



US005588009A

United States Patent [19] Will

[11] **Patent Number:** 5,588,009
[45] **Date of Patent:** Dec. 24, 1996

[54] **PERSONAL PAGING, COMMUNICATIONS, AND LOCATING SYSTEM**

[76] Inventor: **Craig A. Will**, 37675 Fremont Blvd. No. 23, Fremont, Calif. 94536

[21] Appl. No.: **191,111**

[22] Filed: **Feb. 3, 1994**

[51] **Int. Cl.⁶** **H04L 1/18**

[52] **U.S. Cl.** **371/33**

[58] **Field of Search** 371/32, 33; 455/54.1, 455/53.1, 89; 379/56, 57

[56] **References Cited**

U.S. PATENT DOCUMENTS

3,439,320	4/1969	Ward	367/191
3,696,384	10/1972	Lester	367/199
3,805,227	4/1974	Lester	367/6
3,805,265	4/1974	Lester	342/44
4,172,969	10/1979	Levine et al.	379/70
4,356,484	10/1982	Eckhardt	340/825.03
4,601,064	7/1986	Shipley	359/172
4,696,054	9/1987	Tsugei et al.	455/89
4,775,996	10/1988	Emerson et al.	379/61
4,823,123	4/1989	Siwiak	340/825.44
4,970,714	11/1990	Chen et al.	370/17
5,062,151	10/1991	Shipley	359/154
5,151,930	9/1992	Hagl	379/57
5,153,582	10/1992	Davis	340/825.44
5,265,033	11/1993	Vajk et al.	364/514
5,396,537	3/1995	Schwendeman	379/57
5,438,611	8/1995	Campana, Jr. et al.	379/58
5,479,408	12/1995	Will	370/94.1
5,493,692	2/1996	Theimer et al.	455/26.1
5,526,401	6/1996	Roach, Jr. et al.	379/59

OTHER PUBLICATIONS

Stallings, William. Data and Computer Communications, Second Edition, MacMillan Publishing, 1988, pp. 107-112 and 141-144.

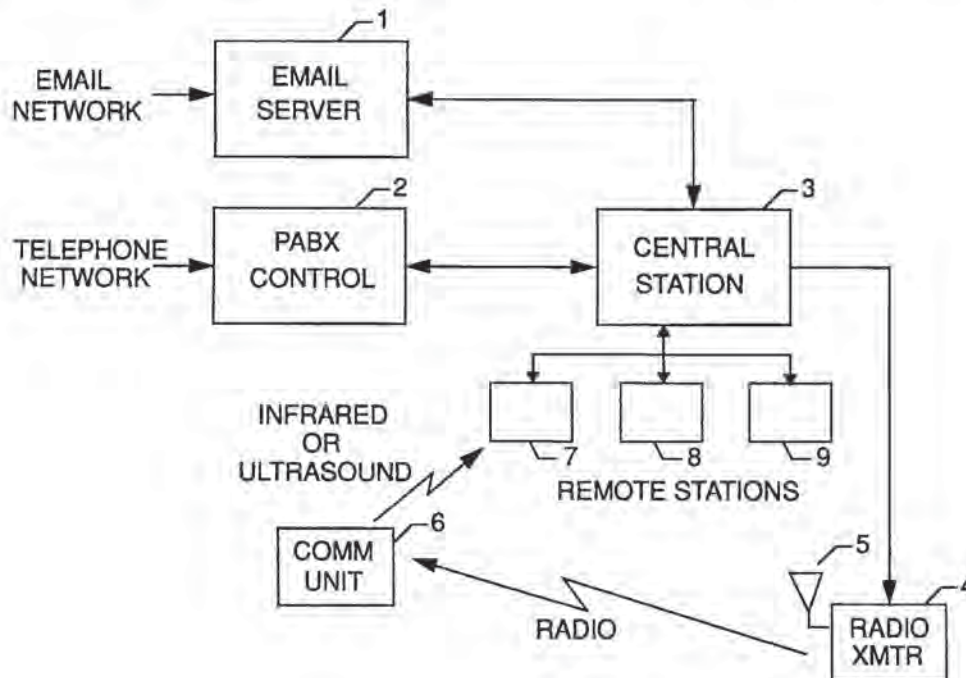
Weiser, Mark. The Computer for the 21st Century. pp. 94-104 Scientific American, Sep., 1991.

Primary Examiner—Stephen M. Baker

[57] **ABSTRACT**

A method and apparatus for sending paging signals and messages to individuals within a building and accepting responses to the messages. Messages may be initiated by electronic mail, incoming telephone calls, incoming Fax messages, or other sources. Data is sent via radio to a communications unit carried by the individual and displayed visually together with possible responses. Each unit transmits its identity and responses or original messages when desired via coded infrared light (or, in an alternative embodiment, ultrasound) to one or more remote stations located in rooms or along corridors of the building. A remote station relays data to a central station via wire or optical fiber, which tracks the location of units and delivers messages. Communication units are clipped to the clothing of users and can be incorporated into a corporate employee identification badge. The hybrid radio-infrared light approach combines the broad, reliable characteristics of radio communication with the ability of infrared light to allow each unit to be located. This allows highly reliable delivery of messages via an acknowledgement and retransmission protocol, two-way communication with the individual, and capabilities (such as those for transferring incoming telephone calls) that require the location of the individual to be known.

25 Claims, 26 Drawing Sheets



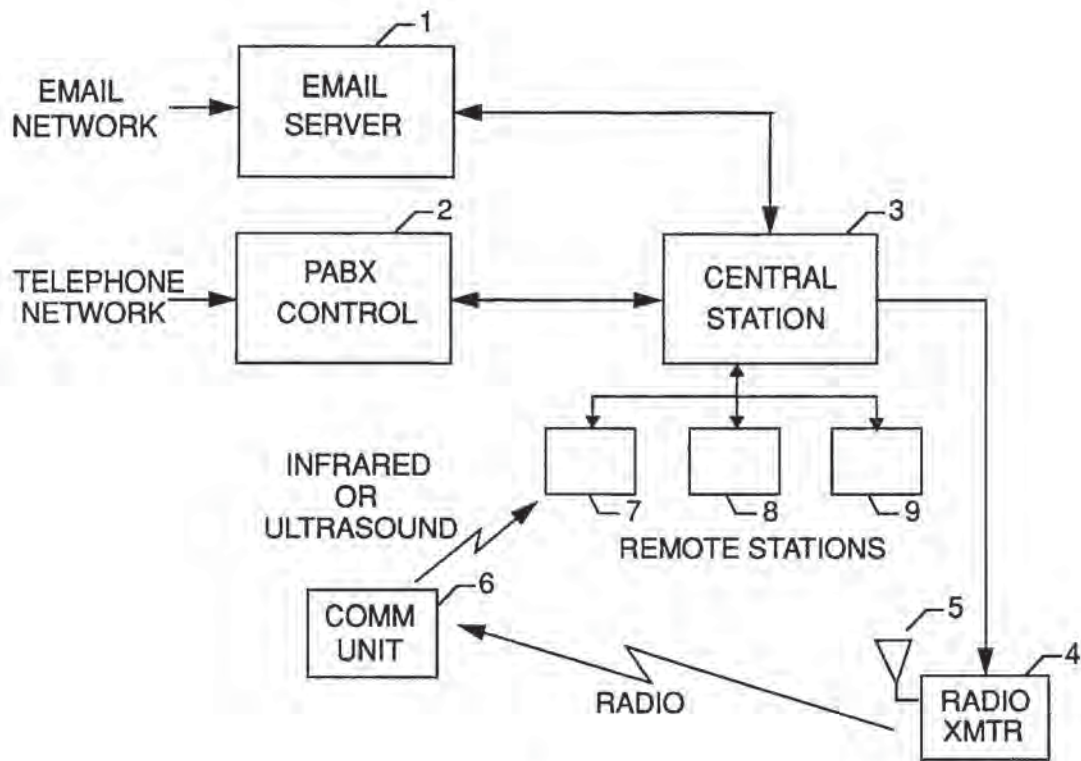


FIG. 1

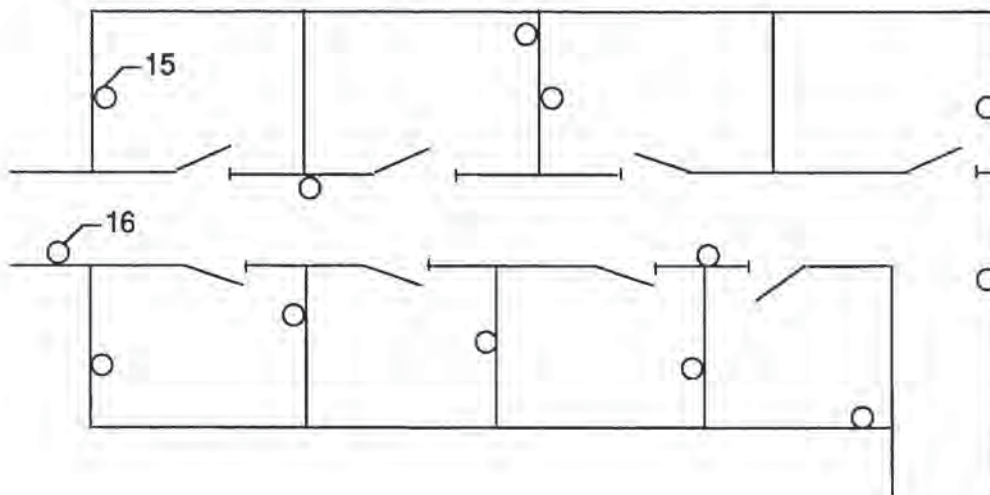


FIG. 2

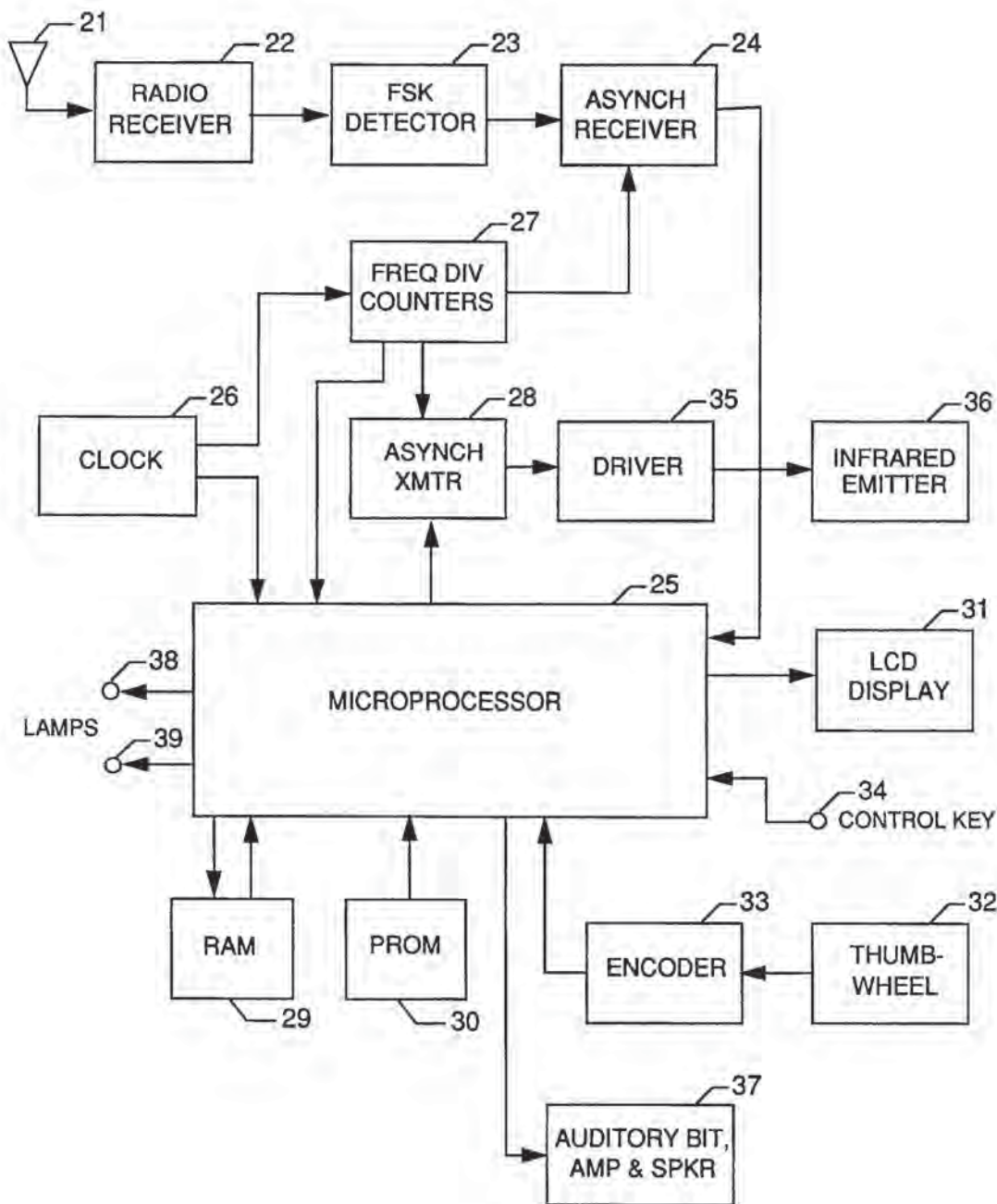


FIG. 3

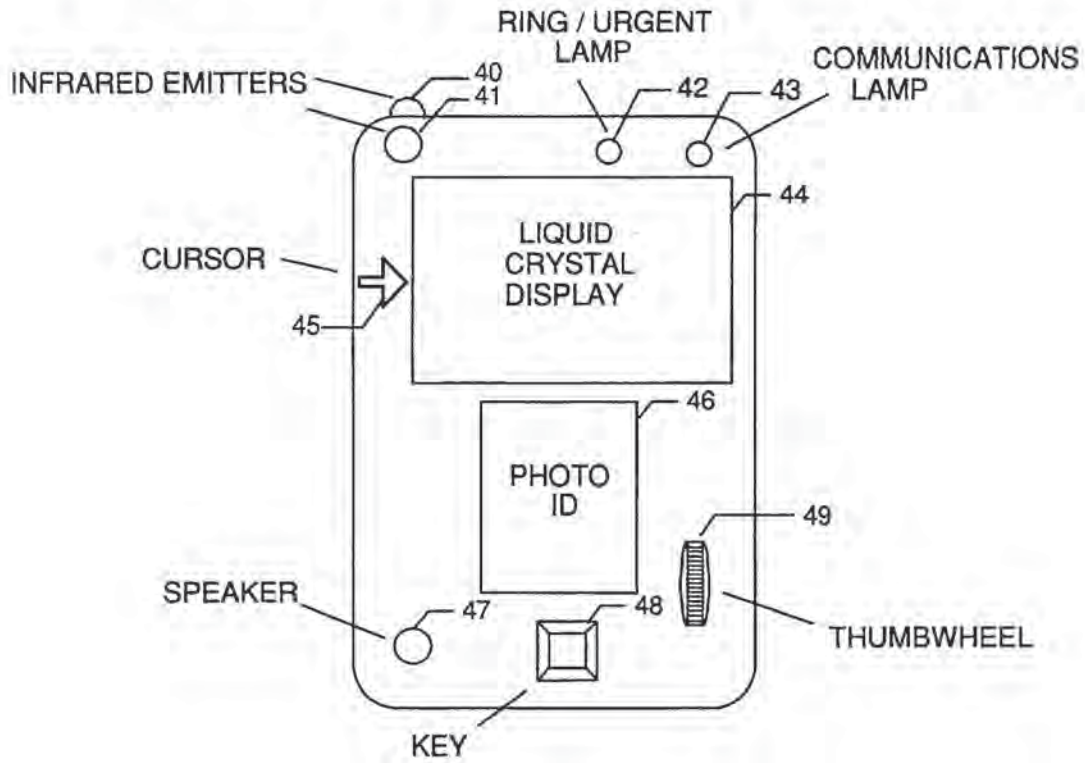


FIG. 4

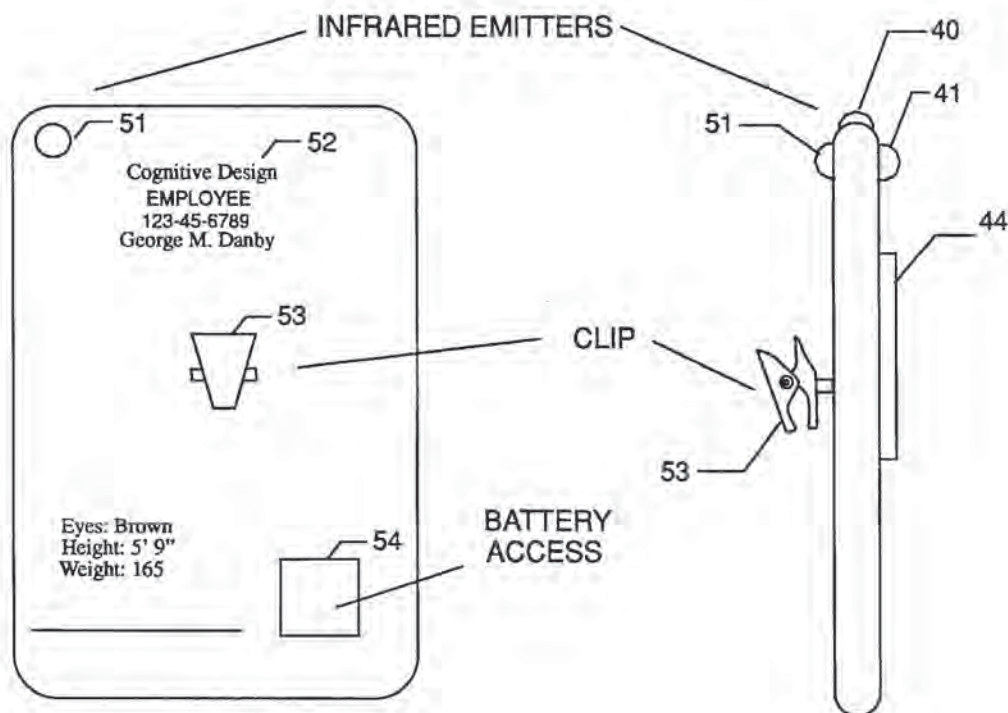


FIG. 5

FIG. 6

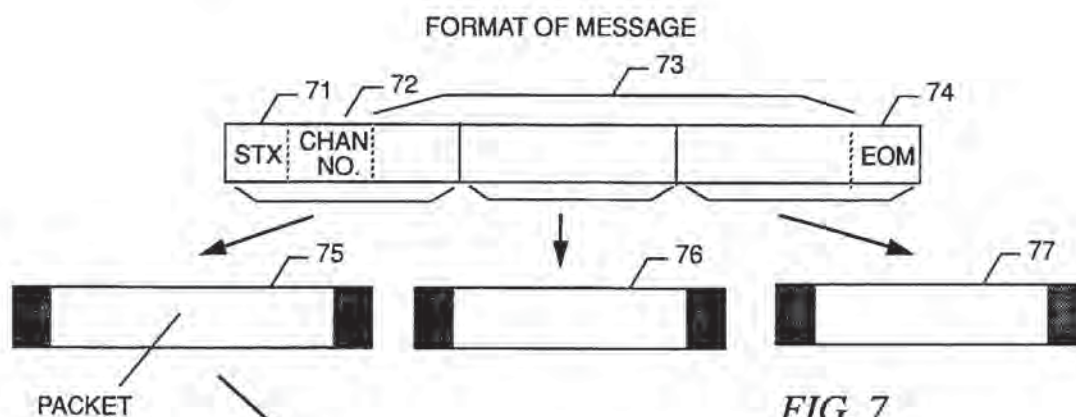


FIG. 7

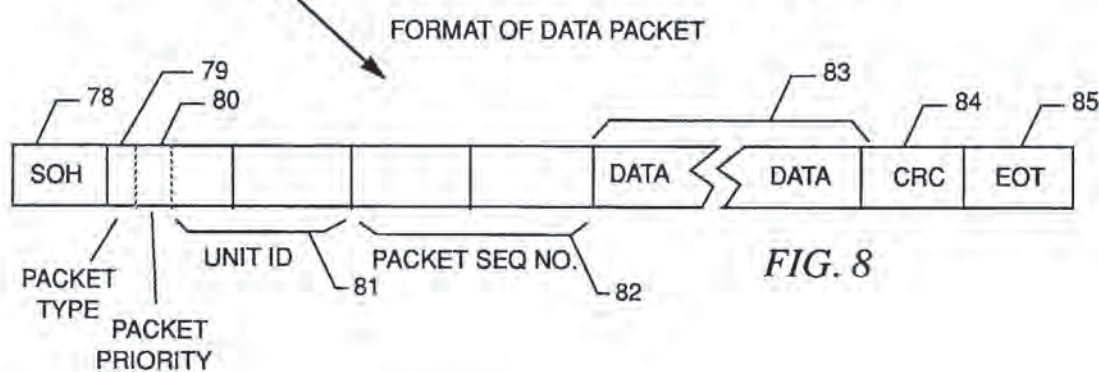


FIG. 8

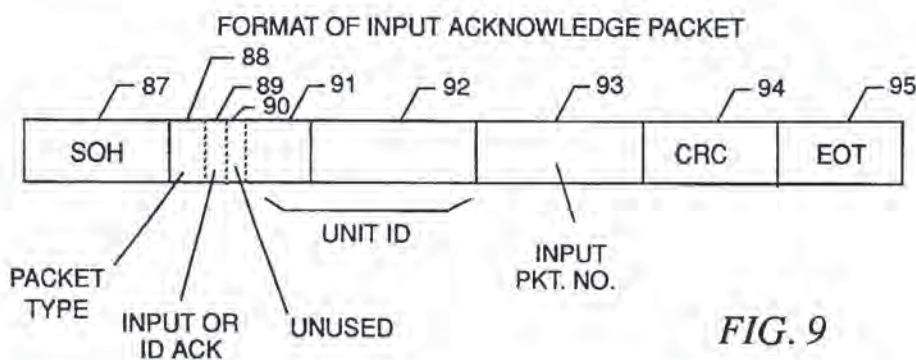


FIG. 9

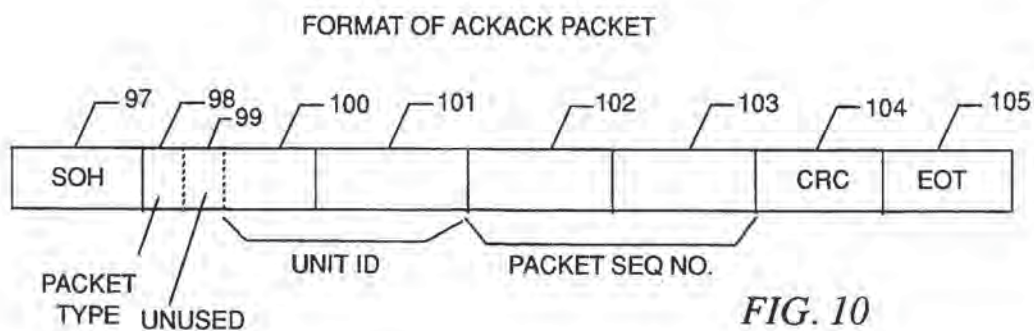


FIG. 10

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