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# United States Patent [19] Carvey

[11] **Patent Number:** **6,128,290**  
[45] **Date of Patent:** **\*Oct. 3, 2000**

- [54] **PERSONAL DATA NETWORK** 5,297,142 3/1994 Paggeot et al. .... 370/461  
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- [75] Inventor: **Philip P. Carvey**, Bedford, Mass.  
 [73] Assignee: **BBN Corporation**, Cambridge, Mass.  
 [\*] Notice: This patent is subject to a terminal disclaimer.

- [21] Appl. No.: **08/949,999**  
 [22] Filed: **Oct. 14, 1997**

### Related U.S. Application Data

- [63] Continuation-in-part of application No. 08/611,695, Mar. 6, 1996, Pat. No. 5,699,357.  
 [51] **Int. Cl.<sup>7</sup>** ..... **H04B 7/212**  
 [52] **U.S. Cl.** ..... **370/347; 370/350; 370/442; 370/509; 455/89; 364/708.1**  
 [58] **Field of Search** ..... **370/347, 350, 370/442, 509, 512; 455/89; 364/708.1**

### References Cited

#### U.S. PATENT DOCUMENTS

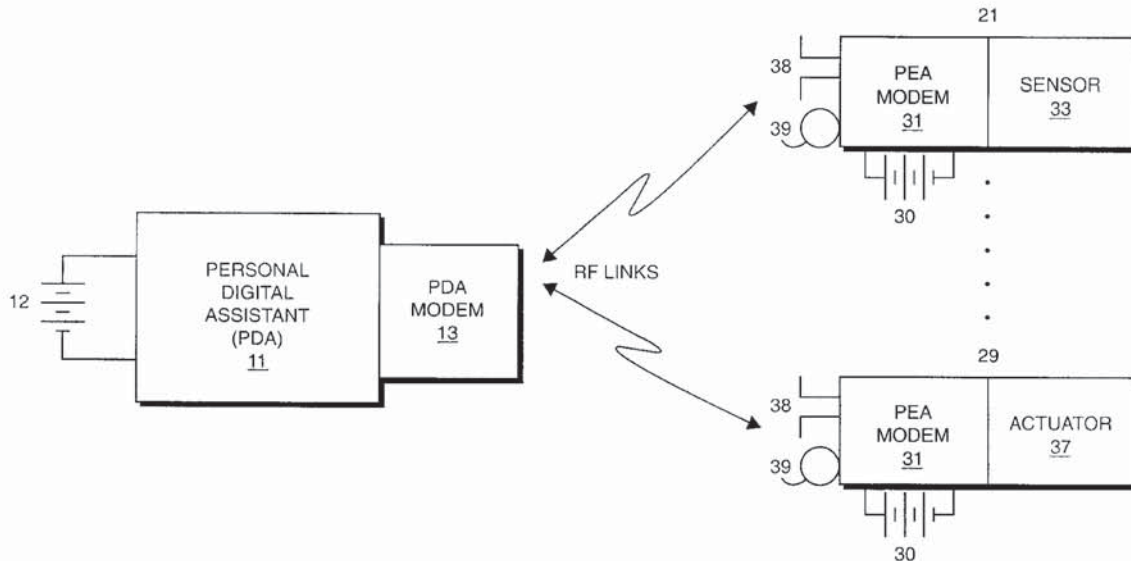
- 5,247,285 9/1993 Yokota et al. .... 361/680

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*Assistant Examiner*—Jasper Kwoh  
*Attorney, Agent, or Firm*—Leonard Charles Suchyta; Floyd E. Anderson

### [57] ABSTRACT

The data network disclosed herein utilizes low duty cycle pulsed radio frequency energy to effect bidirectional wireless data communication between a server microcomputer unit and a plurality of peripheral units located within short range of the server unit, e.g. within 20 meters. By establishing a tightly synchronized common time base between the units and by the use of sparse codes, timed in relation to the common time base, low power consumption and avoidance of interference between nearby similar systems is obtained.

### 11 Claims, 8 Drawing Sheets



APL 1001

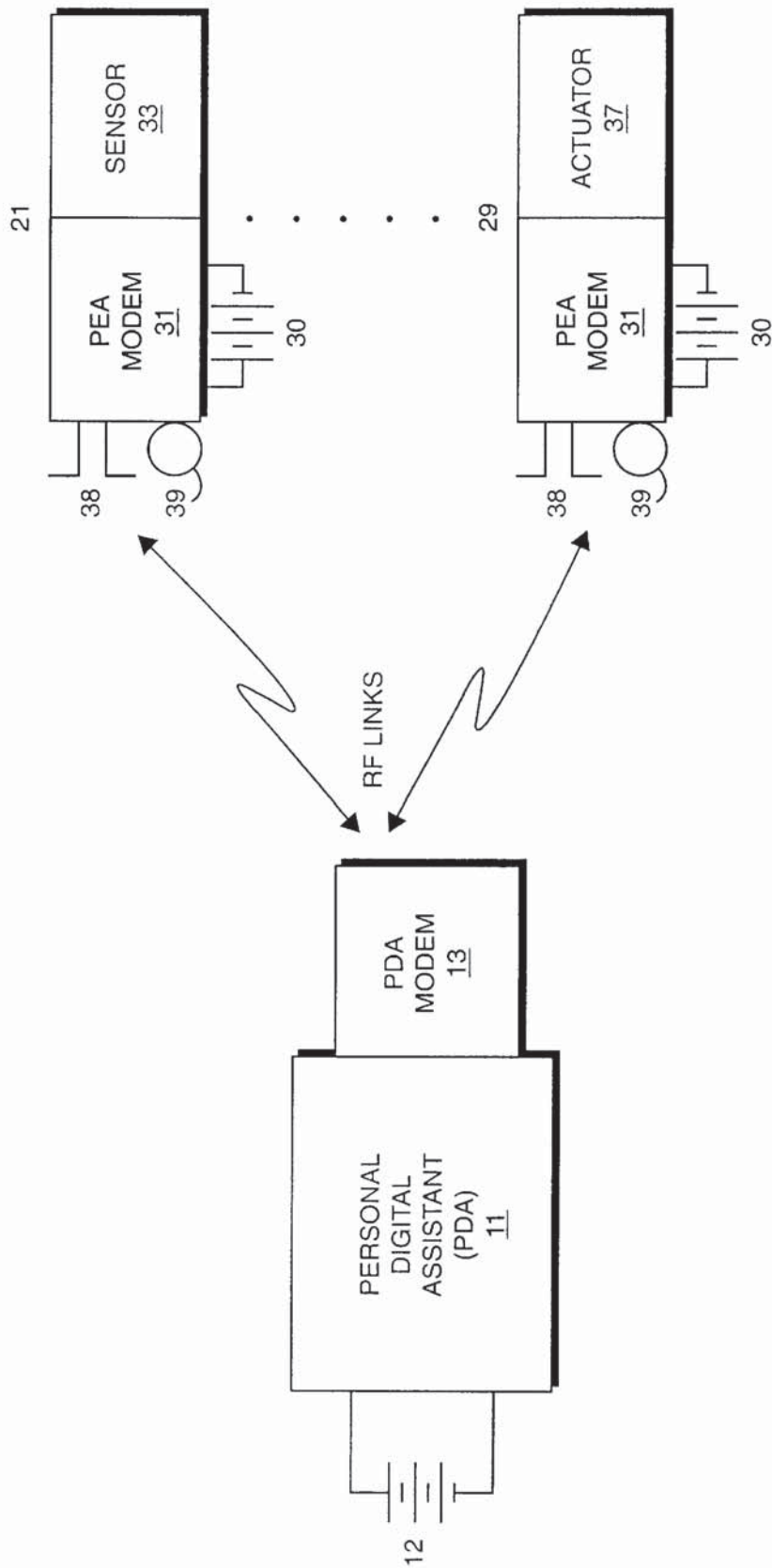


FIG. 1

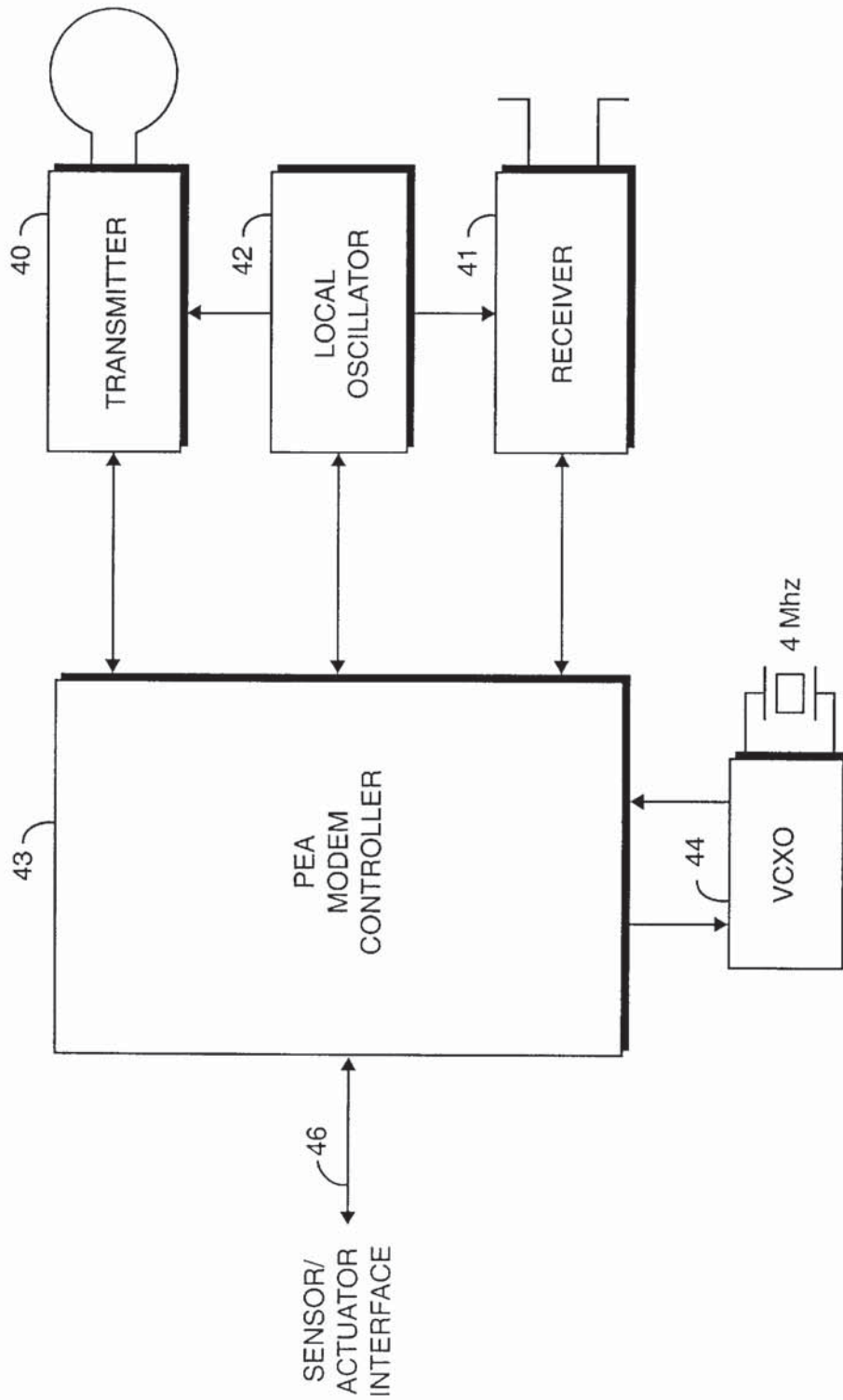


FIG. 2

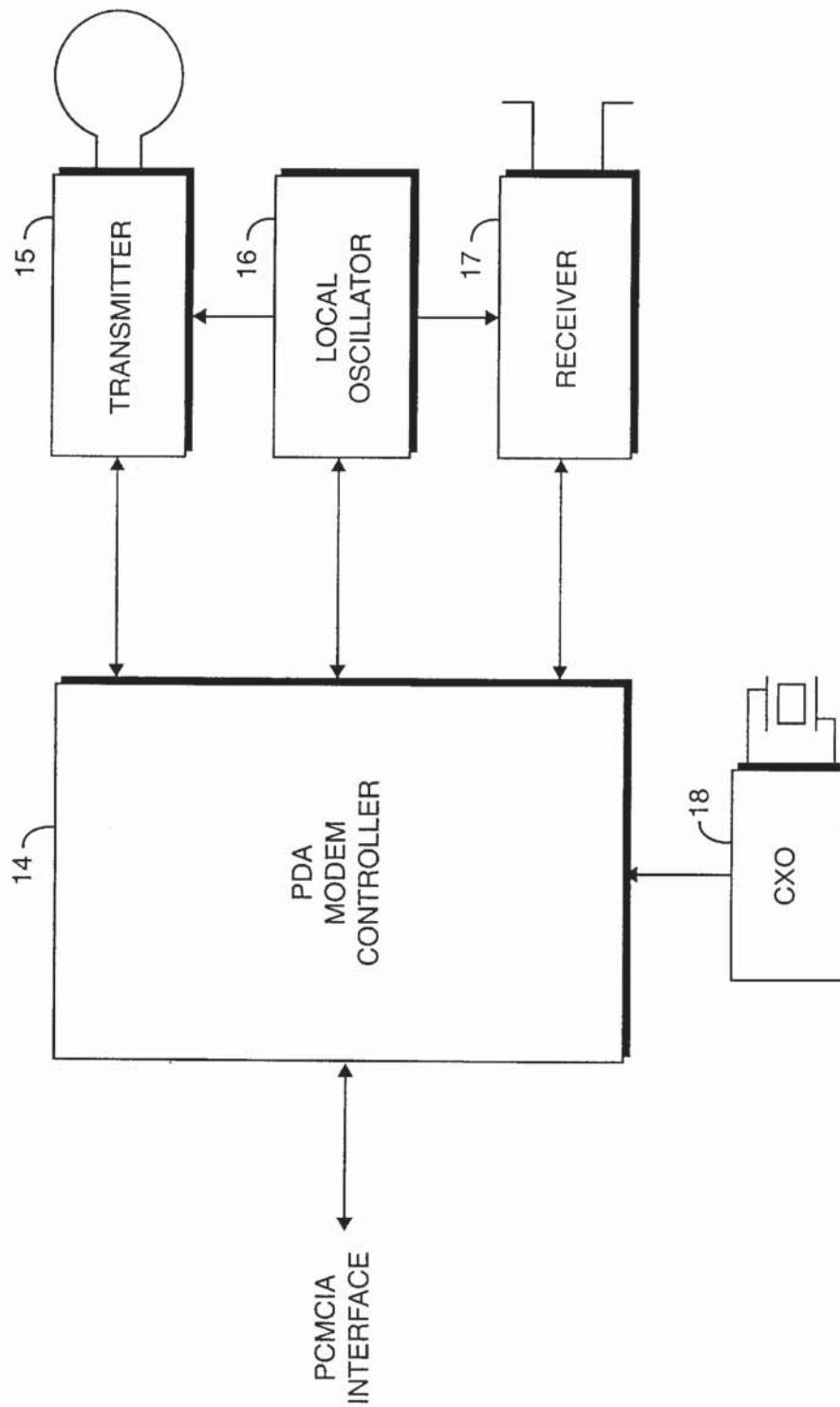


FIG. 3

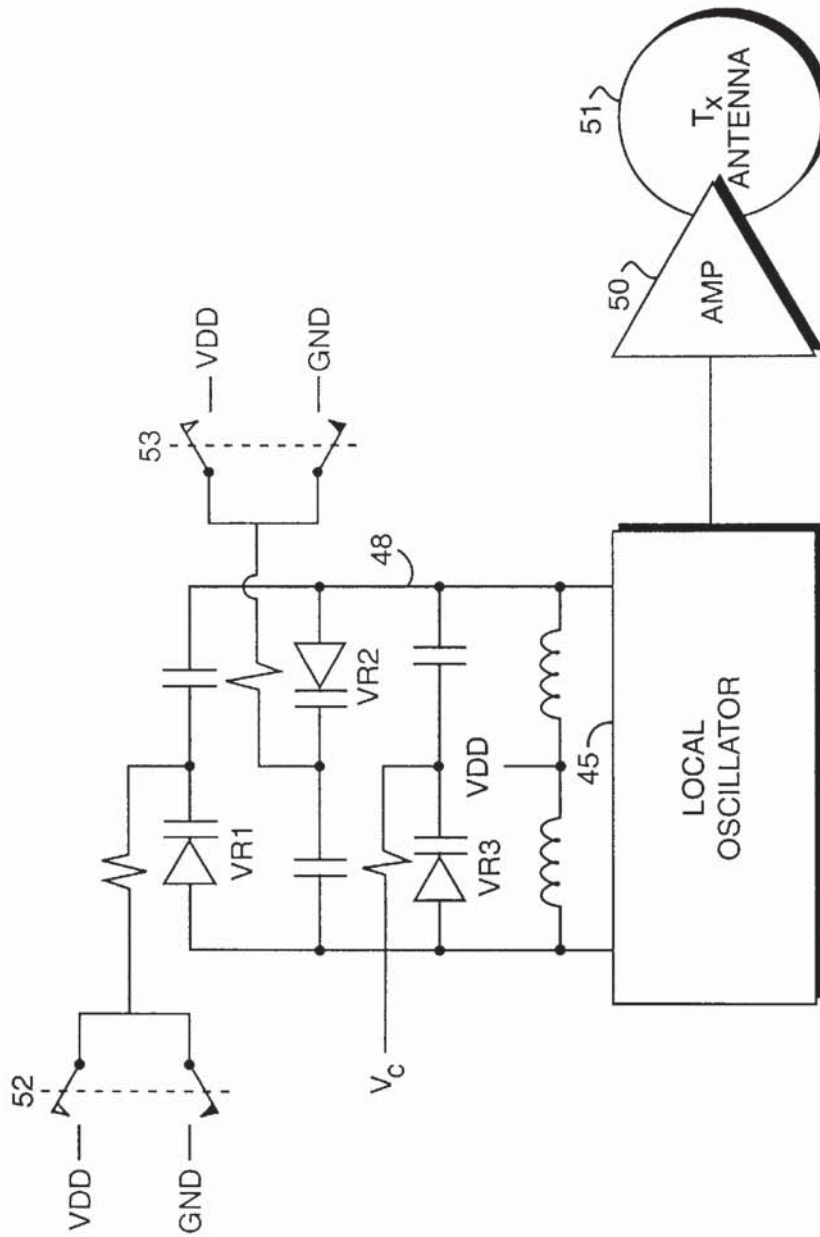


FIG. 4

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