



US005575284A

# United States Patent [19]

[11] Patent Number: **5,575,284**

Athan et al.

[45] Date of Patent: **Nov. 19, 1996**

## [54] PORTABLE PULSE OXIMETER

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[21] Appl. No.: **221,958**

[22] Filed: **Apr. 1, 1994**

[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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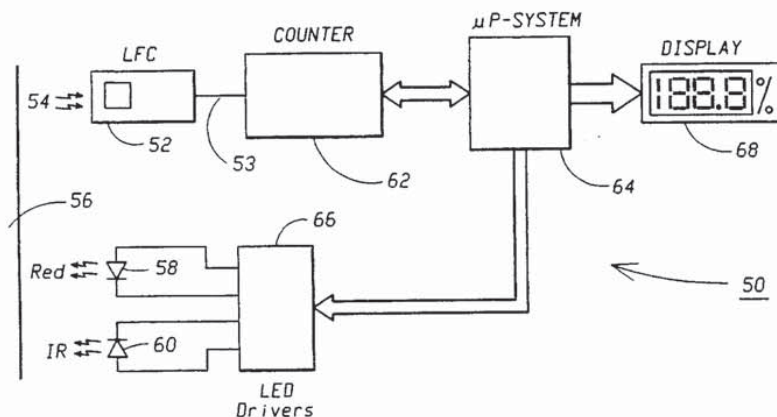
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## [57] ABSTRACT

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



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APL1038

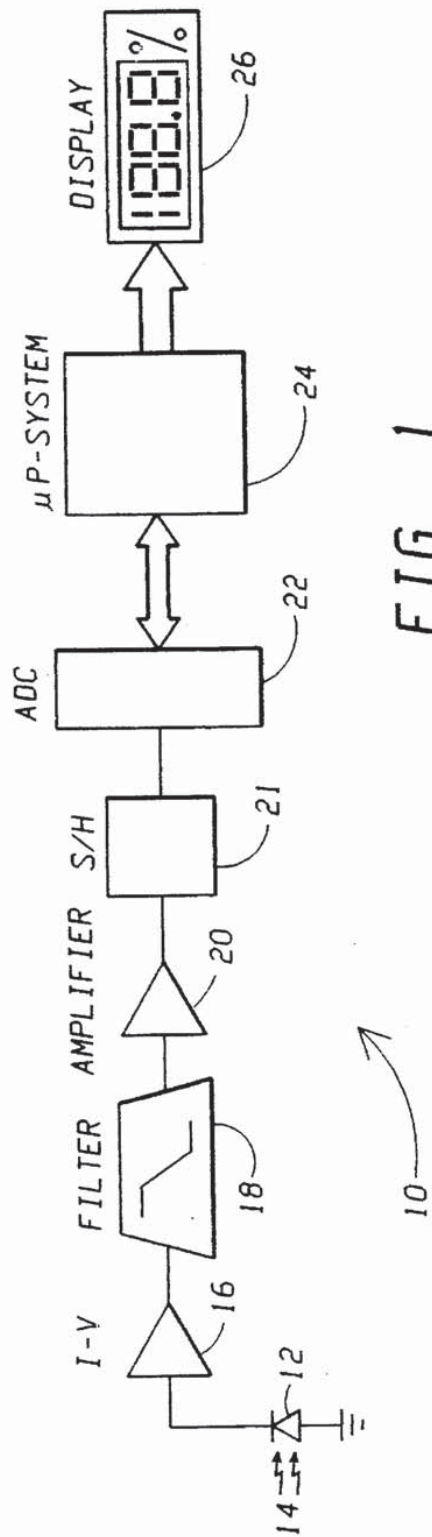


FIG. 1  
(PRIOR ART)

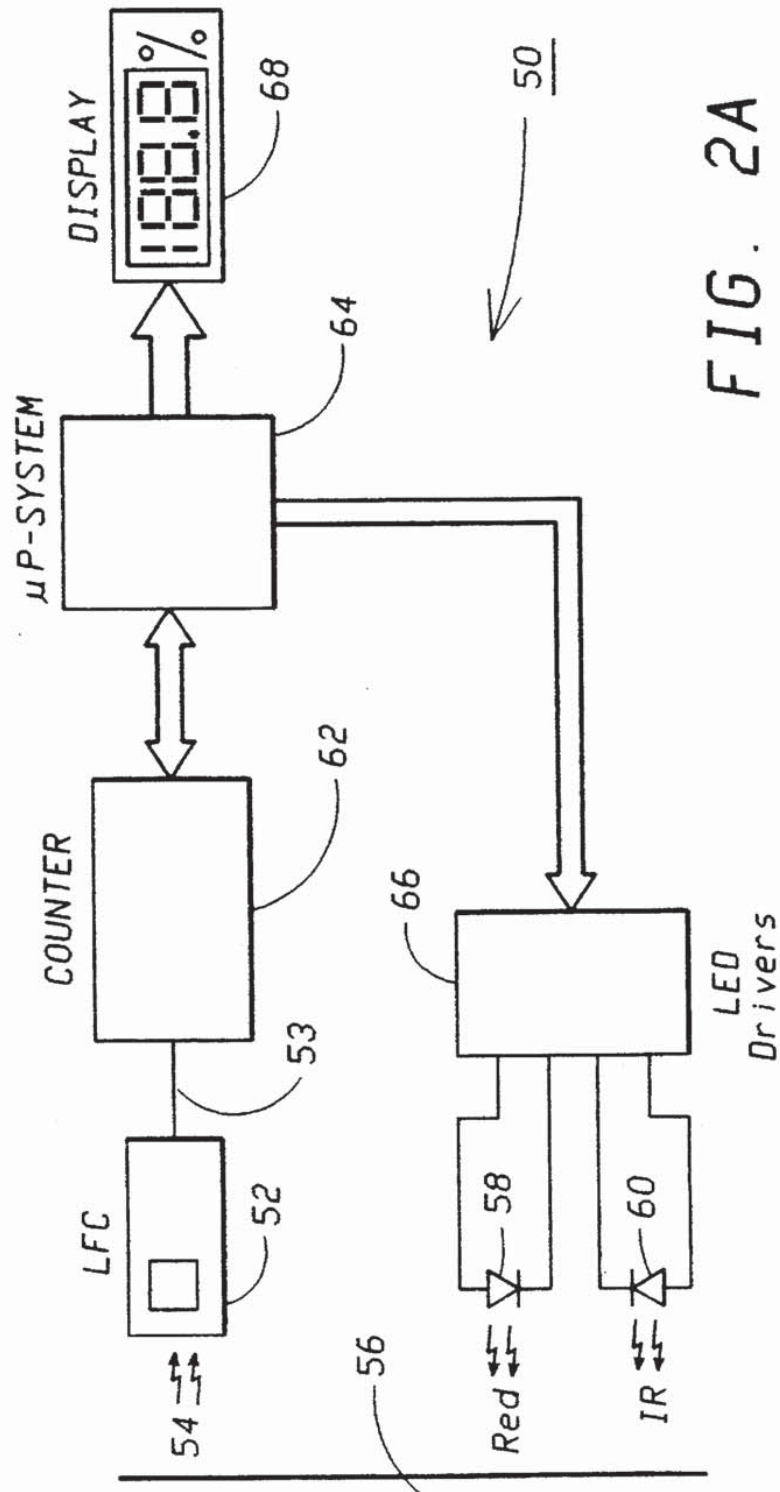


FIG. 2A

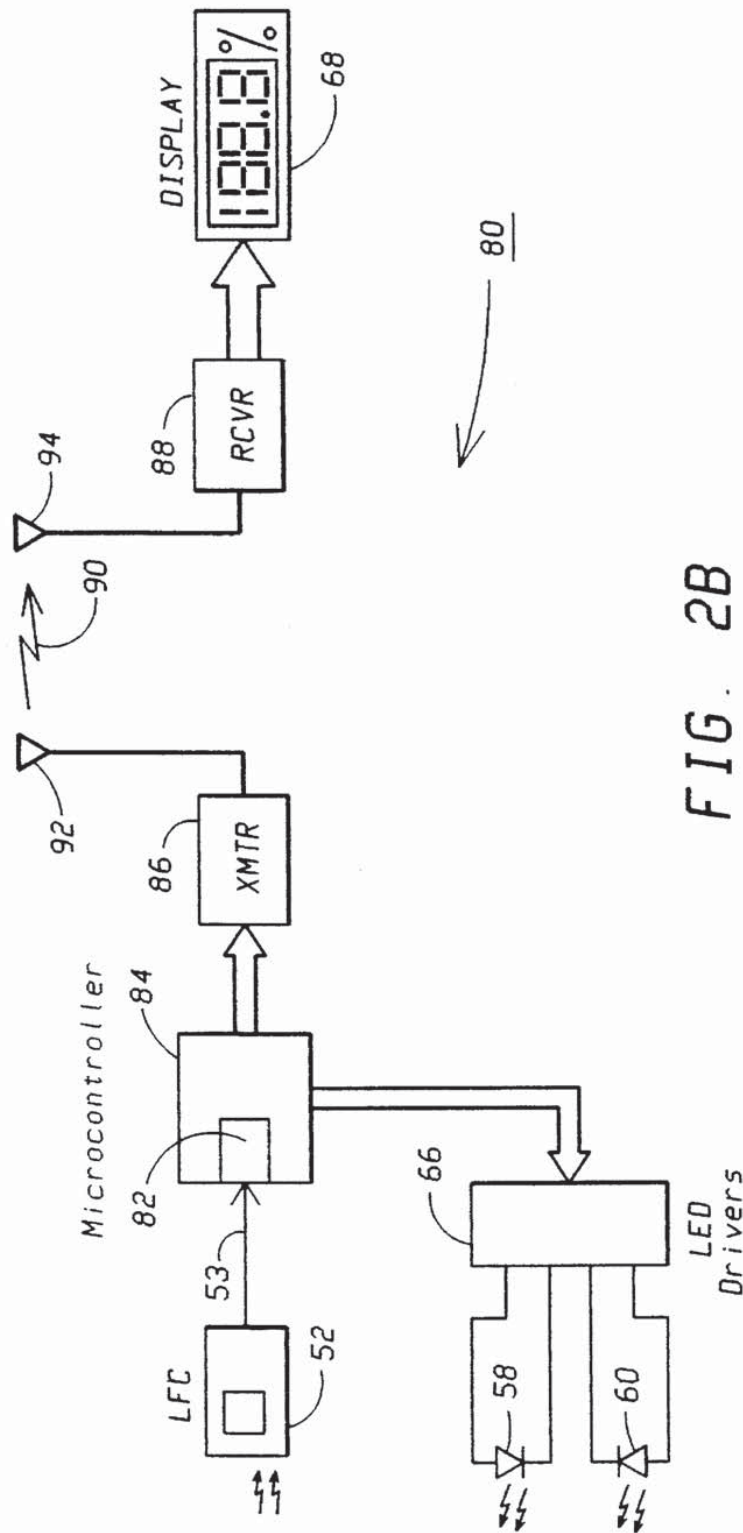


FIG. 2B

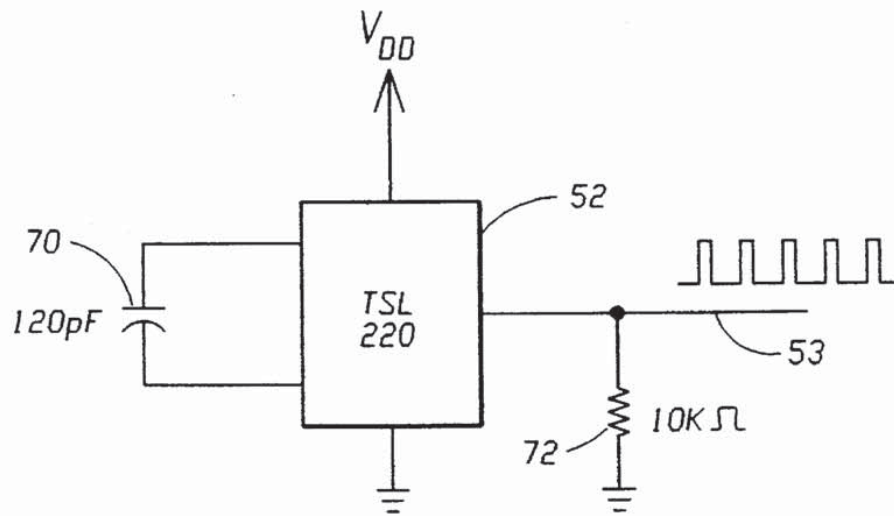


FIG. 3A

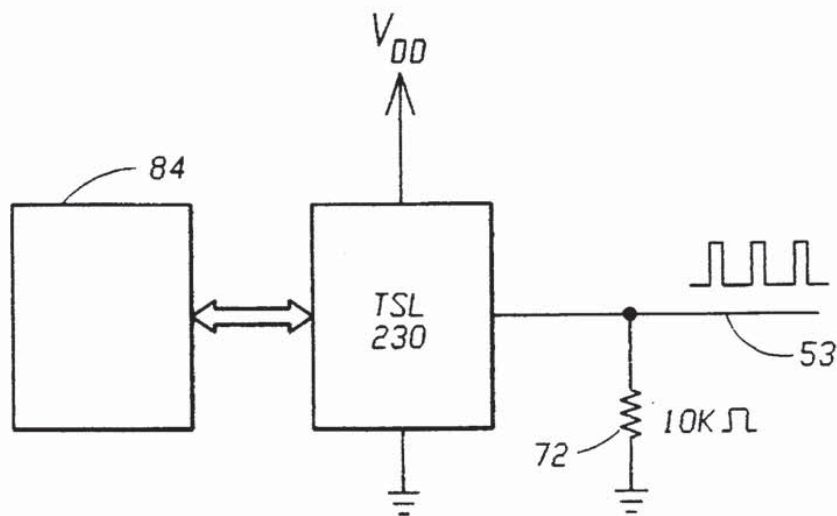


FIG. 3B

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