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# United States Patent [19]

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Wandel

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[54] **AUTONOMOUS RADIO TELEMETRY**

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[57] **ABSTRACT**

[21] Appl. No.: **08/897,346**

An improved radio modem is disclosed for use with an autonomous radio telemetry system. The radio modem includes a reprogrammable microprocessor, a radio transceiver, and a serial interface. By providing a software program within the radio modem that converts the serial interface into a general purpose interface to external input/output devices, and by providing additional programmed decision making capability into the radio modem, no external telemetry computer is required to interface with the input/output devices, and the radio modem operates as a combination telemetry computer and radio device. The radio modem also includes a novel reprogrammable state machine architecture for communicating with the input/output devices, and for deciding what actions to take based on the status of the external devices.

[22] Filed: **Jul. 21, 1997**

[51] Int. Cl.<sup>7</sup> ..... **G08C 19/16**

[52] U.S. Cl. .... **340/870.01; 340/870.02; 340/870.07; 379/106.01; 379/106.03**

[58] Field of Search ..... **340/870.01, 870.02, 340/870.07, 310.01; 379/106.01, 106.03**

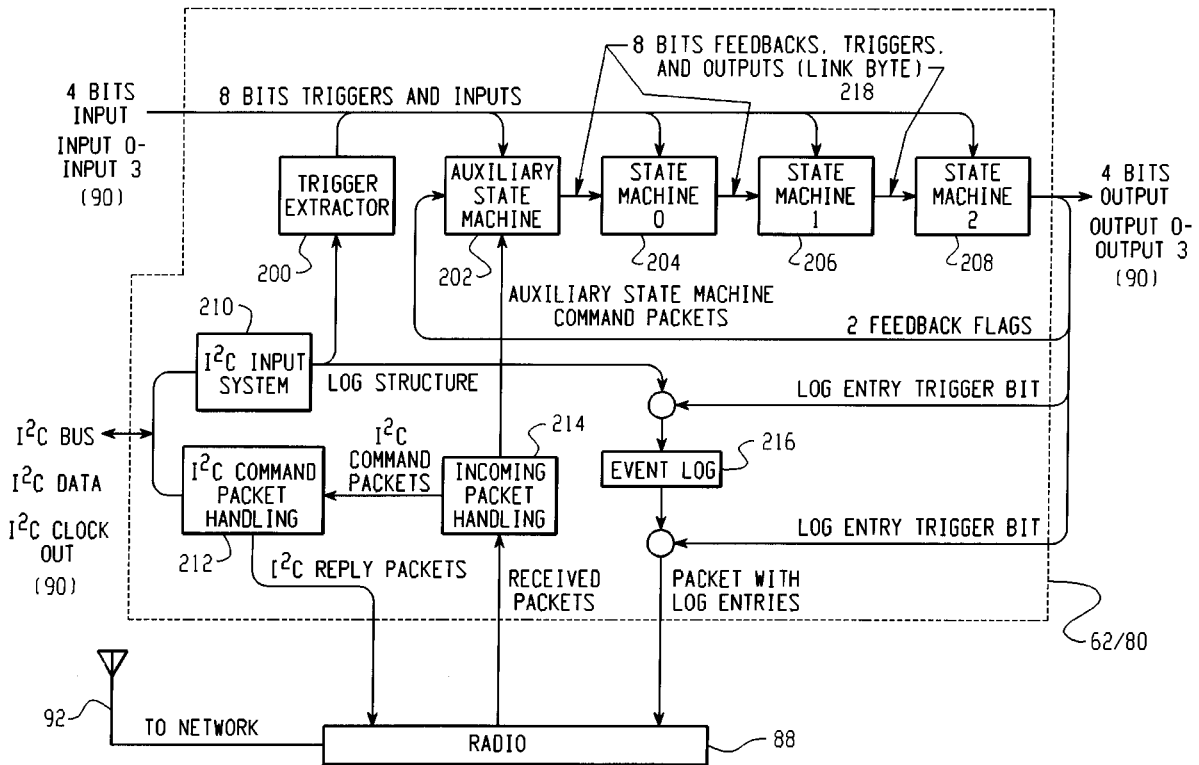
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Primary Examiner—Michael Horabik

**4 Claims, 6 Drawing Sheets**



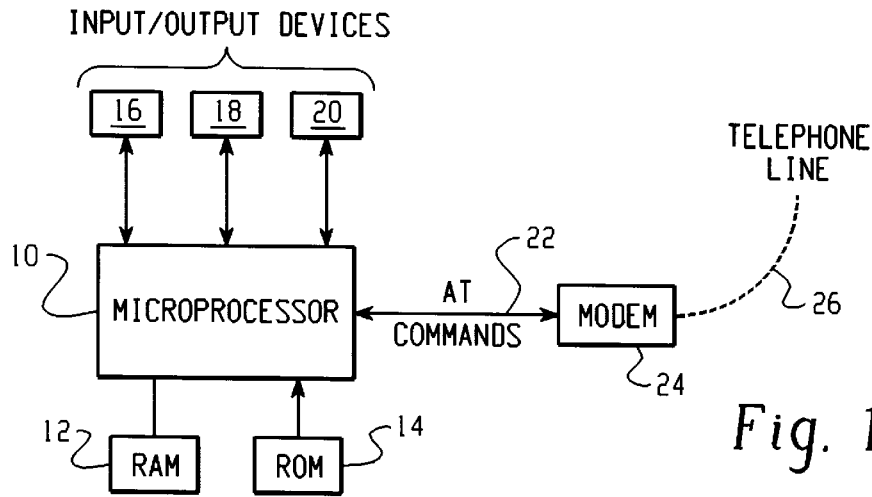


Fig. 1

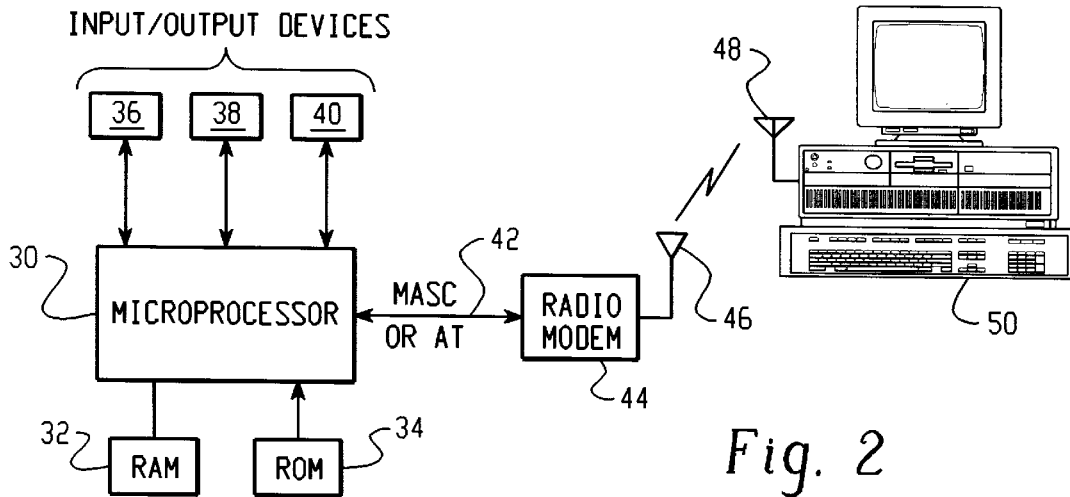


Fig. 2

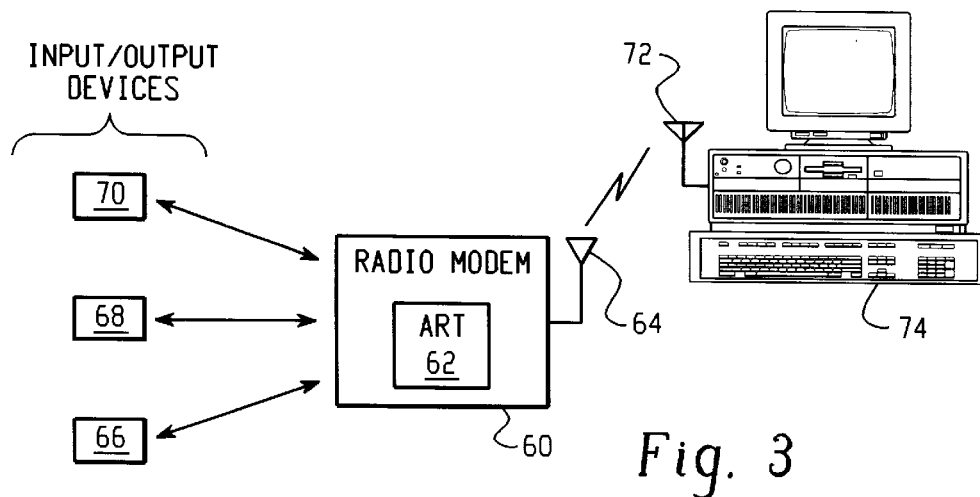


Fig. 3

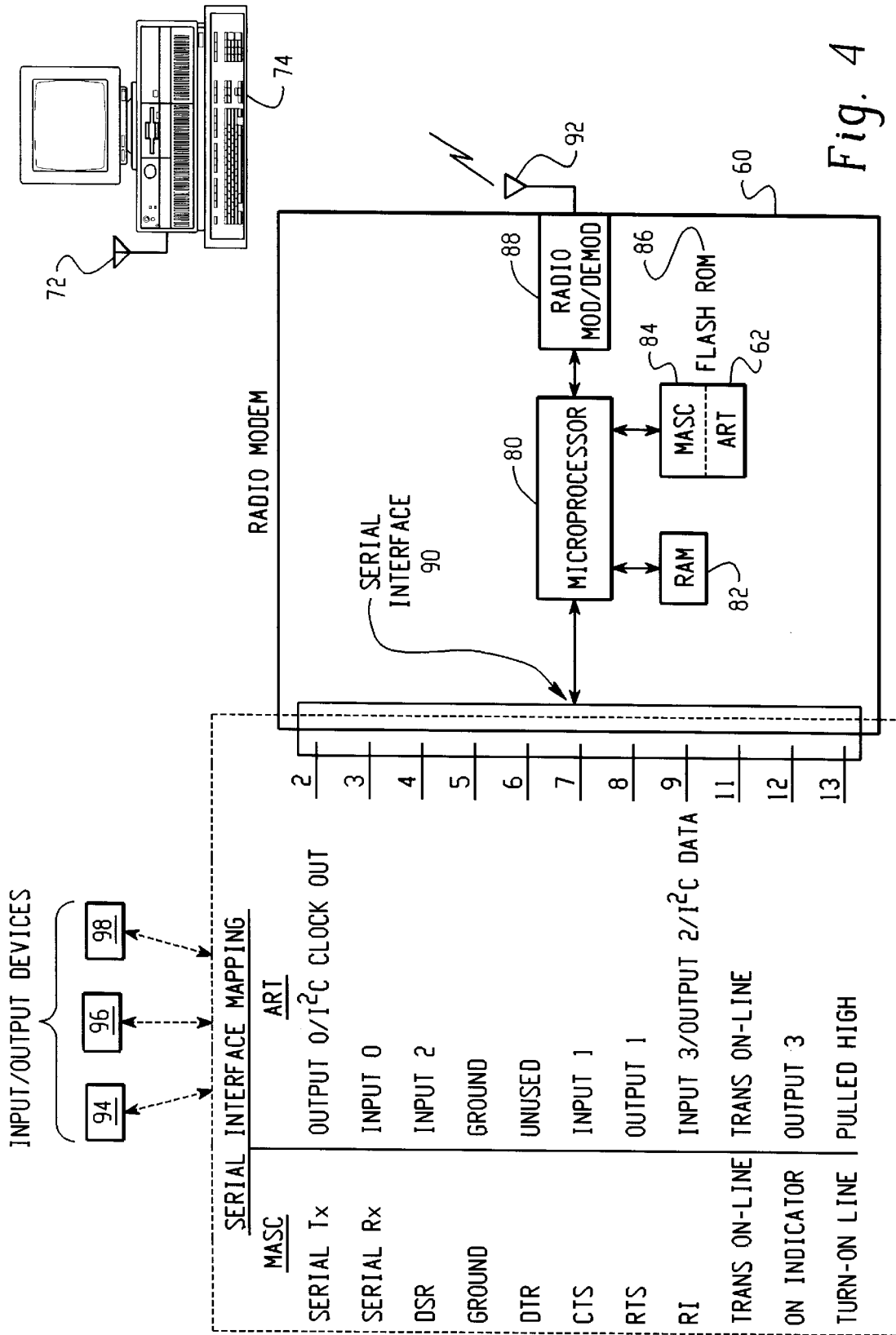


Fig. 4

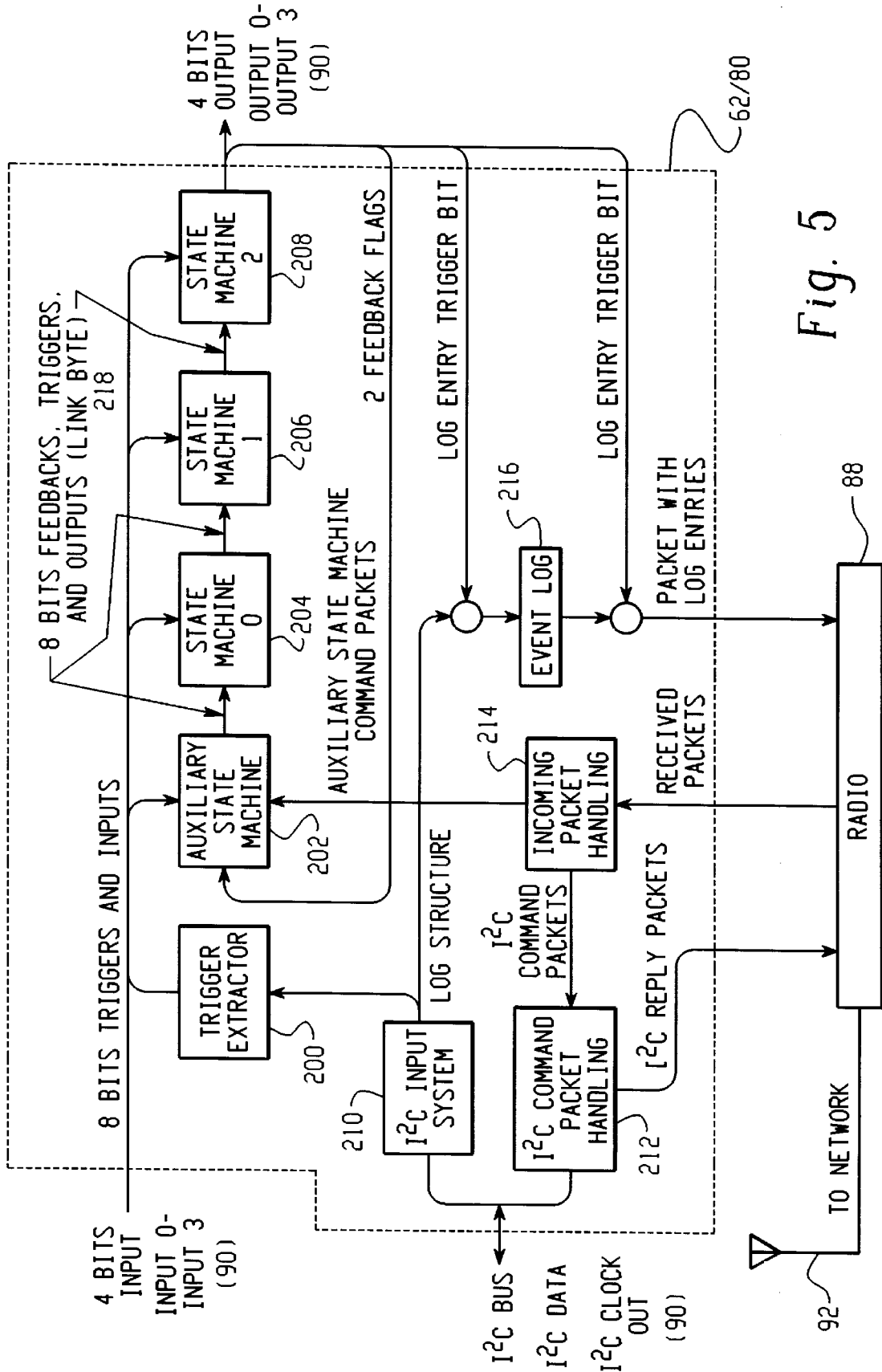
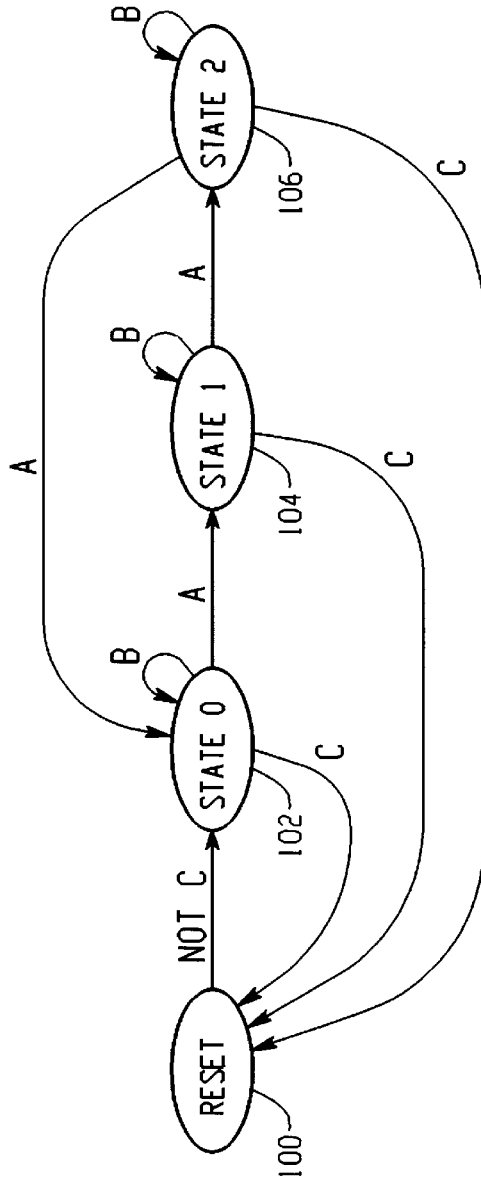


Fig. 5



ARROW CONDITION

- A THE STATE'S PROPOGATION CONDITION HAS BEEN MET, AS WELL AS THE SPECIFIED NUMBER OF REPETITIONS. THE NEXT STATE IS ENTERED, AND THE NEXT STATE PROPOGATION CONDITION IS IMMEDIATELY CHECKED.
- B THE STATE'S PROPOGATION CONDITION HAS BEEN MET, BUT THE REQUIRED REPETITION COUNT HAS NOT BEEN MET. THE STATE MACHINE REMAINS IN THE SAME STATE FOR THIS ITERATION, BUT THE REPETITION COUNTER IS INCREMENTED.
- C THE MACHINE'S RESET CONDITION HAS BEEN MET. THE STATE MACHINE ENTERS AND REMAINS IN ITS RESET STATE UNTIL THE RESET CONDITION IS NO LONGER MET.

Fig. 6

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