Invention

Simple printing mechanism for
Baudet code system

SISDE - 22
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 Bandet 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 Bandet signals. This form of such record is more suitable for mechanical installation in the mobile police radio transmitting systems than for large fixed, or 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 on a succession of lines from left to right as in ordinary written or printed matter, or in a succession of words on a tape, the latter being cut up into sections and then 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, a "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 to shift the plate of
carriage of the printer

the printer from right to left at the beginning of each line, between the plate or the print head, and for a particular character is printed, and to raise the plate at the end of the printing of each line so as to bring the paper to the next line for printing. These operations consequently complicate the mechanism very considerably. Another method of accomplishing the same and result is to keep the sheet of paper in a fixed position during the printing of each line, and to move the type 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 destroying the type form 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 mechanisms for accomplishment.

In the tape printer, while the carriage
return "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 message are recorded in special positions similar to the paper in a manner quite similar to that in a stenographic recording device known as the "shorthand." In the latter the "pneumatic 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 account of this specification.

The invention is described in connection with Figs. 1, 2, and 3. The Fig. 1 is a representation of the means for selecting a given character.
In general such a device is 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 plotter functions. Furthermore, it will accommodate certain special arrangements for certain special functions to be described.

Referring to Fig. 1, the printer consists of a slotting translator having five bars 1-5, which plate bars have an innumerable number of the translator slots through which are disposed to the right, under the control of a selector of magnets 6-10. These magnets are operated in permutations corresponding to the received Baudot signals, the circuits for actuating these magnets are not shown and are of no concern in the present invention.

Positioned transversely over the translator bars 1-5 and disposed above them is a set of 31 bars hereinafter called the print bars 11. The translator bars are plotted, 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 permutable arrangement of the translator bars one and only one...
alignment of slots presented under the print bar 11 into which a particular print bar can drop, the print bar is kept from riding on the translator bar by an individual spring attached to one extremity of the bar, being pulled into the slot by a spring attached to one extremity of the said bar. (Side elevation, Fig. 2, shows one spring.) The other extremity of each print bar carries a type face suitable for making an impression upon paper, through a typewriter ribbon which is interposed between the type face and the paper. The translator bars are so arranged and the print bars are so arranged that the order of the print bars as reading from left to right is such as to bring the high-frequency letters in the center, somewhat as follows:

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

In order to print the characters on the selected print bar, a print impulse...
is delivered to a magnet 13 which strikes a print 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 circuit 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 permutation displacement of the translated bars 1-5. The character on the type of selected print bar will be printed on the paper well and the position of printing corresponds identically with the left to right position of the selected print bars. For example, if the letter R is printed, it will appear in the following location on the paper well (the...
for "line feed", i.e.,

means are provided 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 cam which is actuated on the return of the print
lever arm it to its position after printing has occurred.

The appearance of the paper roll with the
right of the illustrative message "Proceed to assigned
station" will be as shown below (the series of letters
at the top was inserted only for purposes of reference):

UKWYPCDANGETIOSHUMQVXAZ
The Baudot code provides for 31 permutations only 10 of which are required for the alphabet. The
seven extra permutations are commonly employed for
special functions, such as "figure shift", "letter
shift", "space", etc. In case it is desired to provide
for the printing of figures, it is possible to arrange
means used to be described.

The print-lever arm is normally
pressed down in addition to the letter
face. They are usually also bent see "upper-
case" type face. In the same way as do the
print-bar of a typewriter. The print-lever
arm is so arranged that normally
it will strike the paper against the "lower-
case" character on the selected print bar.
However, with the receipt or a special "figure shift"
signal, which is one of the five extra perm-
utations mentioned above, the print-lever
arm is displaced so that it strikes the
paper against the "upper-case" character
on the selected print bar. The print-lever
The print-lever arm will continue to strike "upper-case" characters until the receipt of a "letter shift" impulse, whenupon the print-lever arm returns to its normal position.

The arrangements for effecting this shifting, from lower to upper case, are shown in Fig. 8. Suppose the Baudet permutation for letter shift ( = upper case ) is 

\[ + + - + - - - \]

The translator causes a small bar to be selected, which opens 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 Baudet permutation,

\[ + + + + + + + + \]

the translator causes a small bar to be selected, which opens the circuit for actuating magnet . The print-lever arm then returns to its normal lower-case striking position.

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THESVEN'TH BRIGADE HAS RETIRED

THE SEVENTH BRIGADE HAS RETIRED
RTENO

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

JQBWYUFHDPIONETRASLQPMGVXK

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

KJABWJUDEFIORENTHASLYPMGVXZ

438394163787878209193

93

603

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, $2^5 = 32$) activate five slotted bars, arranged haphazardly.

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

4. Each selector bar connects to its respective type face capable of registering one impression on a paper tape through a typewriter ribbon.

5. When the selector bar is selected and falls into the 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 "steno-type"
The selector bars are arranged in this order to correspond with normal frequencies:

JKWYPDABRETOISLHUMQVK

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

delivered to us at
Washington on May 3, 1935

William F. Frederick

Winston Bediman

John Harkness