



(12) **United States Patent**
Mueller et al.

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(54) **METHOD AND APPARATUS FOR AUTOMATICALLY TRANSMITTING TEMPERATURE INFORMATION TO A THERMOSTAT**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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(51) Int. Cl.⁷ **F23N 5/20; G08B 17/00**

(52) U.S. Cl. **236/46 R; 236/51; 340/584; 374/167**

(58) **Field of Search** **236/46 R, 5; 340/584, 340/870.17, 589; 374/167**

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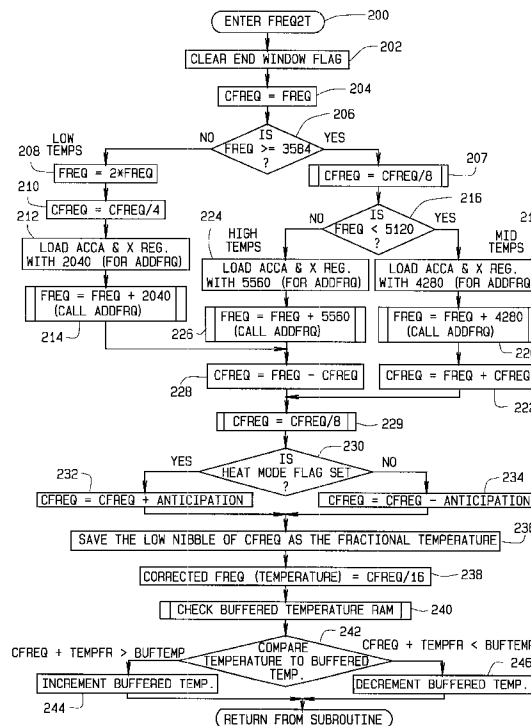
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(57) **ABSTRACT**

A method and device includes the use of multiple remote sensors transmitting temperature information to a thermostat, while reducing or eliminating transmission interference and providing increased user control. Remote temperature sensors of the present invention sense temperature at variable time periods and only transmit temperature information on a sensed change in temperature. Transmission of temperature information is provided on variably selected frequencies within a specified range, and may be based in part on previous temperature transmissions. A learn mode is provided that allows for recognition of each sensor by a host-controlling thermostat, including determining the proper transmission power level for each sensor. Additionally, each sensor is programmable to provide a temperature offset and each sensor may be individually weighted according to specific requirements or needs.

47 Claims, 5 Drawing Sheets



Emerson Exhibit 1031

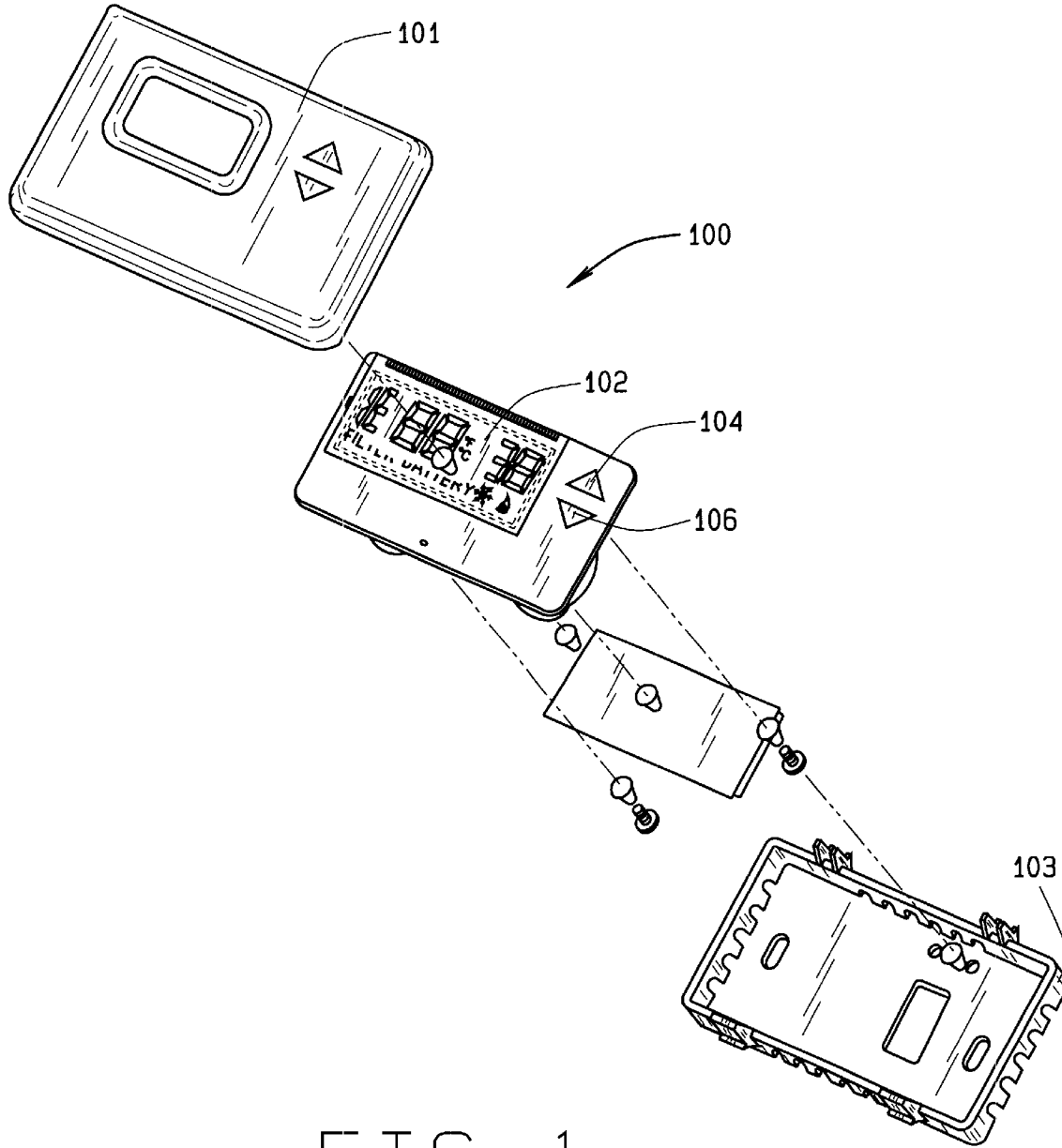


FIG. 1

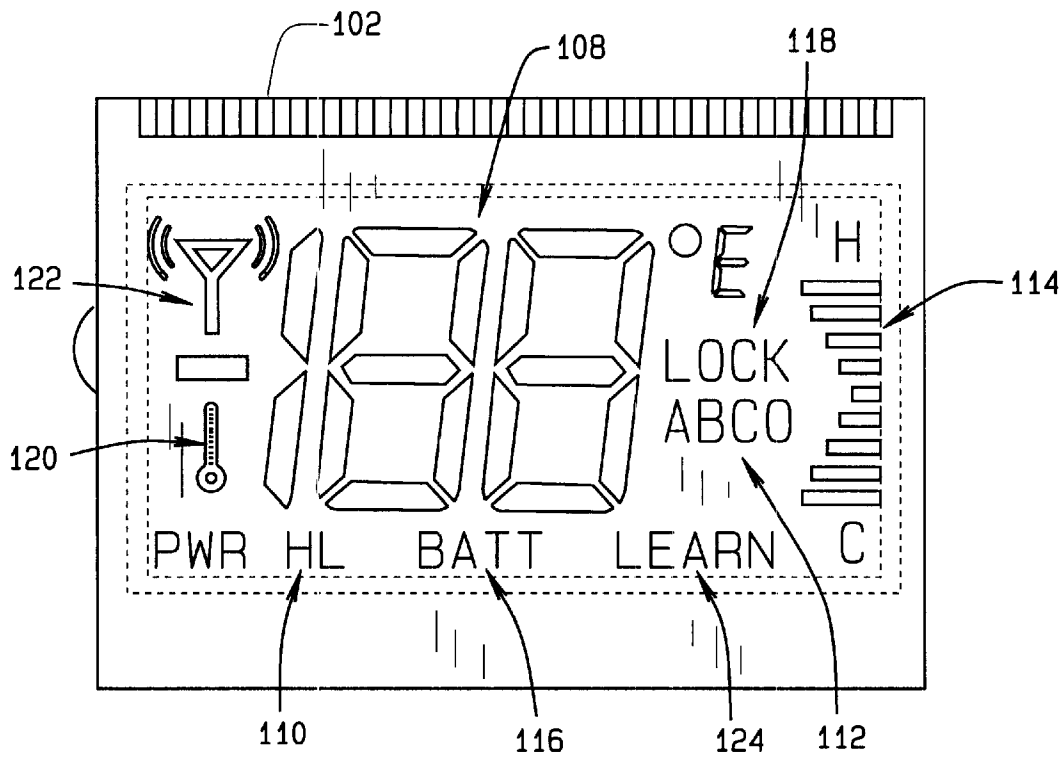


FIG. 2

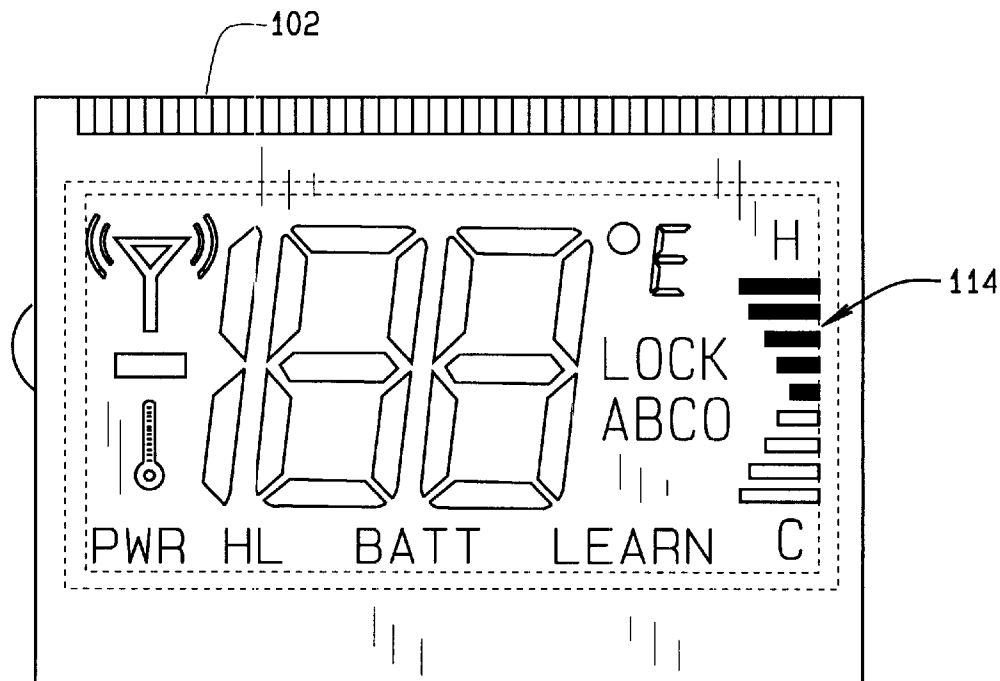


FIG. 3

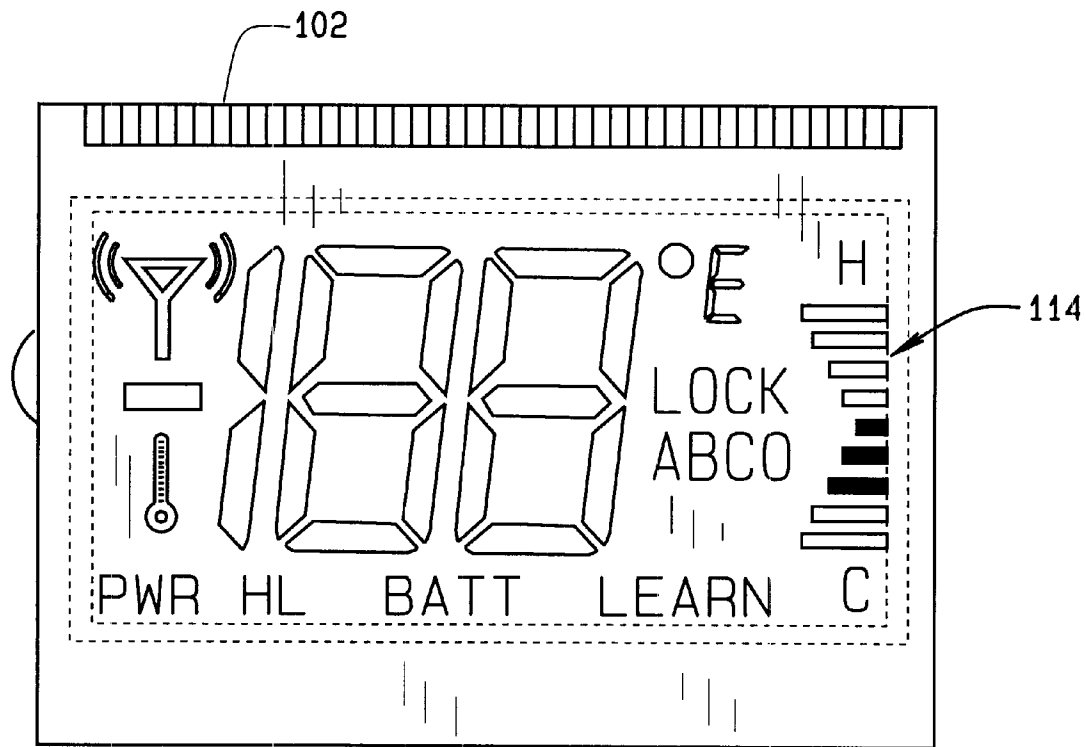


FIG. 4

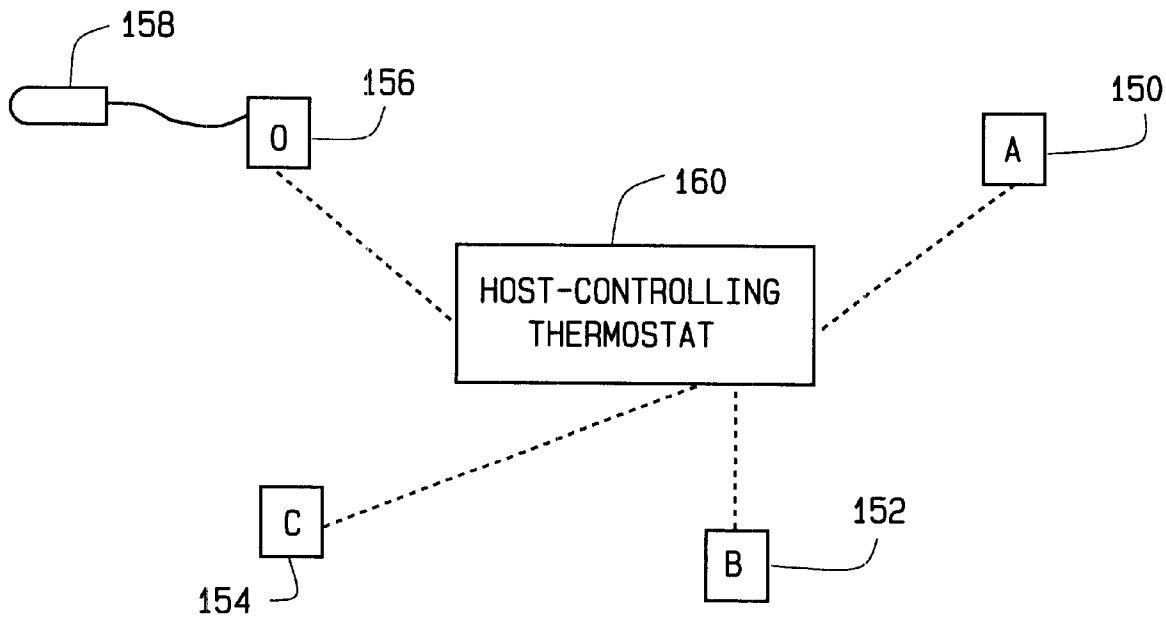


FIG. 7

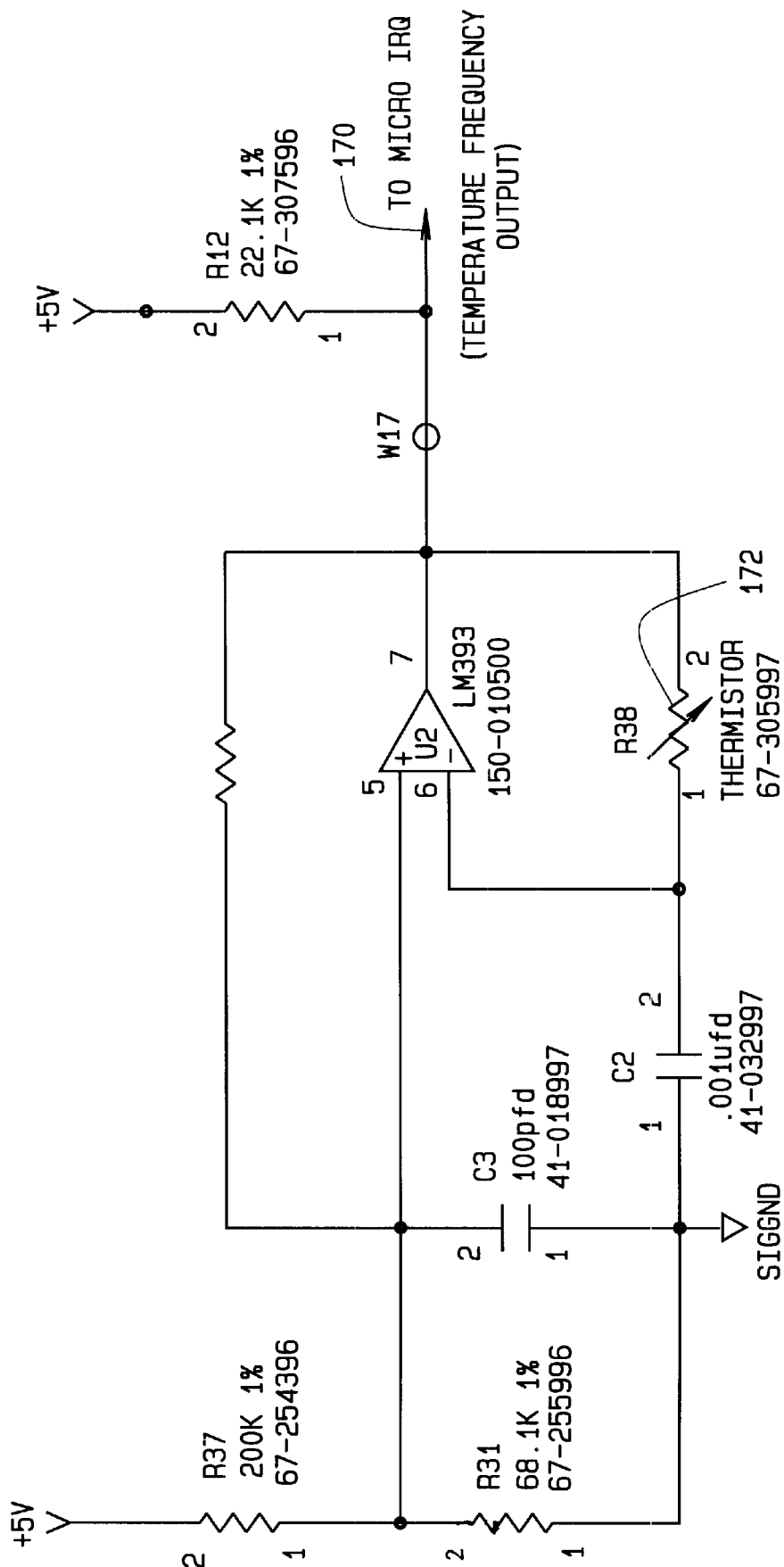


FIG. 5

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