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Arcelus

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[54] USER-WORN ELECTROCARDIOGRAM VIEWER DEVICE

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[*] Notice: This patent issued on a continued prosecution application filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provisions of 35 U.S.C. 154(a)(2).

5,343,869	9/1994	Pross et al.	600/523
5,383,912	1/1995	Cox et al.	607/32
5,417,222	5/1995	Dempsey et al.	600/509
5,577,510	11/1996	Chittum et al.	600/523
5,620,472	4/1997	Rahbari	607/27
5,623,926	4/1997	Weiss	600/509
5,682,902	11/1997	Herleikson	600/521
5,738,104	4/1998	Lo et al.	600/509

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[22] Filed: **Mar. 29, 1997**

Related U.S. Application Data

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[51] Int. Cl.⁷ **A61B 5/0432**

[52] U.S. Cl. **600/523; 600/509**

[58] Field of Search 600/509, 520, 600/523; 607/32

[56] References Cited

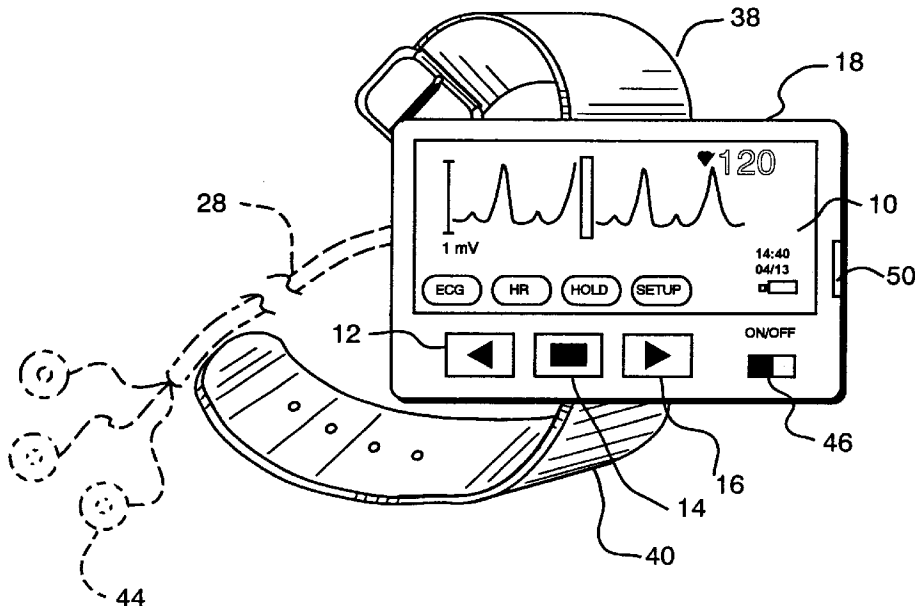
U.S. PATENT DOCUMENTS

4,108,166	8/1978	Schmid	600/523
4,120,294	10/1978	Wolfe	600/523
4,635,646	1/1987	Gilles et al.	600/509
4,791,933	12/1988	Asai et al.	600/509
4,809,705	3/1989	Ascher	600/523
4,825,874	5/1989	Uhlemann	600/523
4,889,134	12/1989	Greenwold et al.	600/523
5,003,984	4/1991	Muraki et al.	600/523
5,300,093	4/1994	Koestner et al.	607/32
5,304,209	4/1994	Adams et al.	607/32
5,336,245	8/1994	Adams et al.	607/32

[57] ABSTRACT

A user-worn electrocardiogram viewer acquires data relating to a user's electrocardiogram signal. The viewer receives the electrocardiogram signal (by wired or wireless link) and displays it on a self-contained display screen (10). The viewer provides switches (12, 14, 16) operated by the user to adjust the display and processing of the electrocardiogram signal through the selection of parameters such as size of the electrocardiogram signal to be displayed, bandwidth of the electrocardiogram signal to be processed, and speed of the electrocardiogram signal when displayed through the screen. The viewer also includes a storage capability to store the electrocardiogram signal for later recall and analysis. The viewer also includes an infrared port (50) to communicate with the serial port of other devices. The viewer provides other support functions to the user such as display of heart rate, visual display of QRS-detection, and time and date information. The viewer also provides the user with the capability to set a heart rate target zone and heart rate trend. The viewer is easy to operate by the user and suitable for attachment (38, 40) to the user's upper limb, preferably the wrist.

20 Claims, 11 Drawing Sheets



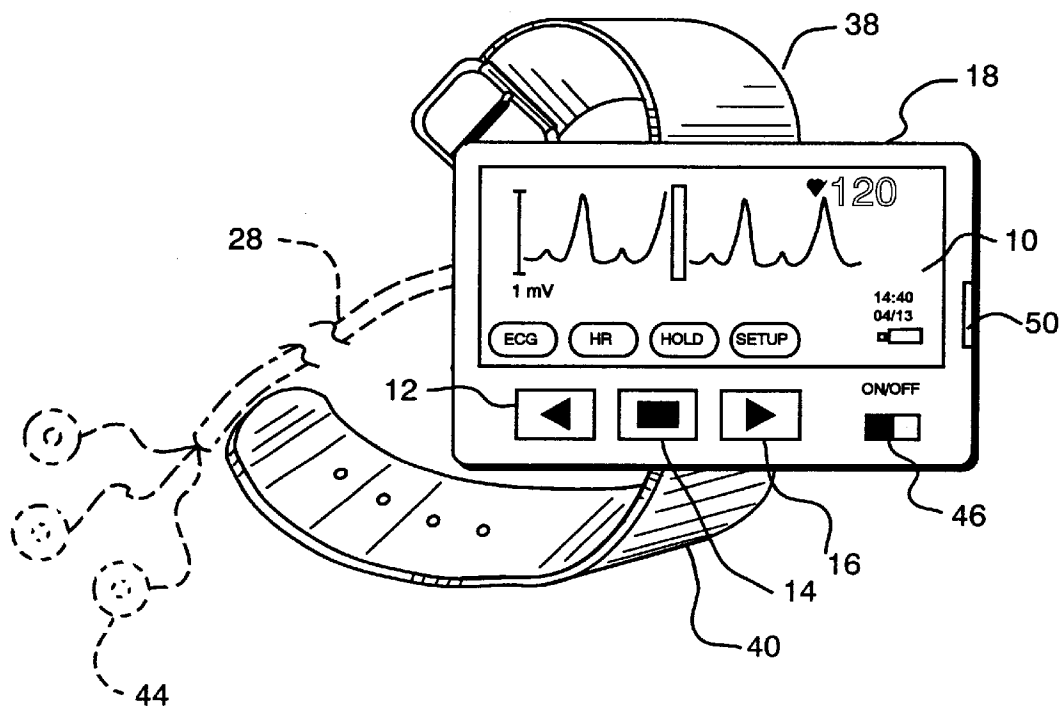
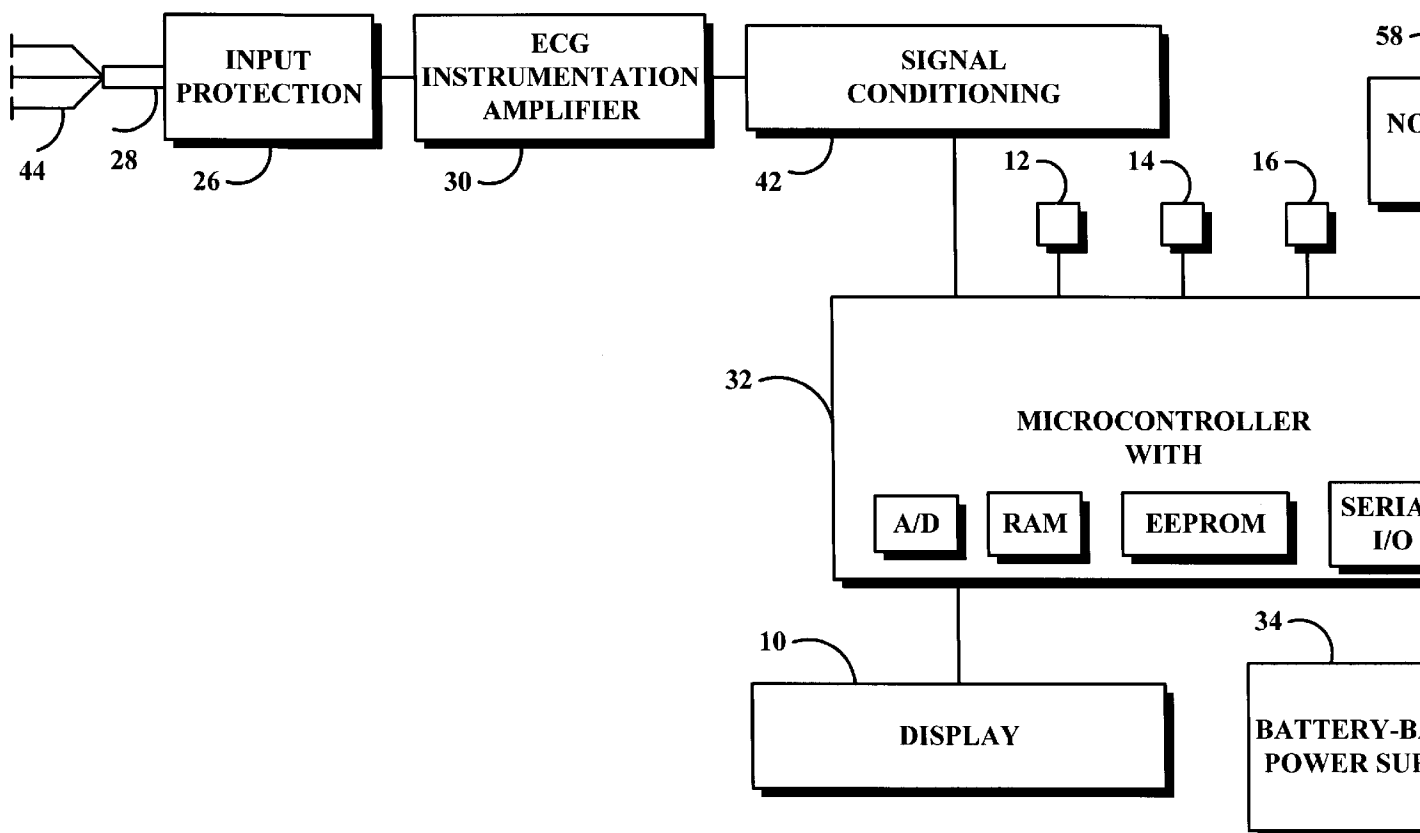


FIG. 1

FIG. 2



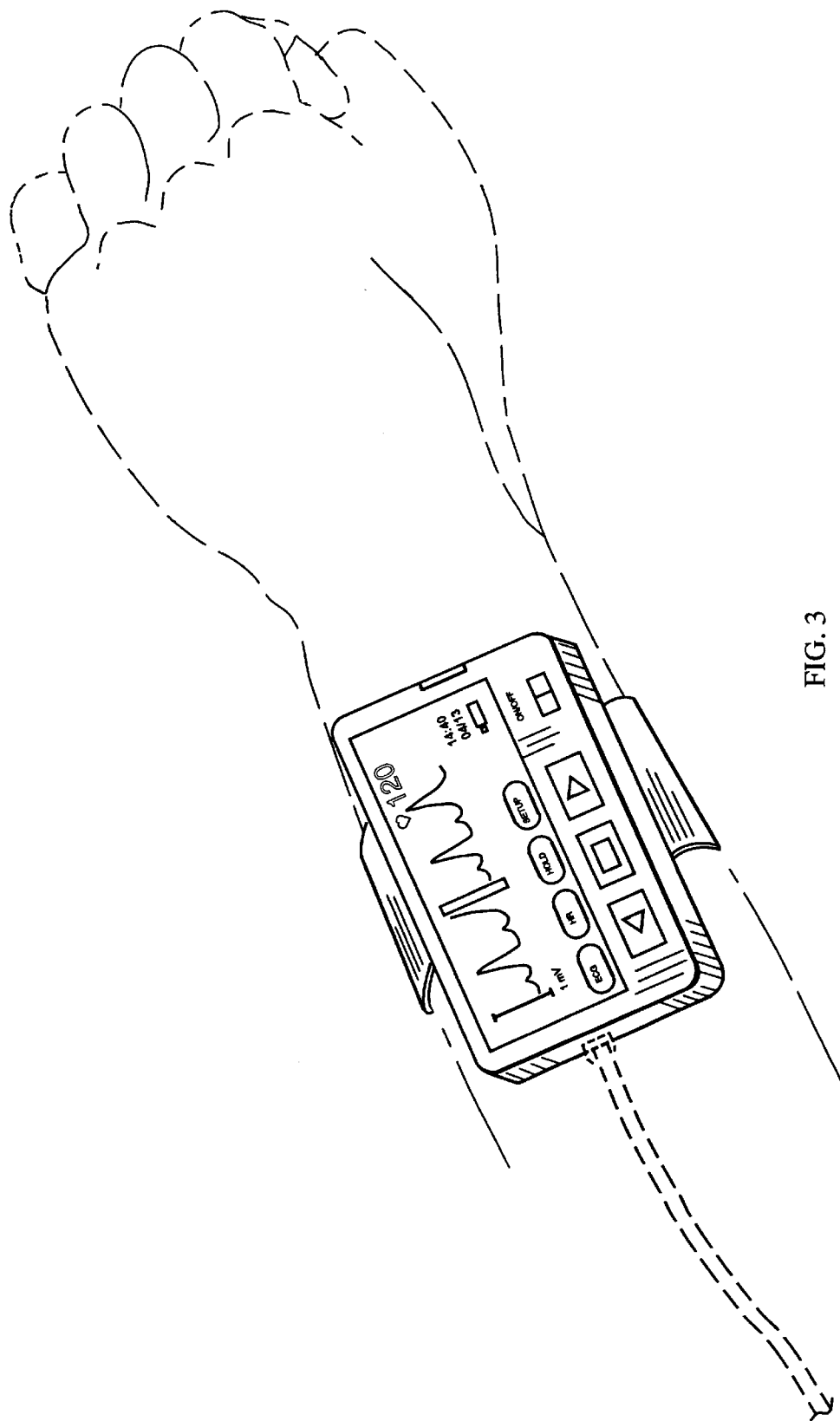


FIG. 3

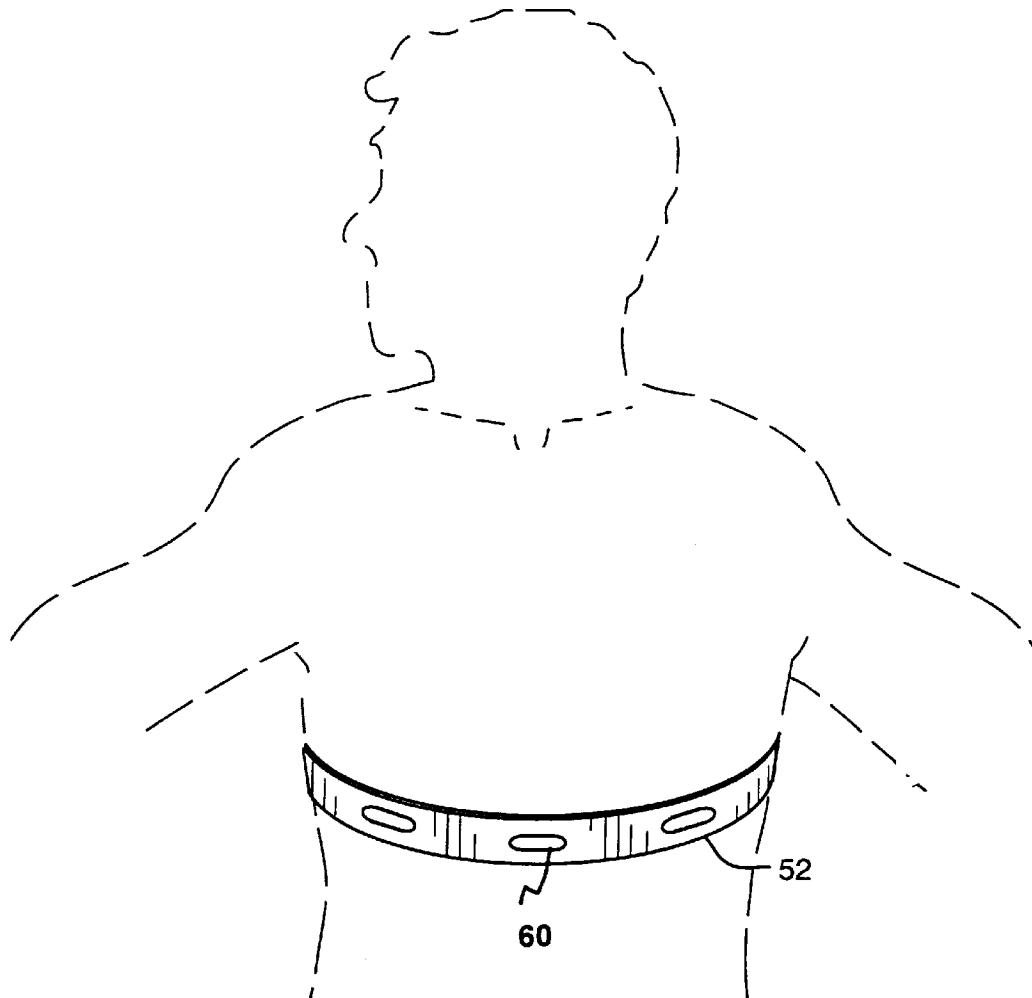


FIG. 4

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