Invention
Simple printing mechanism for
Baudot code system

SISDE-22

electrically operated

This invention pertains to message recording or printing mechanisms for use with plural-unit telegraph codes of the type known in the art of printing telegraphy as the Baudot code. The principal object of the invention is to provide an extremely simple printing device for producing a printed record of the messages transmitted by such Baudot signals. The form of such record is more suitable for mobile installations such as in mobile police radio systems than for large fixed installations. In the various systems of printing telegraphy based upon the use of a plural-unit code the apparatus required to record the messages is usually quite complicated by reason of the fact that the text is recorded either in successive lines from left to right on a page, as in ordinary written or printed matter, or in a succession of words one a tape, the latter being cut up into sections and pasted upon a sheet of paper. The printing mechanism which produces a record of the former type is usually referred to as a "page printer"; that which produces a record of the latter type, as "tape printer".

In the page printer it is necessary to move the paper so as to bring the space in which a letter is to be printed into correct position. This means that a mechanism must be provided for a function known as "carriage return", i.e., to shift the platen of

the carriage of the printer from right to left at the beginning of each line, and for a second function known as "line feed," i.e., to roll the platen at the end of the printing of each line so as to bring the paper to the next line for printing. In addition it is necessary to provide mechanism for advancing the platen from left to right one space each time a character is printed. Another method of accomplishing the same end result is to keep the sheet of paper in a fixed position during the printing of each line, and move the type or printing wheel from left to right across the paper as the successive characters are printed, and to advance the sheet of paper to the next line at the end of the printing of the last line. In both cases the printing and paper moving functions require considerable apparatus, which naturally complicates the whole mechanism. Moreover, in both cases the necessity for orienting the type bars or the type wheel for each printing operation, so that the character being recorded is printed in a particular spot within a limited space, also involves quite complex mechanism for accomplishment.

In the tape printer, while the "carriage

return" and "line feed" functions are absent, the necessity for orienting the type wheel into proper position for printing also complicates the apparatus.

In the present invention the printed record of the received message is made upon a roll of paper of the width of that commonly employed in adding machines, and the characters constituting the text of the message are recorded ~~in spatial positions similar to the the paper in a manner quite similar to that in a stenographic recording device known as the "stenotype" in the latter the~~ successive lines, so that the text is read downward, character by character. The characters do not fall into a single column, however, for reasons which will become apparent subsequently. An example of the appearance of the printed record formed by the apparatus of my invention is shown in a later part of this specification.

The invention is described in connection with Figs. 1, 2, and 3. Fig. 1 is a schematic representation of the means for selecting a given character, res-

In general such a device, as termed a "Baudot translator" and is well known in the printing telegraphy art. I have, however, modified it so that it performs not only the translator functions but also the printing functions. Hereafter it will sometimes be termed the printer and received permutation of Baudot signals. Fig. 2 is a side elevation of the printer. Fig. 3 shows circuit arrangements for certain special functions to be described.

Referring to Fig. 1, the printer consists of a set of five slotted translator bars 1-5, ~~in which slots have been cut in positions corresponding to the Baudot code, in a manner well known in the art~~ which are displaceable to the right, under the control of a set of selector magnets 6-10. These magnets are operated in permutations corresponding to the received Baudot signals; the circuits for actuating these magnets are not shown in complete form and are of no concern in the present invention.

Positioned transversely over the translator bars 1-5 and ~~suspended above them~~ rocking on a common shaft is a set of 31 bars hereinafter called the print and stunt bars 11. The translator bars are slotted, the slots being arranged so that as the bars are displaced to the right, under the action of selector magnets 6-10, there will be for each different permutative arrangement of the translator bars one and only one

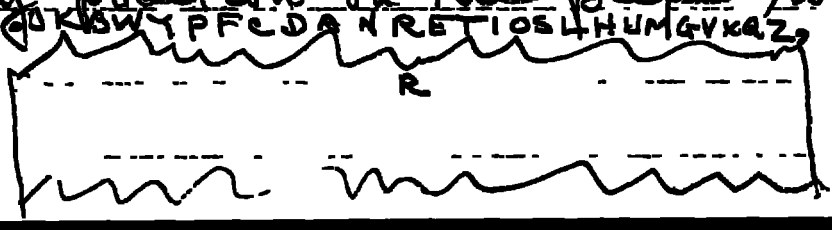
alignment of slots presented under the print bars and shunt 11, into which a particular print or shunt bar can drop, ~~the print bars are kept from riding on the translator bars by individual springs attached to one extremity of each print bar~~ being pulled into the slot by a spring attached to one extremity of the said bar. (Side elevation, Fig. 2, shows one spring 12.) The other extremity of each print bar carries a type face suitable for making an impression upon ~~a~~ paper, when struck, through a typewriter ribbon which is interposed between the type face and the paper. (In the case of a shunt bar, the other extremity carries no type face but is arranged to close a contact when the shunt bar is released.)

The slots in the translator bars ~~are so arranged~~ and the print bars are so arranged that the order of the print bars reading from left to right is such as to bring the high-frequency letters in the center, and the low-frequency letters at the extremities of the line, somewhat as follows:

J K B W Y P F C D A N R E T I O S L H U M G V X Q Z

In order to print the character on the selected print bar, a print impulse

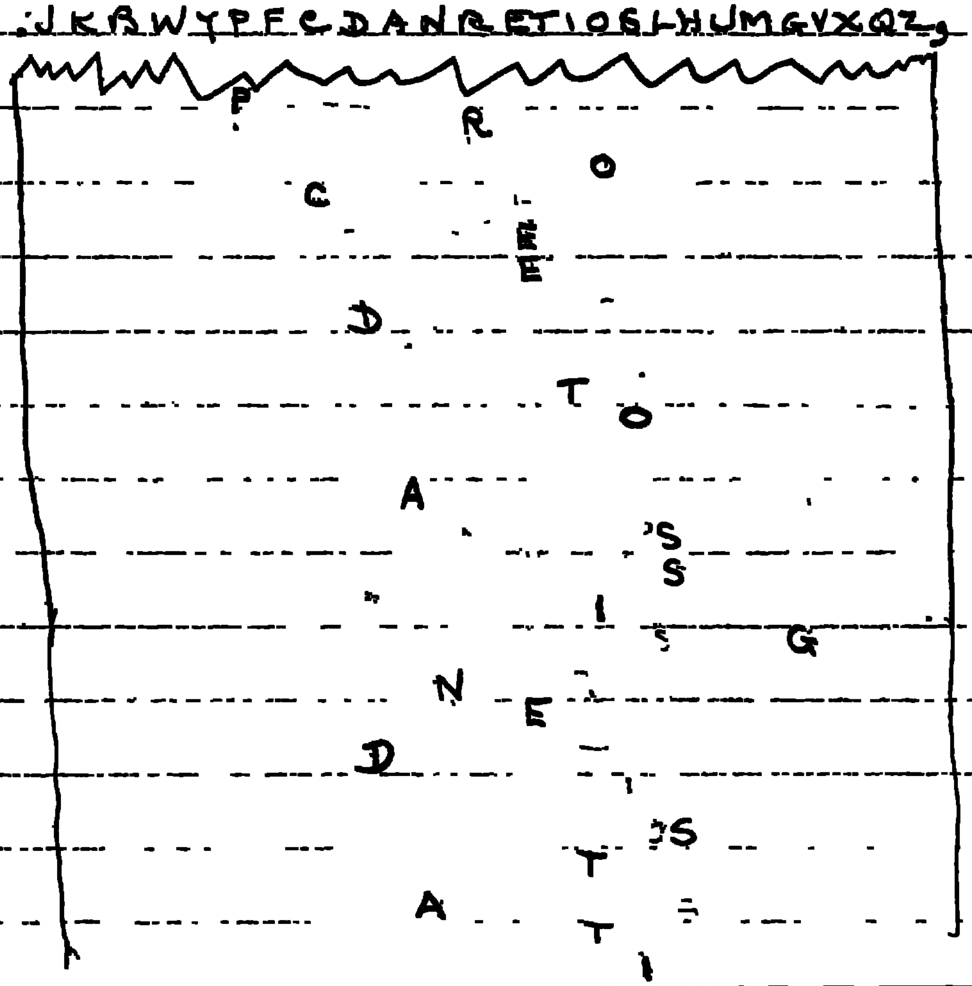
is delivered to a magnet 13 which strikes a print lever arm 14 underneath the paper upon which the printing is to take place. Magnet 13 is controlled by a slow-acting relay 14 which is in the common return conductor 15 for selector magnets 6-10. Thus, when any one or a group of the selector magnets 6-10 is actuated, the print impulse will come shortly after the particular print bar has been selected and has dropped into the alignment of slots presented by the permutative displacement of the translator bars 1-5. The character on the ~~type bar~~ selected print bar will be ~~printed~~ printed on the paper roll and the position of printing corresponds identically with the left to right position of the selected print bar. For example, if the letter R is printed it will appear in the following position on the paper roll (the letters above the paper are shown for reference only)



The line feed magnet may also be operated by a special contact controlled by one of the rotating brushes of 11.

Means are provided, for "line feed", i.e., to step the paper forward to the next line, after each printing of a character. These means consist of a ratchet and pawl and magnet controlled by a contact which is closed on the return of the print lever arm 14 to its normal position after printing has occurred.

The appearance of the paper roll with the text of the illustrative message "Proceed to assigned stations" will be as shown below (the line of letters at the top is inserted only for purposes of reference):



The Baudot code provides for 31 permutations only 26 of which are required for the alphabet. The five extra permutations are commonly employed for certain signs of punctuation, such as period, comma, and for special functions, such as "figure shift," "letter shift" and "space". In case it is desired to provide for the printing of figures, it is possible to arrange ~~the print~~ for same in the present system by means now to be described.

The print ~~lever arm 14 normally~~ ~~strikes~~ bars 11 may, in addition to the letter type-faces they carry, also bear an "upper-case" type face, in the same way as do the print bars of a typewriter. The print-lever arm 14 ~~normally~~ is so arranged that normally it will strike the paper against the "lower-case" character on the selected print bar. However, on the receipt of a special stunt signal, "figure shift" which is one of the ~~five~~ extra permutations mentioned above, the print-lever arm is displaced so that it will strikes the paper against the "upper-case" character on the selected print bar. The print-lever

arm will continue to strike "upper-case" characters until the receipt of a "letter shift" impulse, whereupon the print-lever arm returns to its normal position.

The arrangements for effecting this shifting from lower to upper case are shown in Fig. 5. Suppose the Baudot permutation for figure shift (= upper case) is +++-+-. On receipt of this permutation the translator causes a stunt bar to be selected, which closes a circuit for actuating magnet , which in turn moves the print-lever arm to its upper case striking position and keeps it there until on the receipt of another Baudot permutation, +++++, the translator causes a stunt bar to be selected, which opens the circuit for actuating magnet . The print-lever arm thereupon returns to its normal or lower case striking position.

JKBWYPFCDANRETIOSLHUMGVXQZ

THESE VENTH BRIGADE

RTENO

-4-3-2-1-2-3-4-5-6-7-8-9-10-11-12

-4-3-2-1-0-1-2-3-4-5-6-7-8-9-10-11-12
D I O N E T R A S L C P M G V X K

-4-3-2-1-0-1-2-3-4-5-6-7-8 | 9-10-11-12
F I O R E N T H A S L Y P | M G V X Z
8 39 41,63 98 111 84 78 20 41 2 103

Fig. 8.

75

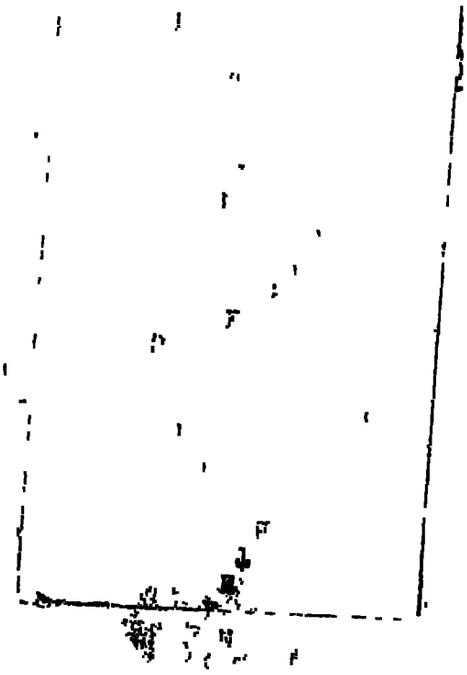
603

THE SEVENTH BRIGADE
HAS RETIRED

24
50
26
16
2
8
1

240

REF ID:A67530



RTENO

-11-10-9-8-7-6-5-4-3-2-1-2-3-4-5-6-7-8-9-10-11-12

12-11-10-9-8-7-6-5-4-3-2-1-0-1-2-3-4-5-6-7-8-9-10-11-12
J Q B W Y U F H D I O N E T R A S L C P M G V X K

12-11-10-9-8-7-6-5-4-3-2-1-0-1-2-3-4-5-6-7-8-9-10-11-12
K J Q B W C U D F I O R E N T H A S L Y P M G V X Z
4 3 8 39 41,63 98 111 82 78 20 41 2 10 3

95

603

1
1
2
5
18
25
36
25
24
50
26
16
2
8
1
240

THE SEVENTH BRIGADE
HAS RETIRED

Invention of a printing mechanism

1. The object of this invention is to provide a very simple recording or printing mechanism for use with plural-unit code systems, such as the Baudot.

2. Using the Baudot code as an illustration, let the received impulses (in permutations of two kinds through five places, $2^5 = 32$) actuate five slotted bars, arranged longitudinally.

3. These slotted bars are slotted appropriately to admit of the dropping into position, upon receipt of the appropriate code combination, of one of 32 selector bars, the latter having projecting lugs at appropriate positions to engage with the slots on the slotted bars.

4. Each selector bar carries at its extremity a type face capable of registering an impression on a paper tape through a typewriter ribbon.

5. When the selector bar is selected and falls into the ~~slot~~ alignment of slots on the slotted bars, it causes the type face to be struck against the paper.

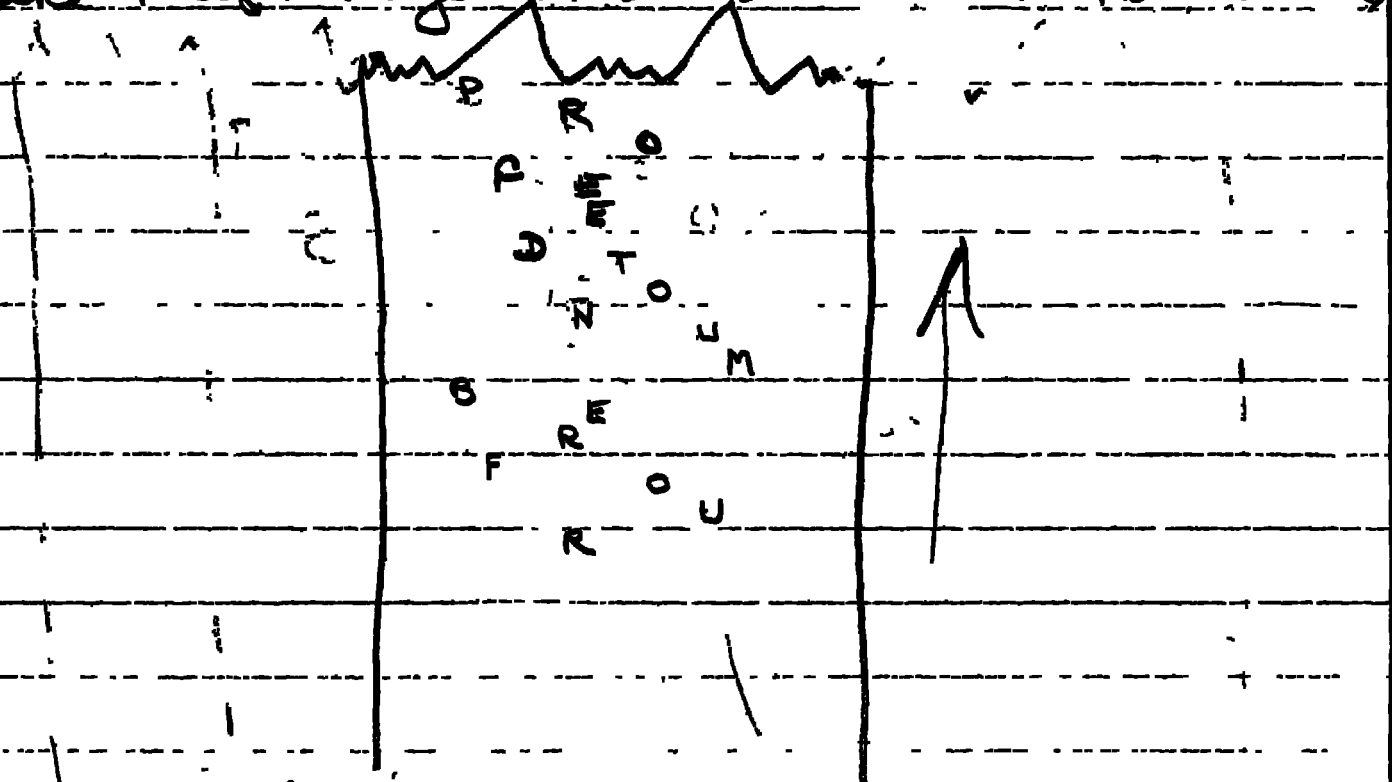
6. The record is similar in form to that of the well-known "stenotype"

fig.

machine ~~the~~ the selector bars are arranged in this order to correspond with ~~the~~ normal frequencies:

JKBWYPFCDANRETIOSLHUMGVXQZ

The record would be something like this (message PROCEED TO NUMBER FOUR)



Disclosed to us at Washington on May 3, 1935 William F. Friedman

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