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PROPOSAL FOR MODIFYING TELETYPE APPARATUS FOR
CIPHER PURPOSES.

The following sketch and accompanying explanation were conceived and drawn up by me this 4th day of June, 1924, for modifying Teletype Apparatus for cryptographic purposes.

The principal new apparatus required is a tape transmitter of the usual type but so modified as to permit of the five contacts being established in sequence and in phase with the five keyboard transmitter contacts of the teletype transmitting keyboard. In the accompanying sketches A designates the five keyboard contacts which are established in sequence; B designates the five tape transmitter contacts which are also established in sequence, contact 1 of A being operated simultaneously with contact 1 of B; contact 2 of A being operated simultaneously with contact 2 of B, and so on. The five leads from A are connected in parallel to one end of the winding of the teletype magnet C; the five leads from B are connected in parallel to the other end of the winding of the teletype magnet C. Bus bars 6 and 6' are connected to the positive pole of battery, bus bars 7 and 7' are connected to the negative pole of battery.

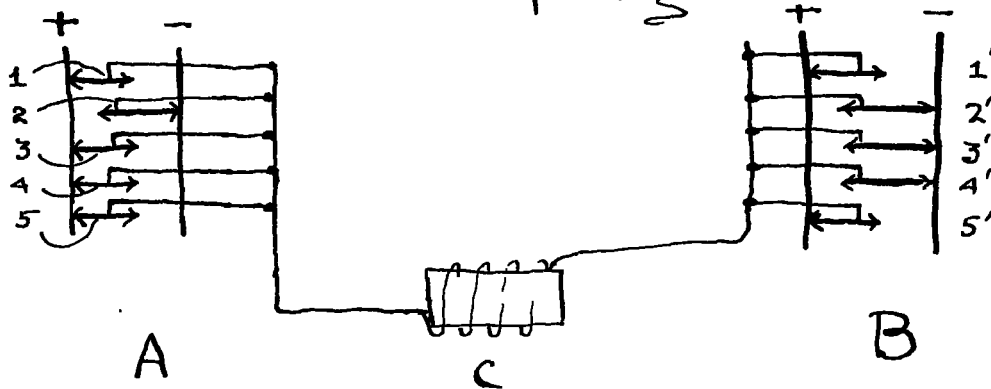
The operation is as follows: Suppose the letter X, code combination $\ast\ast\ast\ast$, is set up on the keyboard, and the letter Z, code combination $\ast\text{---}\ast$, is set up on the tape transmitter. Contacts are so arranged that a \ast of the code combination means an actual contact to \ast battery, a - of the code combination means an actual contact to - battery by means of the contacts vibrating between the two bus bars 6, 7 and 6', 7'. Hence, for X, contact 1 of A is making contact to \ast battery when it is operated, and simultaneously for Z contact 1' of B is making contact to \ast battery. Consequently no circuit is established through C. When contacts 2 and 2' are operated, immediately following 1 and 1', 2 is making contact to - battery, 2' is making contact also to - battery, hence no circuit is established through C. When contacts 3 and 3' are operated, 3 is at \ast , 3' is at -; hence a circuit is established and C is energized. When contacts 4 and 4' are operated, 4 is at \ast , 4' is at -; hence a circuit is established and C is energized. When contacts 5 and 5' are operated, 5 is at \ast , 5' is also at \ast ; hence C is not energized. The entire result is the combination $\text{---}\ast\ast$, which is the code for the letter N.

In deciphering, the operations are similar in nature, the letter Z on the tape and the letter N set up on the keyboard contacts yield X, the original keyboard letter. This is shown in Figure 2.

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June 4, 1924

Fig. 1.

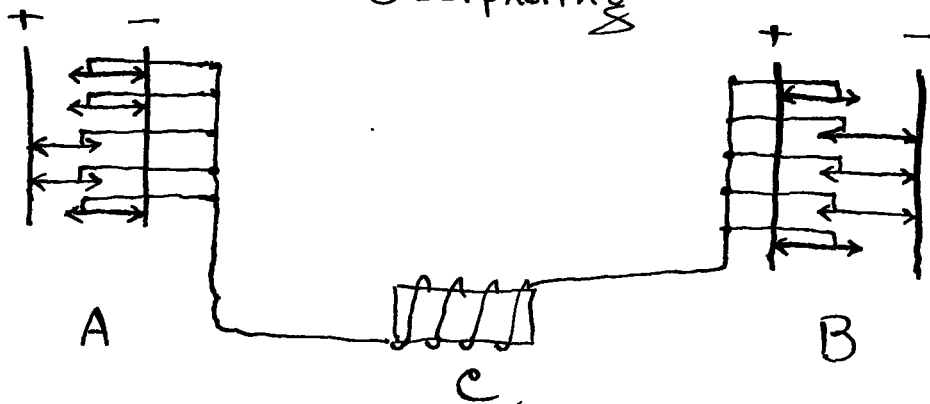
Enciphering



X = + - + + + Letter
 Z = + - - - - + Key
 N = - - - + + - Cipher

Fig. 2.

Deciphering



N = - - - + + - Cipher
 Z = + - - - - + Key
 X = + - + + + Letter

Disclosed to me
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 June 4th, 1924
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