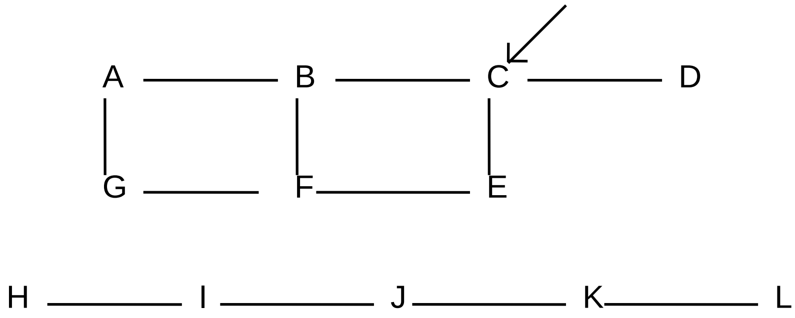
An idea for the "Super Jumbo"

αβ



Consider the above menu, and suppose that we have decided to assume that the correct story will get on to the second chain. This will mean that with current entry at C - on the line which is the correct stecker for C - the current will reach one point of each of the rows H, I, J, K, L of the diagonal board.
That is to say at least one of the points $\alpha\,\beta$, where α is a letter on the first chain and β a letter on the second chain, will be energised ; two of these points will be energised if there is a confirmation between the two chains ; but clearly not all of the points will be energised (because if I / Q is then I / Z cannot be). In general, however, when the input at C is full, all of these points $\alpha\,\beta$ will be energised.

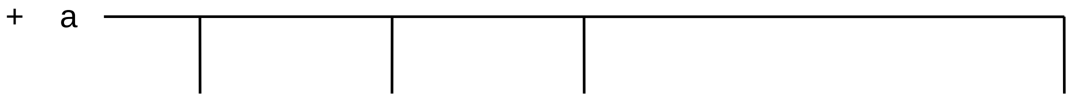
With current entry on a specified line of the input it is possible to make the machine stop only when (i) there is a straight on this line, and also (ii) this straight gets on to the second chain. The details of this are given in the screed.

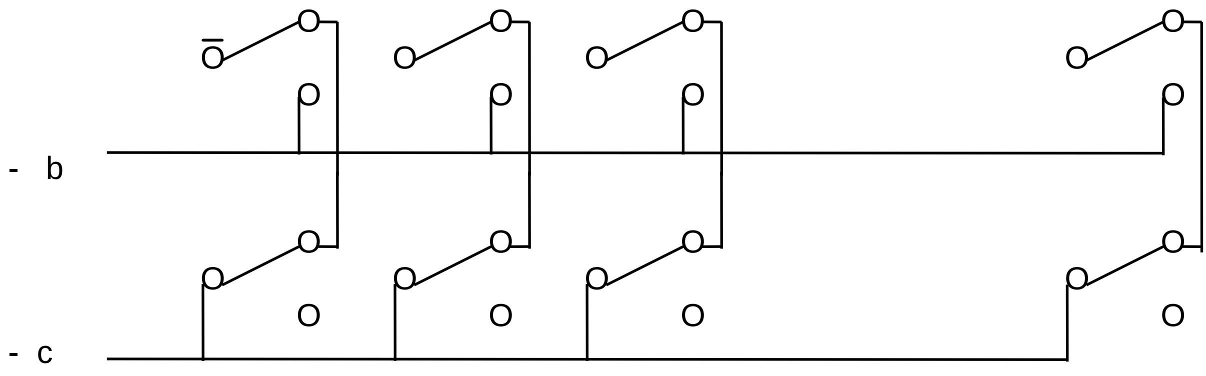
It should be possible in the following way to make the machine stop when there is a straight on any line of the input and when this straight also gets on to the second chain; ie. we do not need to make a definite (self-stecker) assumption.

Suppose there is a straight not on the current entry line and that this straight gets on to the second chain. In this case one at least of the points $\alpha\,\beta$ will be not energised - but agian not all of them will be not energised.

Thus to make use of a subsidiary chain control, (to ensure that a straight gets on to the second chain), when the current is not on the "straight" line of the input we must ensure that some one or more of the points $\alpha\,\beta$ is not energised

Now consider the Super Jumbo having 676 relays one to each point of the diagonal board. To each relay we add two points - except to the self - stecker relays, since these cannot cause a story to get from one chain to the other.





$\underline{a}$ is a common connection to all the 650 non self-stecker relays.

$\underline{b}$ & $\underline{c}$ are two series of plugs which connect the chosen relays $\alpha\ \beta$ into two commons. About 40 - 50 relays will be involved.

Current flowing from $\underline{a}$ into both $\underline{b}$ and $\underline{c}$ stops the machine.

Now consider various cases :-

(i) No straight - the input at c being full.
Here <u>all</u> the relays $\alpha\ \beta$ will be energised (i.e. up) and no current will flow in $\underline{b}$, though current will flow in $\underline{c}$.

(ii) A straight, but not on the input line.
If this straight actually gets on to the second chain at least one of the relays $\alpha\ \beta$ will be not energised (i.e. down). Current will flow in $\underline{b}$ & $\underline{c}$ and the machine will stop.

If the straight does not get on to the second chain all the relays $\alpha\ \beta$ will be up and current will not flow in $\underline{b}$: the machine will not stop.

(iii) A straight on the input line.
If the straight gets onto the second chain some one (or more) of the relays $\alpha\ \beta$ will be up, so sending current through $\underline{c}$: but not all of them, so sending current through $\underline{b}$. The machine will stop.

If the straight does not get on to the second chain all the relays $\alpha\ \beta$ will be down and no current will flow through $\underline{c}$: current <u>will</u> flow through $\underline{b}$. The machine will not stop.

Thus the machine will only stop when there is some straight on the input and when this straight gets on to the second chain.

<u>Corollary (1)</u>

It is clear that the circuit <u>c</u> is only necessary to deal with the case of a straight on the input line.
If we definitely put current in on a "wrong" line (eg. a consecutive stecker on Red, Light Blue etc.) then <u>b</u> only is needed, & current through <u>b</u> stops the machine. This would require only one more relay point, and we should arrange that a straight on the input line did not stop the machine.

<u>Corollary (2)</u>

It would be an advantage to have some sort of "machine gun" mechanism which worked while the machine was running.

Consider the rows M, N, O, - - - Z of the diagonal board - ie. those corresponding to letters not on either chain. If γ & δ are both letters chosen from M, N, O, - - - Z then no point of the type $\gamma\,\delta$ can ever be energised. Suppose then that, with the 676 relays wired as in the previous Screed, these chosen relays $\gamma\,\delta$ are completely disconnected. These relays can now be regarded as dud.

Consider the rows M, N, O, - - - Z. We must here restrict ourselves to straights definitely <u>not</u> on the current entry line. When we have such a straight then one or more points of some of these rows (in addition to the points $\gamma\,\delta$) will be not energised : if two points of any such row (again in addition to the points $\gamma\,\delta$) are not energised two possibilities are open :-

(i) the straight has a legal contradiction
(ii) there is a second straight on the chain (probably on the second chain) in addition to the one which gets on and which is possibly correct.

Suppose then that we, as it were, "reverse" the wiring of the first two relay points (see previous screed), so that the relays are "up" when <u>no</u> current flows; and suppose also that only the rows M, N, O, - - - Z are plugged up. Then if we reject stops in which two or more relays in any one of these chosen rows are up, (in addition to the relays $\gamma\,\delta$ which are disconnected and which otherwise would always be up), we shall miss the correct stop only if, in the correct position, there are two straights on one of the chains - one correct & one incorrect. For the menus chosen the chance of this occurring is very likely - but if both chains have a closure the chance is of the order of 5 : 1 in our favour. The method would therefore be possible, but would have only a limited application.

The chief difficulty here seems to be that there is no method of distinguishing electrically between one non-energised straight, and two non-energised straights - only one of which gets on to the other chain. When the current is actually <u>on</u> the "straight" line there is no current in the second & wrong straight, & so this case can be recognised.

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