Jan. 22, 1935. R. G. GRIFFITH 1,988,943

KEYBOARD MECHANISM FOR TELEGRAPH APPARATUS

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Fig. 2.

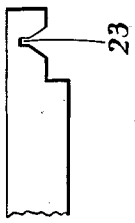
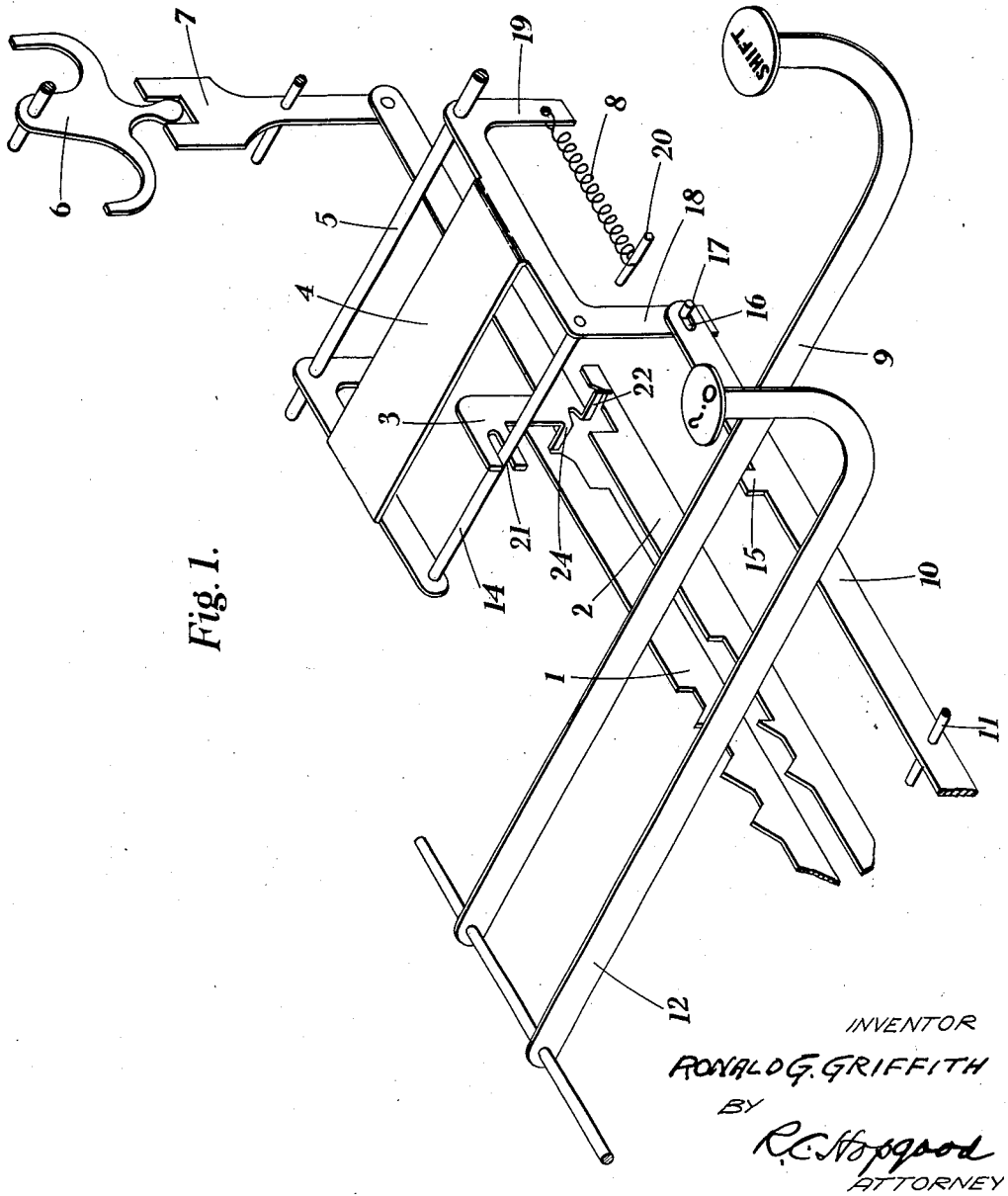


Fig. 1.



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KEYBOARD MECHANISM FOR TELEGRAPH APPARATUS

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12 Claims. (Cl. 178—17)

This invention relates to keyboard controlled telegraph apparatus in which a plurality of key-levers are adapted to effect the transmission of code signals to a line circuit or to effect the perforation of a tape for the subsequent control of the transmission of such signals.

It is usual in printing telegraph systems to provide for case grouping of characters in two groups, the change-over being effected in response to the transmission of shift and reshift signals respectively. In accordance with the standardized five-unit code, letter characters are allocated to the lower case group whilst figure and symbol characters are allocated to the upper case group.

The present trend of printing telegraph technique is to make the keyboard layout approach as nearly as possible to the standard typewriter keyboard layout so that the commercially trained typist will experience minimum difficulty in operating telegraph machines. In the standard typewriter keyboard, however, the figures and symbols are placed in the lower and upper case positions respectively on the top row of keys. In adapting the standard typewriter keyboard layout to the five-unit code, therefore, difficulties arise due to the different case grouping of letter, figure and symbol characters.

It is a primary object of the present invention to remove the limitation in keyboard layout imposed by the use of the five-unit code.

In accordance with one feature of my invention two sets of permutation members are provided for actuation under the control of a signal key-lever, each set of members in accordance with a different code combination, and means is provided for operatively associating either of said sets of permutation members with further apparatus which it is desired to control. Such further apparatus may, for example, comprise signal transmitting means or apparatus for perforating a tape.

In accordance with a further feature of the invention, in a keyboard mechanism means is provided for simultaneously setting up two different signal code combinations upon the actuation of a signal key-lever, and means is provided for selectively rendering either of the set-up signal combinations effective for the control of other apparatus.

According to a still further feature, in a keyboard mechanism a plurality of sets of permutation members are adapted to be set in accordance with a plurality of different signal combinations upon the actuation of a signal key-lever and means is provided for operatively associating a selected one of the sets of permutation members with other apparatus whereby said other apparatus is controlled in accordance with a selected one of said combinations.

The invention will be more fully understood from the following example of a specific embodiment described in conjunction with the accompanying drawing in which Fig. 1 is a perspective view of the parts of a keyboard mechanism necessary for a complete understanding of the invention, whilst Fig. 2 is an enlarged view of the end of one of the permutation bars showing the manner in which it is slotted for a purpose which will be clear from the subsequent description.

In place of five permutation bars, one for each element of the five-unit code, which have heretofore been used in known arrangements, I provide five pairs of permutation bars, one pair for each signal element. One such pair of bars 1, 2 only is shown in the drawing, but it will be understood that five pairs arranged adjacent to one another extend transversely across a keyboard composed of a plurality of key-levers of which only one signal key-lever 12 and a supplementary shift key lever 9 are shown. Each permutation bar is slidably mounted and is longitudinally movable into one or another of two positions by the depression of any signal key-lever, the bars controlling the signalling operations for a corresponding series of signal elements represented by the key depressed. The signal key-levers cooperate directly with the permutation bars which are cut on their upper edges with cam faced notches inclined in one direction or the other in well-known manner. The shift key lever 9 is positioned over the permutation bars so that it does not engage them but when depressed in the same way as the signal key-levers comes into contact with a projection 15 on a transverse lever 10 mounted on a fixed pivot 11. The right-hand end of lever 10 is formed with a slot 16 through which passes a pivot pin 17 carried on a depending arm 18 of a cradle 4.

The cradle 4, which extends over the right-hand ends of the five pairs of permutation bars such as 1, 2, is mounted upon a fixed pivot 5 and is formed with depending arms 18, 19. A spring 8 fixed at one end to one of the arms 19 and at its other end to an anchoring pin 20 tends to rotate the cradle in a clockwise direction about pivot 5.

A transverse rod 14 rigidly fixed to the side members of the cradle 4 passes through slots

21 in five link members 3, the right-hand ends of which are pivotally connected to transfer members 7 of a mechanical relay movement 6 of any suitable kind for operating the signalling mechanism. Only one link member 3 is illustrated in the drawing but it will be understood that five such members cooperate with the cradle 4, one being provided for each pair of permutation bars.

From the lower left-hand ends of the link members 3 two projections 24, 22 extend in opposite directions, one of such projections 24 being on a slightly higher level than the other 22. These projections 24, 22 cooperate respectively with slots 23 formed in the right-hand ends of a pair of bars such as 1, 2. The slots 23, which are formed in the upper edge of one bar and the lower edge of the other bar of a pair, have inclined sides as shown in Fig. 2.

In the normal undepressed condition of the shift key 9 the left-hand side of the cradle 4 is in its elevated position and the left-hand ends of the link members 3 are raised by the rod 14. The projections 24 are therefore engaged in the slots 23 in the rear permutation bar of each pair. When the shift key is depressed, however, the left-hand ends of the members 3 are lowered by the cradle 4 and rod 14, and the projections 22 are engaged in slots 23 in the front permutation bar of each pair.

The depression of a signal key-lever 12 sets the five pairs of permutation bars. In the case of key-levers the labels of which bear two characters or symbols, the cam notches on the bars are so arranged that two different combinations are set up on the two sets of five bars, one for the character or symbol in the lower case position on the key label and the other for the character or symbol in the upper case position on the key lever. The shift key 9 is used to determine which of the two combinations set up shall be transferred through the link members 3 to the mechanical relay mechanism. In accordance with the depressed or raised condition of the left-hand side of the cradle 4 and the left-hand ends of the link members 3, one or other set of projections 22 or 24 respectively is engaged in the slots 23 of that set of permutation bars the transverse movements of which it is required to impart to the link members 3. In the case of key-levers the labels of which bear only one character or symbol, the cam notches on the permutation bars are so arranged that the same combination is set up on both sets of five bars.

The specially shaped slots 23 in the right-hand ends of the permutation bars are necessary since the bars themselves remain in the position in which they are set and as the operation of the shift key 9 may involve a change of combination it must therefore be possible for the projections 24, 22 on the link members 3 to cam the bars or link members into positions in which the projections 24, 22, engage in the bottom of the slots 23.

The invention is particularly applicable to keyboard mechanism of the kind described in my prior Patent 1,921,407 since in combination with the means there described for automatically inserting case shift signal combinations it enables a very close approximation to the standard typewriter keyboard layout to be realized, whilst still adhering to the standard five-unit code. In the standard typewriter keyboard layout the letter characters are each allotted separate key-levers in the lower three rows of keys whilst figures and symbols are placed in the lower and upper case positions on the labels of the top row of keys. In the present instance using a standard five-unit code, however, the figures and symbols are allotted different combinations in the same case group and under certain circumstances certain of the letter characters may be allotted similar combinations in different case groups. In the arrangement according to the present invention the depression of a key on which figures and symbols appear causes two combinations corresponding to the codes for the figure and the symbol to be set up on the five pairs of permutation bars whilst the position of the shift key determines which combination is utilized. When a "letter" key is actuated the same combination is set up on both sets of five permutation bars the case group being otherwise determined. When the invention is applied to the keyboard mechanism described in my prior Patent No. 1,921,407 each key-lever is adapted to actuate a special case determining bar which causes a case shift or unshift combination to be automatically inserted in the manner described in the prior patent referred to whenever a change of case is required and irrespective of whether a "figures and symbols" key or "letters" key has been actuated.

It is to be understood that the invention is not limited to the precise embodiment described and numerous modifications coming within the scope of the appended claims will occur to those skilled in the art.

What is claimed is:—

1. In a keyboard mechanism for telegraph apparatus, a signal key-lever, two sets of permutation members for actuation under the control of said signal key-lever but each in accordance with a different code combination, control mechanism and means for operatively associating either of said sets of permutation members with said control mechanism.

2. In a keyboard mechanism for telegraph apparatus, a signal key-lever, two sets of permutation bars each set adapted to be actuated simultaneously in accordance with a different code signal combination upon depression of said signal key-lever, signal transmitting mechanism common to both said sets of permutation bars and means for selectively rendering either of the set up signal combinations effective for the control of said signal transmitting mechanism.

3. A keyboard mechanism for telegraph apparatus comprising a signal key-lever, a plurality of sets of permutation members adapted to be set in accordance with a plurality of different signal combinations upon the actuation of said signal key-lever, signal control mechanism, and means for operatively associating a selected one of said sets of permutation members with said signal control mechanism whereby said signal control mechanism is controlled in accordance with a selected one of said combinations.

4. In a keyboard mechanism for telegraph apparatus, a pair of permutation members allotted to one signal code element, a signal key-lever adapted to actuate both said permutation members, a mechanical relay movement, a link member for controlling said mechanical relay movement, and means for operatively associating said link member with either of said permutation members.

5. In a keyboard mechanism for telegraph apparatus, a signal key, means for setting up two different signal code combinations upon actua-

tion of said signal key, and means for selectively determining which of said signal code combinations shall be transmitted.

6. In a keyboard mechanism for telegraph apparatus, a signal key, means for setting up two different signal code combinations upon actuation of said signal key, a supplementary key, and means for transmitting one or other of said signal code combinations in accordance with the non-actuated or actuated condition of said supplementary key.

7. A keyboard mechanism for telegraph apparatus comprising a signal key-lever, two sets of permutation bars, means for setting said two sets of permutation bars each in accordance with a different signal code combination upon depression of said signal key-lever, a supplementary key-lever, signal control mechanism, and means for operatively associating one or other of said sets of permutation bars with said signal control mechanism in accordance with the non-actuated or actuated condition of said supplementary key-lever.

8. In a keyboard mechanism for telegraph apparatus, a pair of permutation members and a link member and a mechanical relay movement for each signal element of the code combination, a supplementary key-lever, and means under control of said supplementary key-lever for operatively associating said link members with either of the permutation members of the respective pairs.

9. In a keyboard mechanism for telegraph apparatus, a signal key-lever, a pair of permutation bars adapted to be given a sliding movement upon depression of said signal key-lever, a mechanical relay device, a link member for controlling said mechanical relay device, a supplementary key-lever, and a pivoted member adapted for actuation by said supplementary key-lever to associate said link member with either of said permutation bars whereby said link member is caused to partake of the movement of a selected one of said permutation bars and control said mechanical relay device.

10. A keyboard mechanism for telegraph apparatus comprising a signal key-lever, two sets of longitudinally slidable permutation bars adapted to be set to different code combinations upon depression of said signal key-lever, a link member for each pair of permutation bars adapted to control signal transmitting mechanism, a supplementary key-lever, and a pivoted cradle adapted to be rocked upon the actuation of said supplementary key-lever and thereby to bring said link members under the control of one or other of said sets of permutation members.

11. A keyboard mechanism for telegraph apparatus as claimed in claim 10 in which said link members are each provided with two projections which are adapted to cooperate with slots in one or other of said permutation bars.

12. A keyboard mechanism for telegraph apparatus as claimed in claim 10 in which said permutation bars are provided with slots which are so shaped that said bars are adapted to be cammed into different positions upon the actuation of said supplementary key-lever.

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