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# United States Patent [19]

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Athan et al.

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## [54] PORTABLE PULSE OXIMETER

[75] Inventors: **Stephan P. Athan**, Tampa; **John E. Scharf**, Oldsmar, both of Fla.

[73] Assignee: **University of South Florida**, Tampa, Fla.

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[51] Int. Cl.<sup>6</sup> ..... **A61B 5/02**

[52] U.S. Cl. .... **128/633; 356/41**

[58] Field of Search ..... **128/633, 903; 356/41; 250/214 A, 214 L; 607/60**

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Primary Examiner—Angela D. Sykes

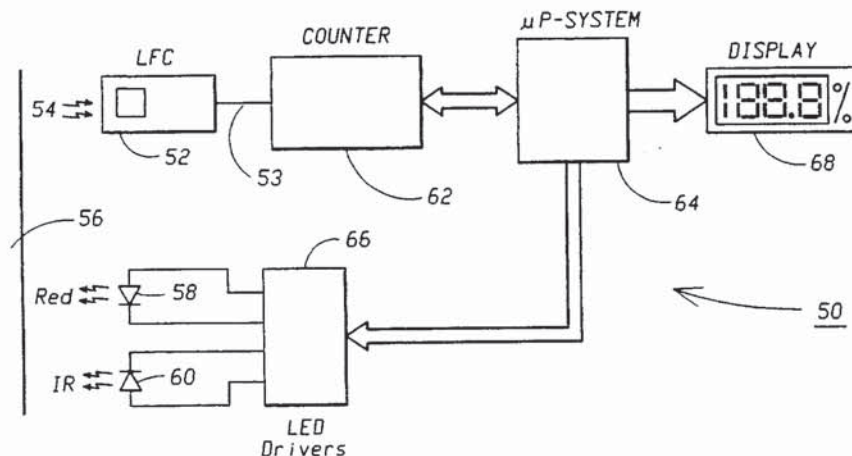
Assistant Examiner—Eric F. Winakur

Attorney, Agent, or Firm—Calfee, Halter & Griswold

## [57] ABSTRACT

A diagnostic instrument for determining a cardiovascular system parameter. In one embodiment, the instrument takes the form of a portable pulse oximeter comprising a light to frequency converter (LFC) as a sensor. Also provided is a light to frequency converter comprising a photoresistor and capacitor in circuit communication with an inverting Schmitt trigger and configured such that the inverter generates a periodic electrical signal corresponding to the amount of electromagnetic radiation illuminating the photoresistor.

22 Claims, 6 Drawing Sheets



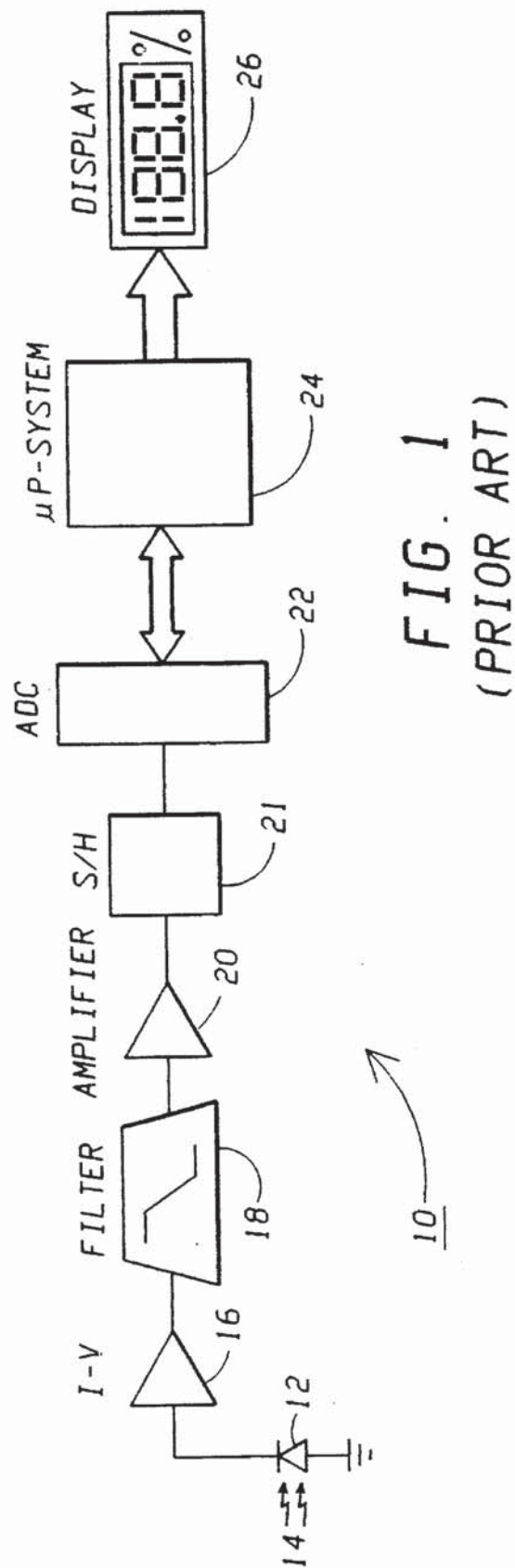


FIG. 1  
(PRIOR ART)



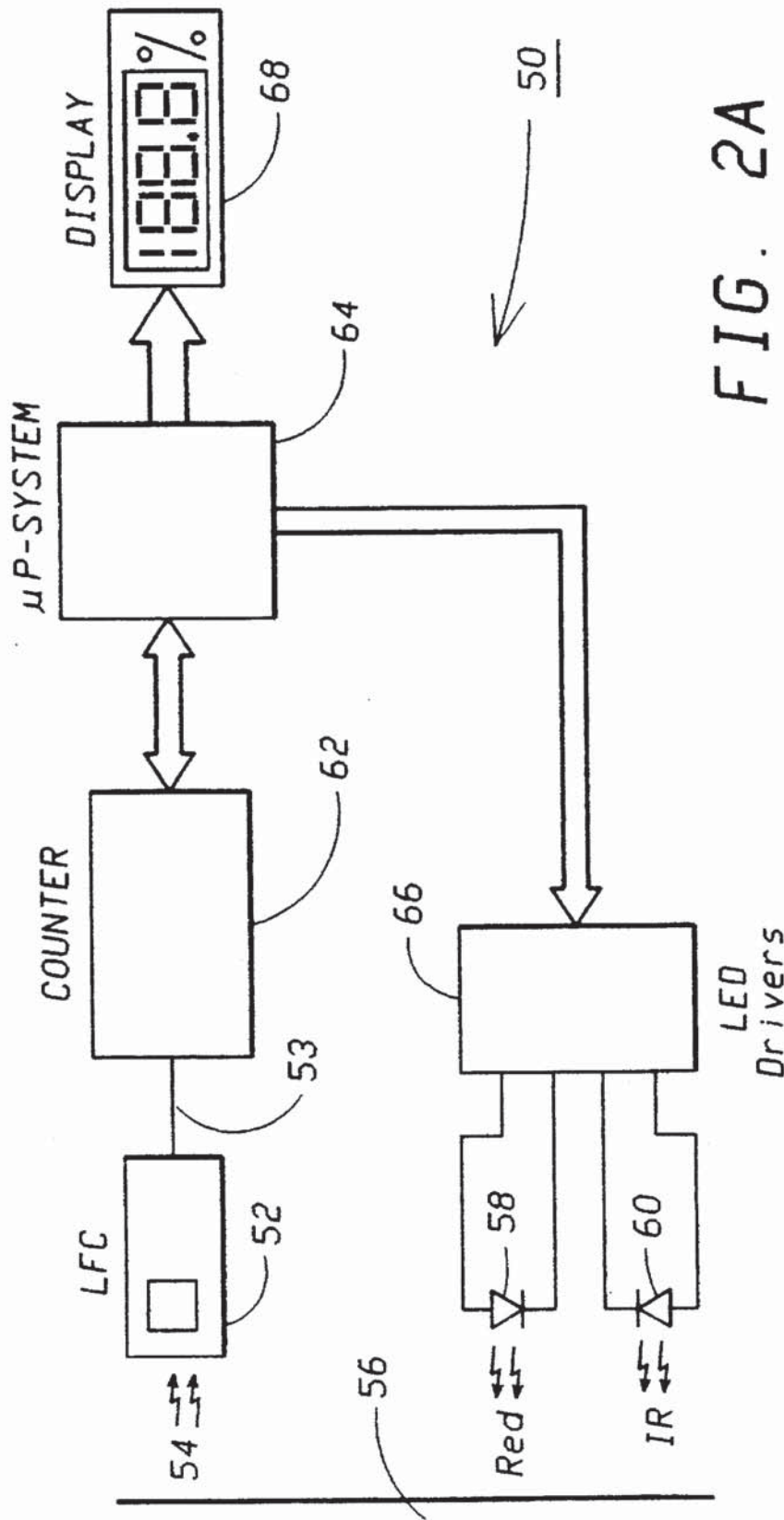


FIG. 2A

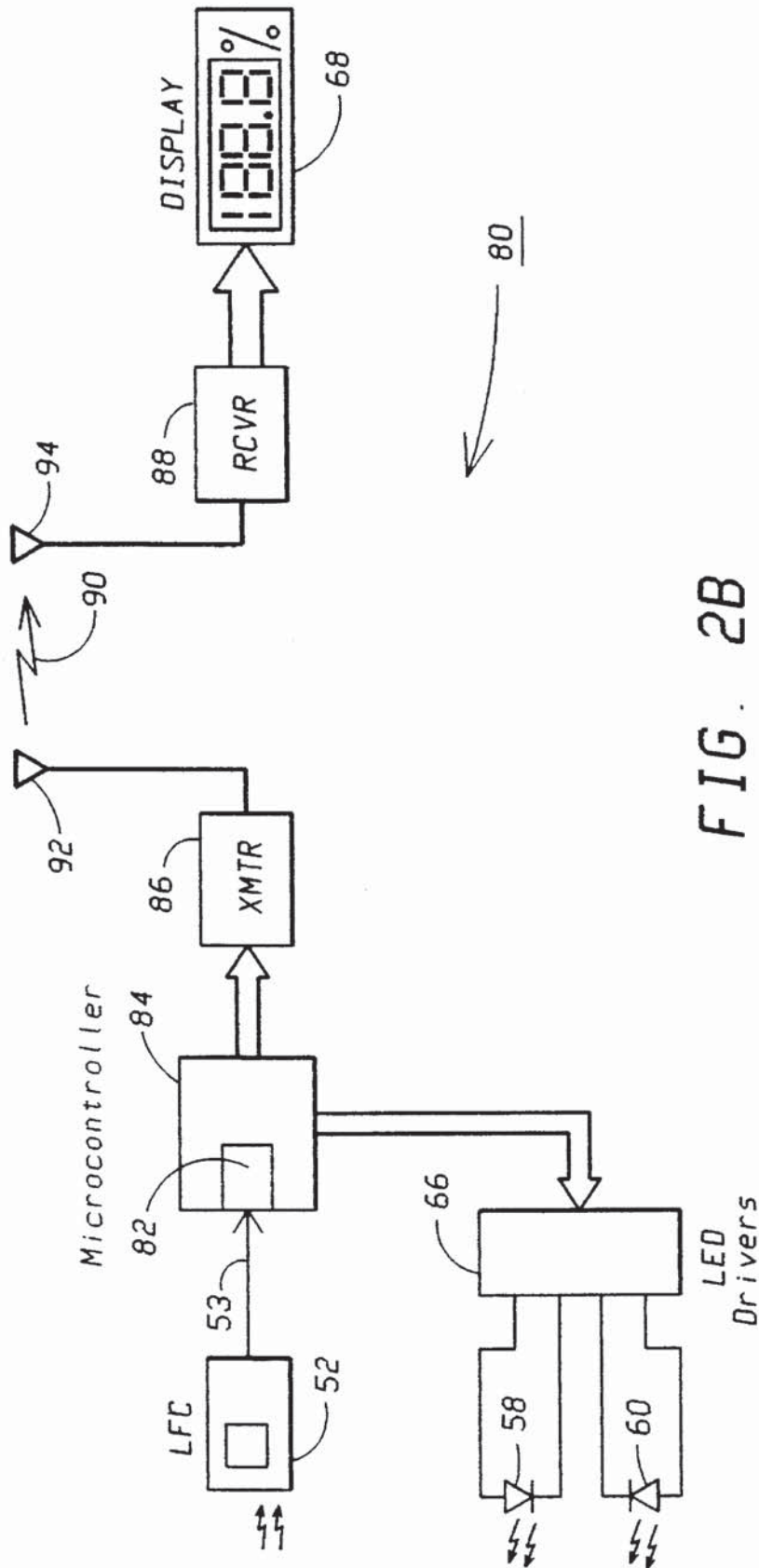


FIG. 2B

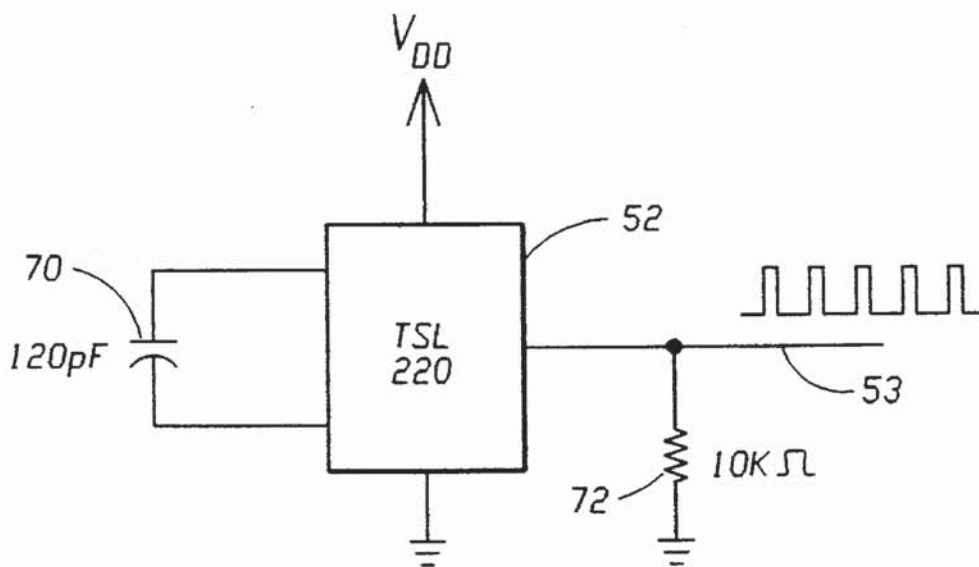


FIG. 3A

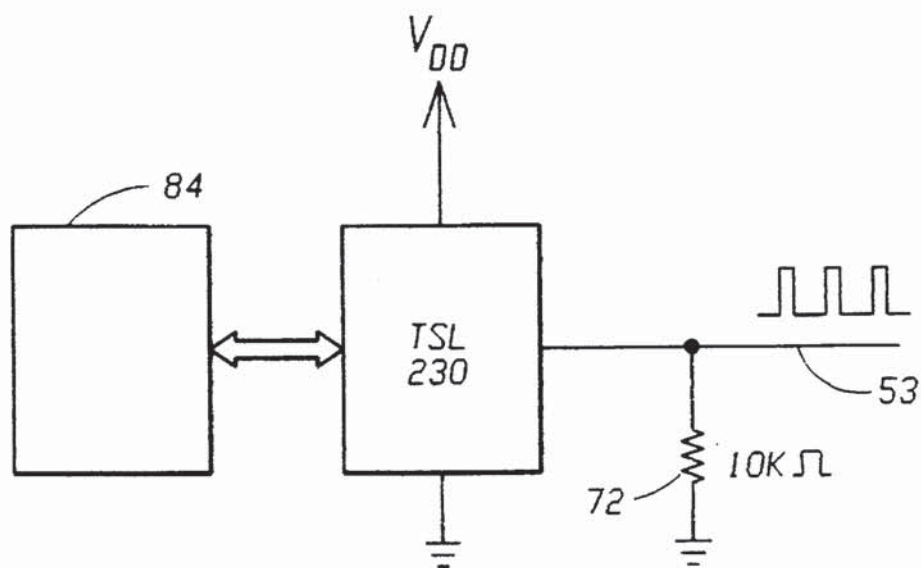


FIG. 3B



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