How an Electronic Brain Works

Part X—The product of two binary numbers.

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IN THE two previous articles we discussed how a brain built around electronic tubes can store information, add, and subtract; and we drew up schematics for an adder and a subtracter (RADIO-ELECTRONICS, June 1951, page 39).

The basic components which are required for an electronic brain have been

* Author: *Giant Brains*, John Wiley & Sons, Inc.

labeled as we have indicated in the table below:

Symbol	Name
A	an AND circuit, or gate
O	an OR circuit, or buffer
E	an EXCEPT circuit, or inhibitory gate
nP	a delay line, delaying pulses for n pulse times
F-F	an electronic switch, or flip-flop

Now let us see how we can use these

components to design an electronic multiplier, which can multiply two binary numbers together and give the product.

A circuit which will multiply is shown in Fig. 1. It contains 17 components, which are connected by lines bearing arrows, along which pulses travel in one direction. This circuit has seven input lines, numbered terminal 1 to terminal 7, and one output line, num-
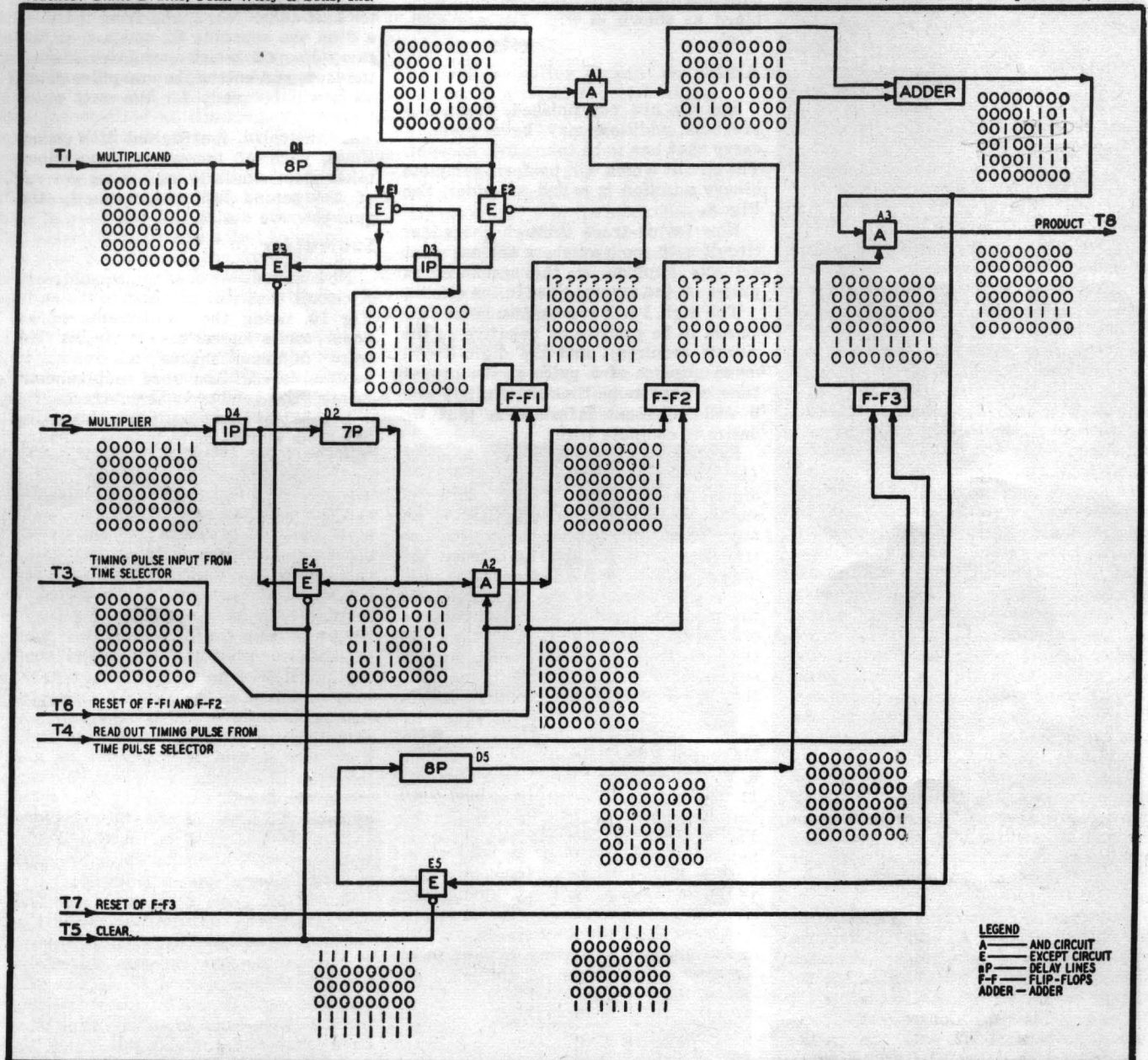

Fig. 1—This multiplier circuit has 17 components. There are 7 input lines and 1 output line where the product appears.