[54] **COMMUNICATION CIRCUIT WITH COMBINED POWER FEED AND DATA TRANSMISSION OVER A PHANTOM CHANNEL**

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[57]   **ABSTRACT**

The disclosure relates to a four conductor circuit arrangement providing two communication channels between a control unit and a terminal device. Power feed and bi-directional signalling are accomplished simultaneously over the same four conductors used for the two commmunication channels without interference. The signalling from the control unit to the terminal is accomplished by means of a voltage modulator circuit in the control unit by which voltage pulses are transmitted via a phantom circuit arrangement over the four conductors to the terminal unit. The voltage pulses are sensed from the phantom circuit in a data receiver which is located at the terminal unit. Connected to the phantom circuit in the terminal unit is a voltage regulator circuit which receives power from the control unit via the four conductor phantom circuit interconnecting the control unit and the terminal. In series with the voltage regulator circuit is a constant current sink and an inductor. A current modulator circuit is provided in parallel for impressing current data pulses generated in the terminal onto the phantom circuit, which are, in turn, received by a receiver circuit in the control unit.

A preferred data format is disclosed as a method for transmitting information between the control unit and the terminal.

The preferred embodiment for the disclosed four conductor communication circuit and the disclosed data format is in a key telephone system in which the control unit is a station card in a key service unit and the terminal is a key telephone station set.

12 Claims, 8 Drawing Figures

Fig. 1.

Fig.2.

Fig.3.

Fig. 4.

Fig. 5.

Fig.6.

Fig.7A.

Fig.7B.
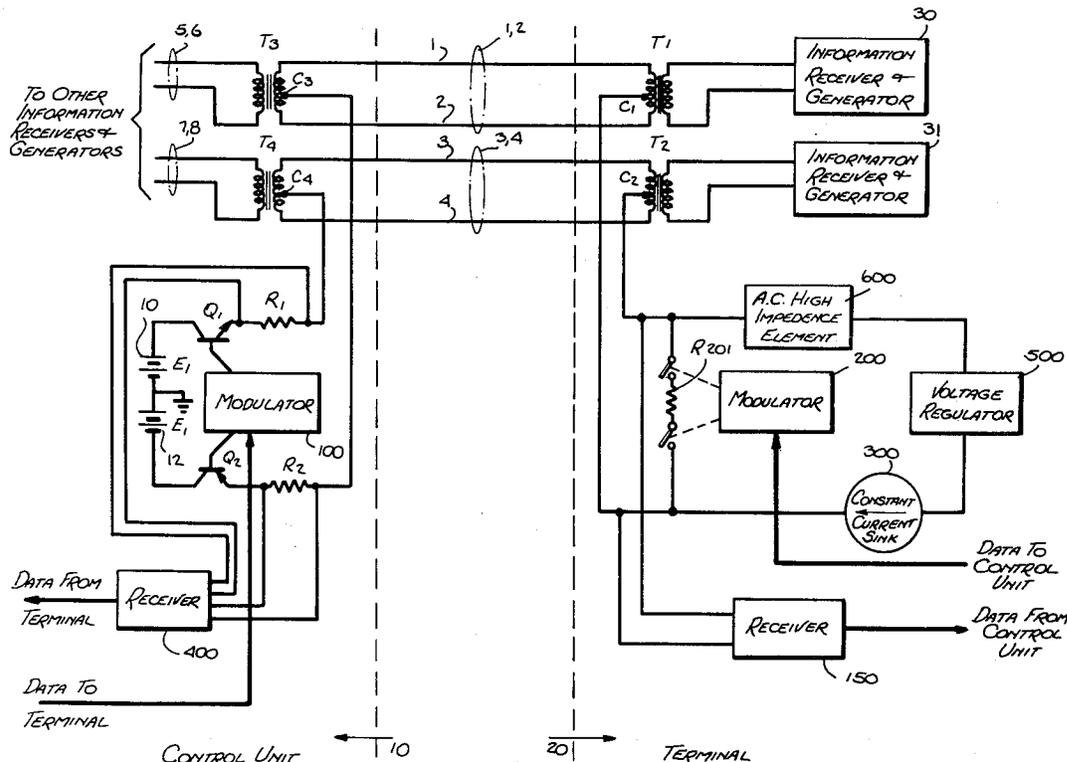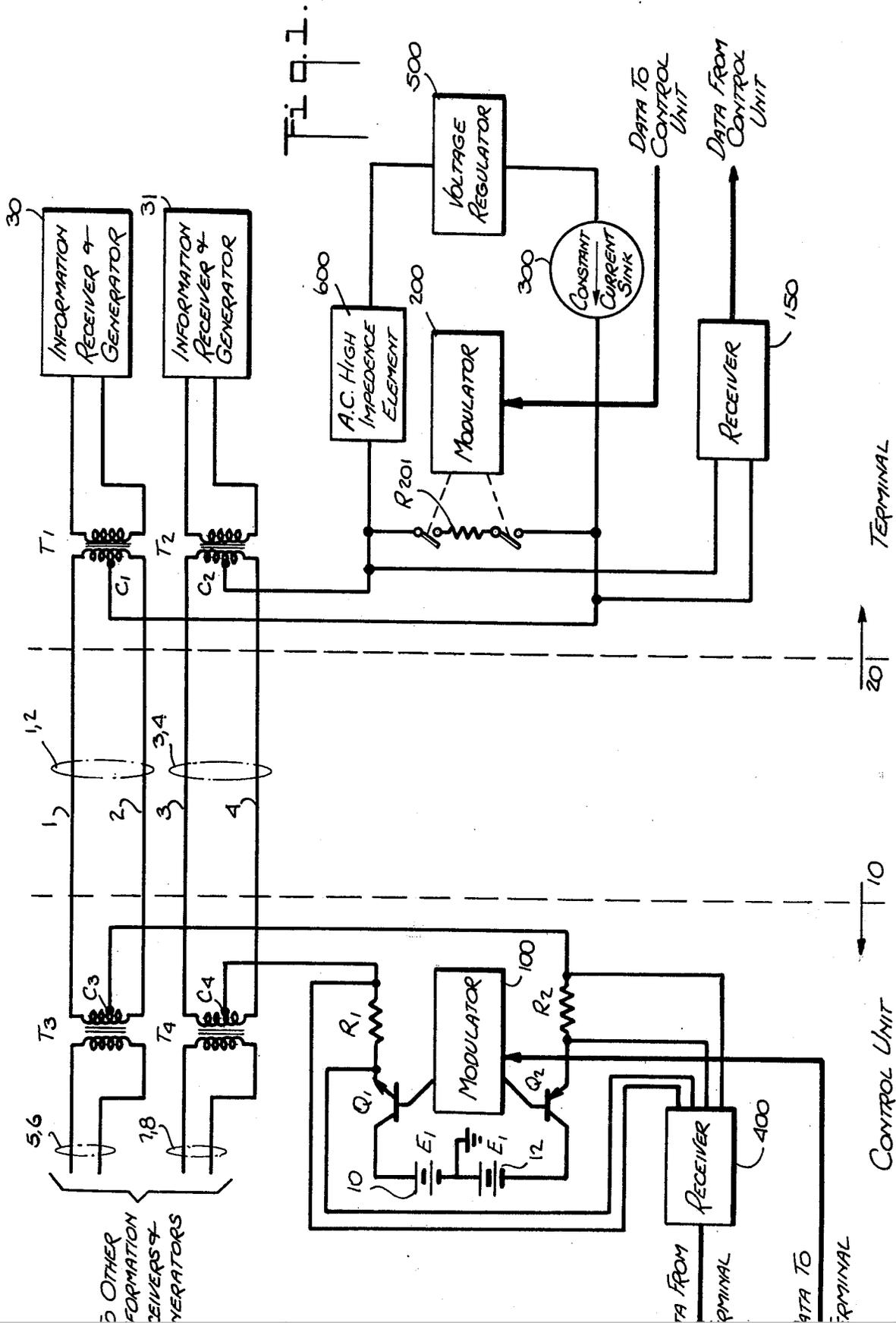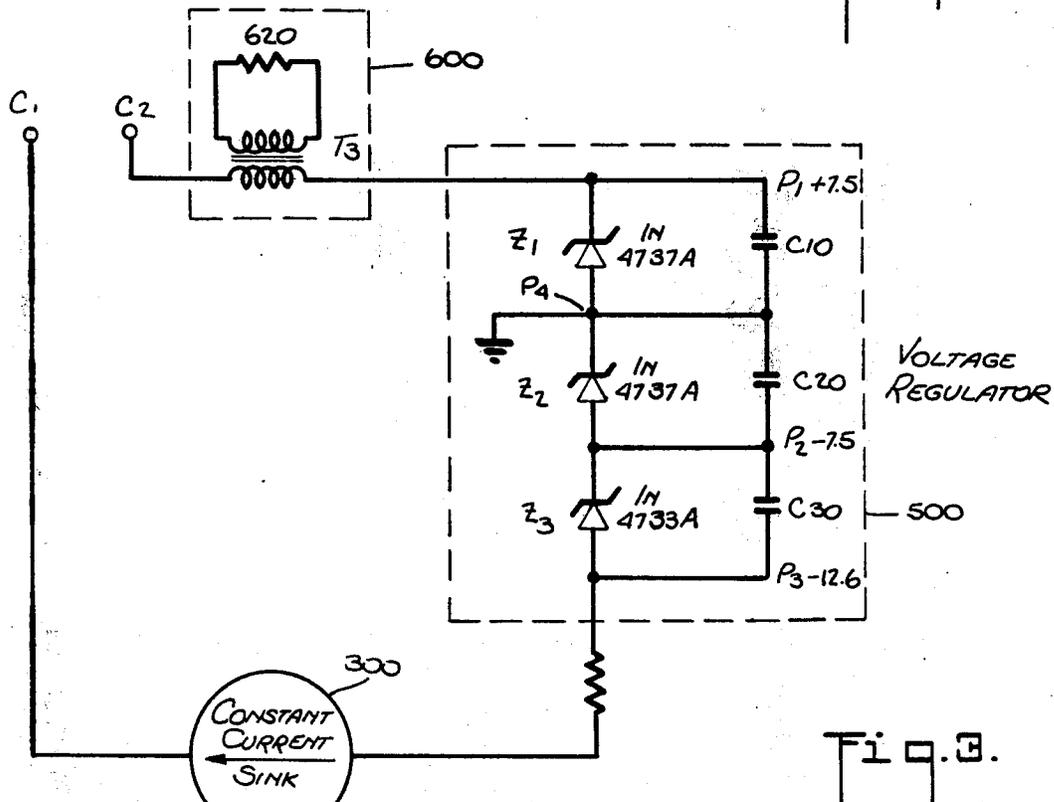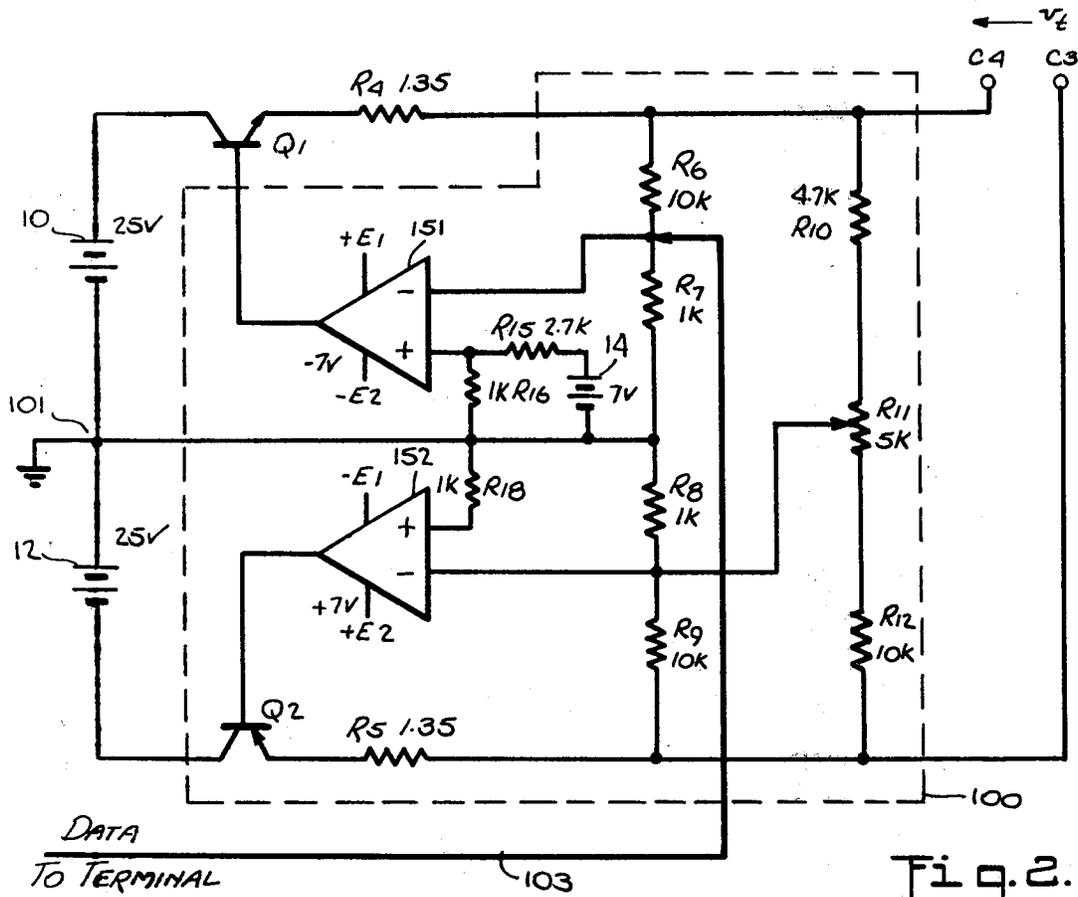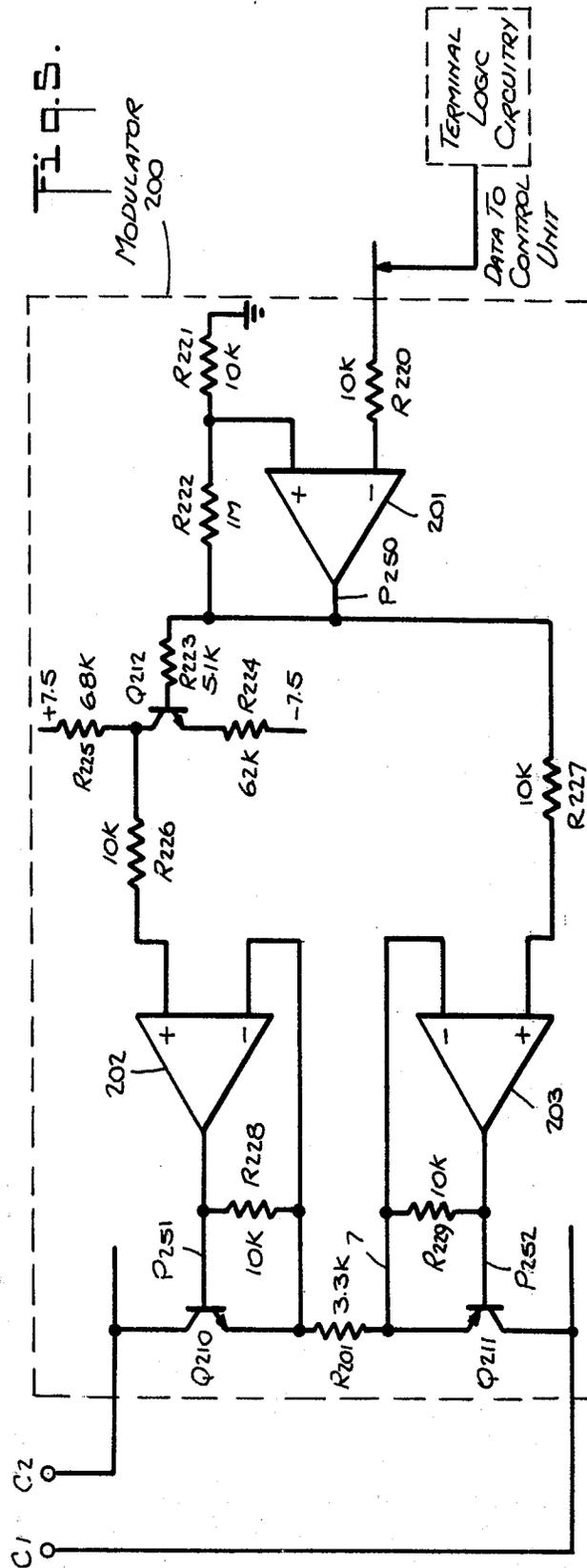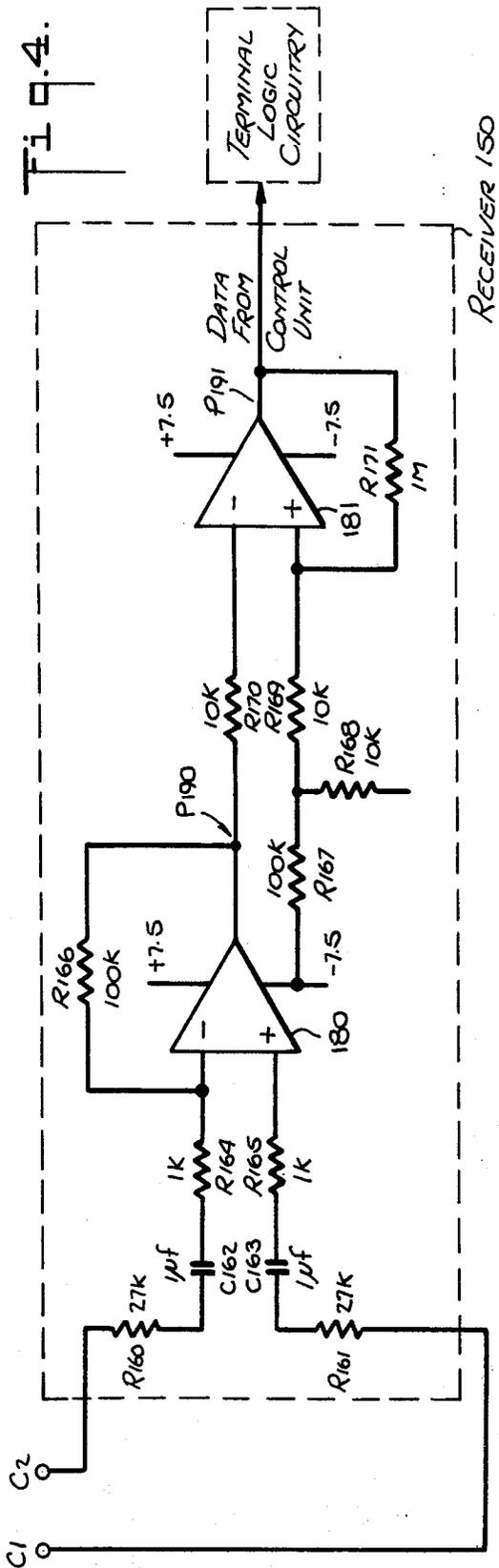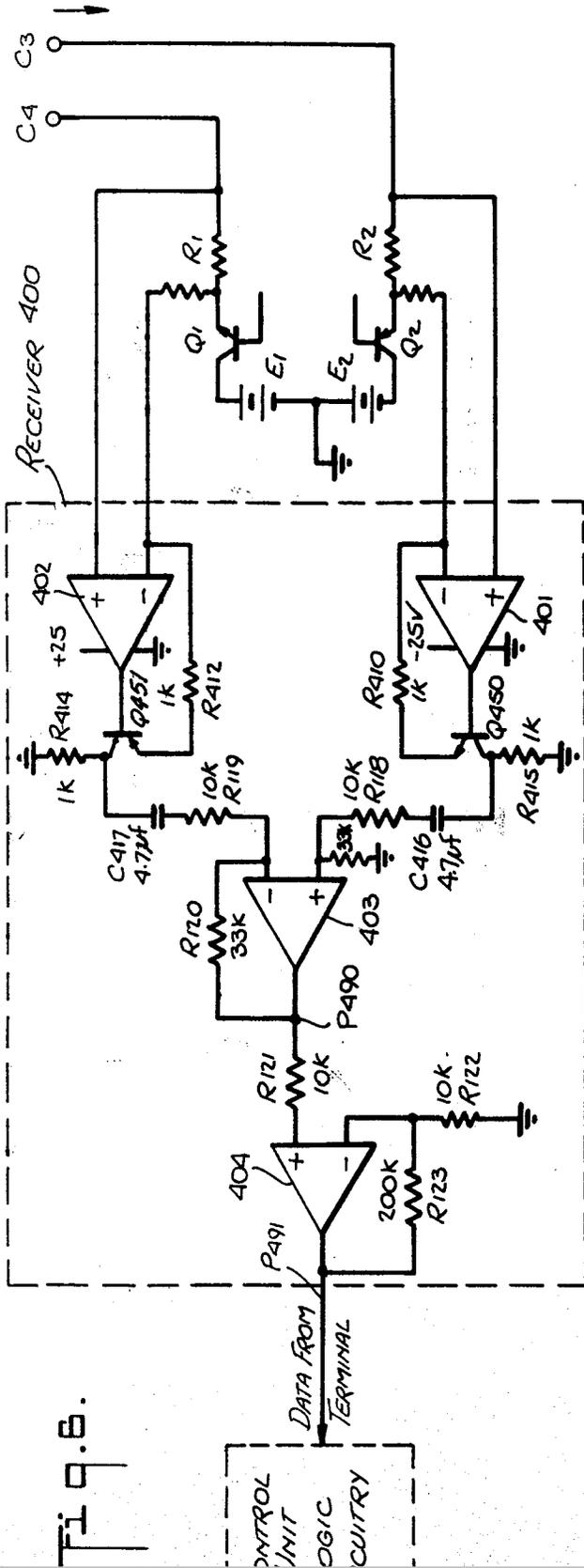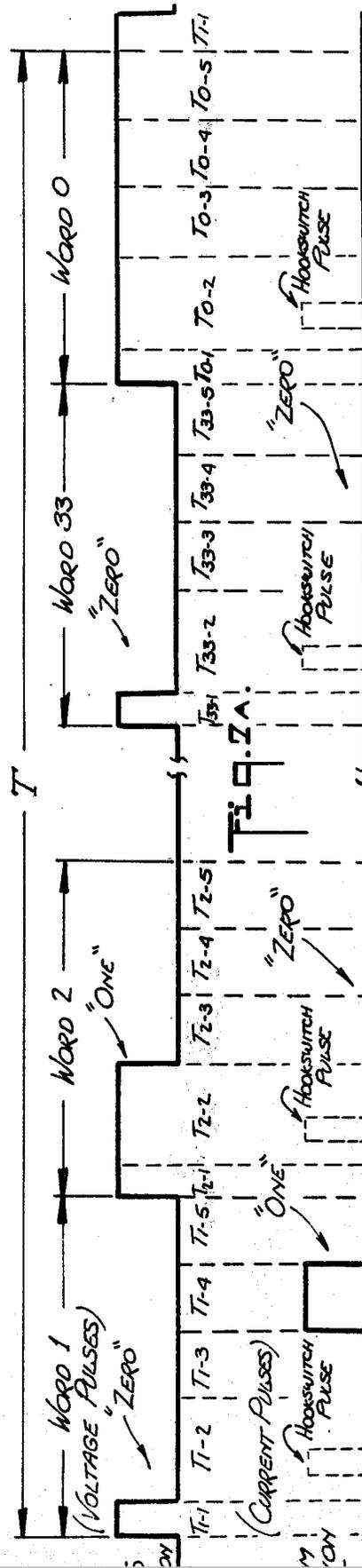
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