SELF-STECKERS ON JUMBO   (7)
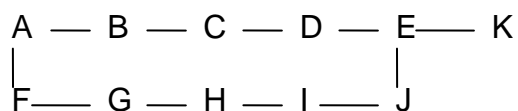
Contents   Counting of self-steckers by non-energised points on the main diagonal
*   - differential relays & switches.*

When the bomb is running the electrical circuit is of the form shown below current is put in at one point of the diagonal board and after many convolutions through a complicated network finds its way back to the battery through the lines of the input. Each junction of the net is a point of the diagonal board.   The points where current is taken away and the particular points of the row (A say) correspond to the input letter.

In general when the input is full all the lines of the input are energised.

Now consider a menu consisting of a single chain

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A — B — C — D — E— K
|             |
F— G — H — I — J
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Consider the self-stecker points A/A, B/B,........K/K when the input is full all of these will be energised. When there is a straight <u>not </u> on the input line some (or maybe more) will be not energised. When the straight <u>is</u> on the input line <u>some</u> will be not energised.

(2)

Now the chance of any ordinary straight (not story) on Jumbo involving one, two, three etc. self-stecker may be evaluated. Suppose that we are prepared to assume that the correct story will involve p self-stecker (for p = 1, 2, ...); then the following is a method for preventing the machine from stopping when the straight as found does not involve at least p self-stecker

There are 26 relays connected respectively to the 26 pts. Aa, Bb, Cc, ...Zz of the diagonal board. The switches ensure that the relays corresponding to the letters <u>off</u> the chain are <u>always</u> "up". They would, of course, never be energised in the main enigma circuit.

NB1 By the use of differential relays we could arrange that the relays were not bobbing up and down all the time i.e. that in their normal (energised) posn. they were up, and only went down when they were not energised.

NB2 The sort of story for which it would be a help would be a closed 10 chain - giving 280 stops. These, by the assumption of 2 self-stecker would be reduced to about 50 stops say - the risk being about 3:1 on.

NB3 The same device applied to the (ordinary) bombs would eg. make a doubly closed 10 chain (11 stops) reasonable. The stops would be reduced to about 2.

(3)

NB4 It is clear that for a straight on the input line we should always get more than p self-stecker relays down. The stops would then occur in the ordinary way, but of course this would not increase the total appreciably.

O.K.L

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