functions irrespective of whether the particular shift signal out of the letter and figure shift signal last received before said secondary shift signal was the letter or the figure shift signal.

6. Printing telegraph receiver according to claim 5 in which said code-function-selector-members are in the form of pivoted vanes arranged parallel with one another each adapted to be rotated into one or another angular position according to the character of the corresponding signal element and further comprising primary and secondary pivoted shift vanes parallel to the other vanes, and adapted to be rotated into one or another angular position according to the setting of the code-function-selector-vanes, function levers selectable for movement by particular combinational settings of the said vanes and means to selectively operate a selected function lever to cause the corresponding function to be performed.

7. Printing telegraph receiver as claimed in claim 6 comprising a secondary shift function lever, means for selecting said function lever for operation by a setting of said code-function-selector vanes, irrespective of the setting of said primary shift vane, means operative upon movement of said secondary shift function lever to cause the rotation of said secondary shift vane into a given angular position and to hold said vane in that position until released by an appropriate subsequent signal and means selectively operative when said secondary shift vane is in

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said given angular position to cause a subsequent setting of the code-function-selector vanes to select a function lever different from that selected by the same setting of said vanes when said secondary shift vane is out of said given angular position.

8. Printing telegraph receiver as claimed in claim 7, comprising means operative upon the movement of any of said code-selector vanes into a new angular position to move any previously selected of said function lever out of selected position, means cyclically operative upon the movement of said secondary shift function lever out of selected position for releasing said secondary shift vane, means operative upon the movement into selected position of a function lever selectable when said secondary shift vane is in said given angular position to hold said secondary shift vane temporarily in said given position regardless of the cyclic operation of said releasing means, and means operative on the movement of said last mentioned function lever out of operative position to cause said secondary shift vane to be moved out of said given angular position.

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