Jan. 5, 1932. R. D. SALMON 1,840,057

TELEGRAPH CODE TRANSLATING APPARATUS

Filed May 19, 1931

FIG. 1

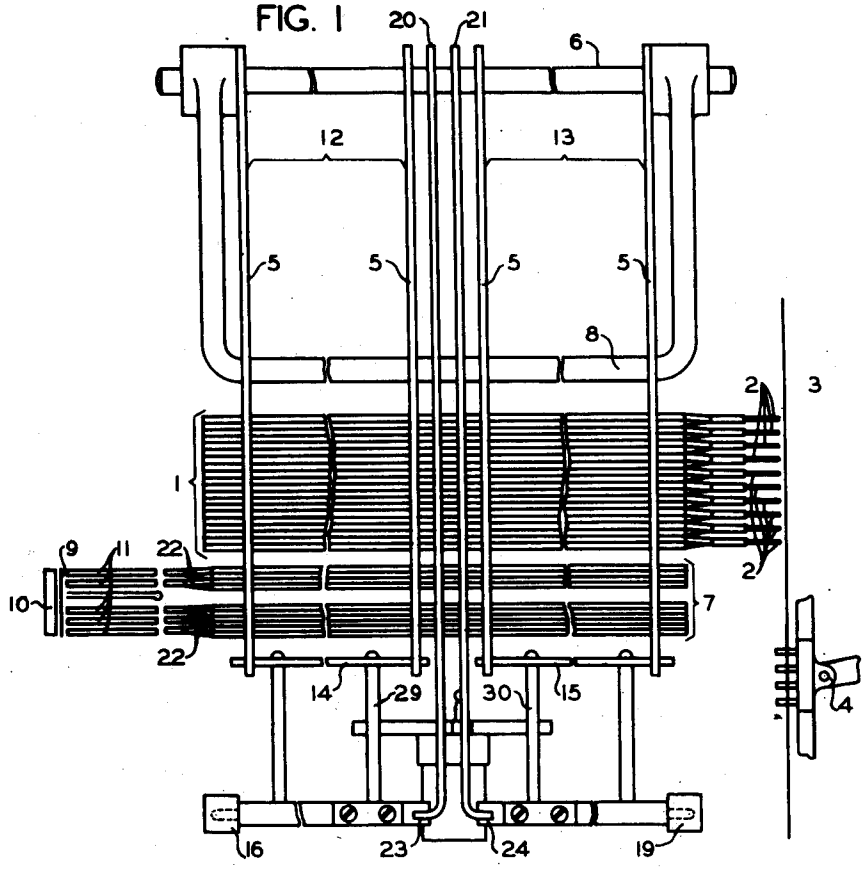


FIG. 2

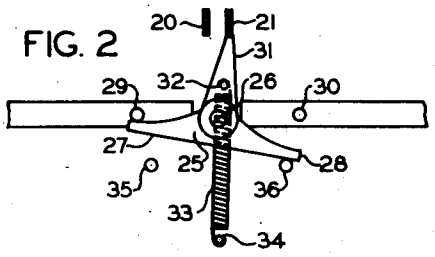
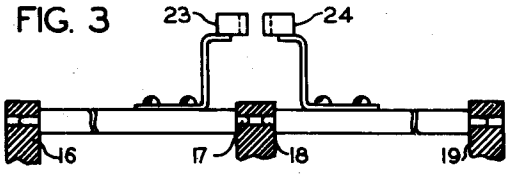


FIG. 3



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TELEGRAPH CODE TRANSLATING APPARATUS

Application filed May 19, 1931, Serial No. 538,602, and in France June 28, 1930.

This invention relates to telegraph code translating or transposing machines.

In translating apparatus of this class a series of members are selectably set in accordance with the elements of each signal in one code, to control the selective setting of another series of members in accordance with the elements of the corresponding signal in another code.

In some codes, certain signals or groups thereof require the prefixing of an appropriate case shift signal. This arises in translating from codes such as the Morse or similar unequal length codes to a five-unit code. The maximum possible number of combinations of the five elements in the latter code being thirty-two, the remaining signals required in practical operation are obtained by using identical combinations for different signals in two groups, and indicating the desired group by an additional case shift signal.

According to the present invention, therefore, in apparatus for translating signals from one telegraph code into another requiring case shift signals, means is provided for inserting an appropriate case shift signal upon change of case in the translated code.

The invention will be described as applied to code translating apparatus in which signals perforated in a tape according to the elements of each signal in one code are employed to control, signal by signal, the setting of a series of notched members. This selects one of a plurality of transverse selector bars individual to that signal perforated in the tape, which selector bar is then actuated to set another series of bars notched according to the code into which it is desired to translate the signals perforated in the tape. The second series of members are then employed to perforate a tape according to the elements of each signal in the translated code. It will be appreciated, however, that means may be employed to set the first series of members other than by perforated tape; also that the signals in the translated code may be employed for other purposes than to perforate a second tape.

Two series of notched bars are shown in United States Patent No. 1,394,439, granted to D. Murray, October 18, 1921, and it is not thought necessary to show them in the drawings.

In the accompanying drawings I have shown only the essential features embodying my invention.

Fig. 1 shows a plan of one arrangement according to the present invention, while

Figs. 2 and 3 show elevations of details thereof.

Referring to the drawings, a series of independent parallel combination bars 1 are suitably supported for longitudinal movement and carry a corresponding series of peckers 2 which co-operates with holes perforated in a tape 3. If it is desired to translate signals from Morse cable code, six pairs of bars are provided and the peckers on alternate bars are suitably staggered so that six bars co-operate with dot perforations situated above the line of center holes in the tape and the other six bars co-operate with dash perforations below the line of center holes. If it is desired to translate from the Morse land line code ten pairs of bars are provided. For unequal length codes a differential tape feed is arranged to move the tape a distance equivalent to the number of center holes in the combination perforated in the tape for each signal, plus one for the letter space, in any manner already well-known and, therefore, only indicated diagrammatically in the drawings at 4. The tape is thus drawn, signal by signal, past the ends of peckers 2 and means is provided (not shown) then to move the tape against the peckers to move in a longitudinal direction those bars 1 against which the corresponding peckers encounter blank tape. When a perforation occurs in the tape the corresponding pecker enters the perforation and the combination bar is not moved. Cam means driven by mechanical power may be employed to feed the tape, signal by signal, and to move the tape against the peckers. The combination bars 1 have square-topped notches cut in various positions on the upper edges and co-operate with transverse selector bars 5 which are arranged in two groups for a purpose to be hereinafter

described, but which are all independently pivoted on rod 6. When the combination bars 1 are set in various longitudinal combinations according to the perforations in the tape, the notches are aligned to select one only of the transverse bars 5 and this selector bar is individual to the signal perforated in the tape.

These means to select one of a plurality of selector bars 5 in accordance with signals, the elements of which are arranged according to the Morse or any other telegraph code, are already known and form no part of the present invention. For this reason it will be understood that any other means may be substituted therefor. The essential is that, according to the manner of reception of the signals, one of a plurality of members is selected corresponding to each signal to be translated.

Arranged parallel to the before-mentioned Morse code combination bars 1 is a second series of five combination bars 7. Notches are cut in various combinations on the edges of these bars under each of the selector bars 5 in accordance with the arrangement of the five elements in the five-unit translated code corresponding to each signal represented by that selector bar. A universal bar 8, preferably actuated by a cam driven from the means for selecting the afore-mentioned transverse bar 5, is arranged to raise any transverse bar which was previously selected and, after the combination bars 1 have been selectably set to select another bar 5, universal bar 8 is lowered and the selected bar allowed to fall into the aligned notches. This causes the selected bar 5 to engage with the second set of combination bars 7 and thus select the elements in the five-unit code corresponding to the signal represented by the selected bar. The combination bars 7 may have inclined teeth so as to be positively moved in various combinations on depression of the selected bar 5. A suitable method for this purpose is for the universal bar 8 to drop and allow the selected bar to fall into the aligned notches and then for a second universal bar (not shown) to depress further, by mechanical power, whichever bar has been selected. An alternative method is to have square-cut notches of suitable width so that the selected combination bars are held against longitudinal movement, while the remainder are free to slide. If it is desired to perforate a tape in the translated five-unit code, the latter arrangement is preferable. The selected combination bars 7 are then held against longitudinal movement by the lowered selector bar 5 and a tape 9 is moved by a die-plate 10 against a series of five punches 11 engaging with the ends of the corresponding series of combination bars 7. The selected combination bars which are held against longitudinal movement cause their corresponding punches to perforate the tape 9 while the remaining punches and bars are free to slide in a longitudinal direction.

Means for translating from one telegraph code into another, substantially as described above, is already known. According to the present invention, however, in order that an appropriate case shift signal may be inserted upon change of case in the translated code, the selector bars 5 corresponding to signals in the five-unit code which belong to each group, of which, in general, the letters constitute one group and figures and punctuation marks form the second group, are arranged in two series in the length of the combination bars 7 as indicated at 12 and 13. Under each of these groups is a separate rocking bar 14 and 15, which is independently pivoted in a suitable manner at 16, 17 and 18, 19. Suitably pivoted on rod 6 are two further selector bars 20 and 21 which do not engage in any manner with either of the series of notched combination bars 1 or 7, but which are employed on depression to set a further series of five combination bars 22, which may be arranged parallel to and alternate with the set of five bars 7. Notches are arranged on combination bars 22 only under selector bars 20 and 21 to form the respective letter and figure case shift combinations in the same manner as previously indicated. These selector bars 20 and 21 are the only ones to act on these combination bars 22, the remainder of the length of the bars 22 being clear of notches for this purpose. The universal bar 8, however, is adapted to raise, on the completion of a signal, either of the bars 20 or 21 which may have been released, in addition to a selected bar 5. Mounted at right angles to rocking bars 14 and 15 are two stop pieces 23 and 24, each of which normally rests under an extension of the selector bars 20 and 21 respectively, but when the corresponding rocking bar is depressed on selection of any one of the selector bars 5 in that group, the stop piece 23 or 24 permits the corresponding bar 20 or 21 to fall and thus set the second set of combination bars 22 for the required case shift combination at the same time as the translated signal combination is set up on bars 7.

When the signals in the translated code are perforated on a tape, the second series of five combination bars 22 are arranged to control a second series of five punches parallel to the series 7 which perforates the translated signal combination, and at a distance of one center hole in advance thereof. It is a simple matter, then, to arrange for the tape feed to take place previous to actuating the tape against the punches and for the tape to be fed a uniform distance of one center hole when each single combination is to be punched, and for an extra center hole to

be fed, or a total of two center holes, whenever a case shift combination is set up in addition.

It is essential, however, that only one case shift combination be set up previous to each signal or group of signals in the same case, and that, only on the occurrence of the first signal in the opposite case of the translated signals, should the case shift signal be prefixed. For this purpose means, such as shown before in Figs. 2 and 3, may conveniently be employed. Lever 25 pivoted at 26 has two horizontal arms 27 and 28, each of which extends under one of the arms 29 or 30 of the corresponding rocking rod 14 or 15, respectively. An arm 31 at right angles to these horizontal arms 27 and 28 carries a pin 32, to which is attached a helical spring 33, the other end of which is attached to a fixed pin 34. This spring 33 constitutes a convenient means of biasing lever 25 to whichever position it was last actuated. Arm 31 of lever 25 is of such a length that when bars 20 and 21 are in the normally raised position, arm 31 swings under whichever bar is on the side to which it has been actuated and prevents any further depression of that bar, while the lever 25 remains in that position. Suitable stop pins 35 and 36 limit the motion of lever 25.

The operation is as follows. When a signal effects the selection of a bar 5, in group 12 or the letter group, for instance, the corresponding combination is set up on bars 7, as previously described. The depression of the selected bar 5 simultaneously depresses rocking rod 14 and moves stop piece 23 from under the letter case shift selector bar 20, which also falls and is actuated together with selector bar 5, corresponding to the signal, to set up the combination for the letter case shift. On depression of rocking rod 14, arm 29 thereof actuates horizontal arm 27 of lever 25, arm 31 is thereupon held by tension of spring 33 against the side of lever 20 until this lever is raised on completion of the signal by universal bar 8. Further translated signals in group 12 will, therefore, not cause any further actuation of selector bar 20, but on a signal occurring in the opposite or figure group 13, stop piece 24 moves from under selector bar 21 and the figure case shift combination is set up on bars 22 simultaneously with the translated signal on bars 7. Rocking rod 15 is depressed by the selected bar 5 in group 13 and arm 28 of lever 25 is depressed by arm 30 of rocking rod 15, so that arm 31 is actuated over against selector bar 21, against which it rests until the completion of this signal. Upon completion of the first signal, bar 21 is raised and arm 31 thereupon springs under selector bar 21 and thereafter prevents the repetition of the case shift signal so long as signals continue to be translated in that group 13.

While the invention has been described as applied to telegraph code translating apparatus in which notched combination bars are employed, it will be appreciated that the method herein shown, of separating the means responding to those signals corresponding to each case or group for the translated code, and providing means for inserting an appropriate case shift signal before the first combination only upon change of case or group, is applicable to other kinds of translating apparatus with corresponding changes in the details of construction of the means providing the feature according to the invention.

What is claimed is:

1. A telegraph code translating apparatus in which a series of members is selectably set in accordance with the elements of each signal in one code to control the selective setting of another series of members in accordance with the elements of the corresponding signal in another code, and means for inserting a shift signal upon change of case in the translated code.

2. A telegraph code translating apparatus comprising two series of members, means for selectively setting one of said series of members in accordance with the signals of one code, means for selectively setting the other series of members in accordance with the signals of the other code, and means for inserting a shift signal upon changing from one code to another.

3. A telegraph code translating apparatus comprising a series of members, means for selectively setting said members in accordance with the elements of each signal in one code, a second series of members, means controlled by the setting of the first members for controlling the selective setting of the second members in accordance with the elements of the corresponding signal in another code, and means for inserting a shift signal upon changing from one code to another.

4. An apparatus for translating signals from one code to another, means for inserting a control signal upon changing from one case to another.

5. An apparatus for translating signals from one code to another, means responsive to each series of code signals, means for separating said responsive means, and means for inserting a shifting signal only upon the change from one case to another.

6. An apparatus for translating signals from one code group to another, means responding to those signals corresponding to each group or case for the translated code, means for separating the responsive means, and means for inserting a shift signal before the first combination only upon the change from one group or case to the other.

7. An apparatus for translating signals from one code to another, a perforated tape

punched in accordance with one code, means under control of said tape to produce a perforated tape punched in accordance with another code, and means for inserting a shift signal in the second mentioned perforated tape.

8. An apparatus for translating signals from one code to another, comprising a group of selecting devices representing one code, a second group of selecting devices representing another code, and means for inserting a shift signal upon changing from one code to another.

9. An apparatus for translating signals from one code to another, comprising punches for perforating a tape in accordance with the translated signal combinations, the perforation for each combination being spaced a certain distance apart, and means for increasing the spacing distances upon changing from one code to another.

10. An apparatus for translating signals from one code to another, comprising a tape provided with a series of holes, means for perforating said tape in accordance with the translated signal combinations, each combination of perforations spaced apart the distance of one of said holes, and means for increasing the spacing upon changing from one code to another.

11. An apparatus for translating signals from one code to another, comprising a tape provided with a series of holes, means for perforating said tape in accordance with the translated signal combinations, each combination of perforations spaced apart the distance of one of said holes, and means for inserting a shift signal, the addition of said shift signal increasing the spacing distance to two of said holes.

In witness whereof, I hereunto subscribe my name this 15th day of May, 1931.

REGINALD DENNIS SALMON.