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United States Patent [19]
Janky

[11] **Patent Number:** **5,786,789**
[45] **Date of Patent:** **Jul. 28, 1998**

[54] **GPS AND CELLPHONE UNIT HAVING ADD-ON MODULES**

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[73] Assignee: **Trimble Navigation Limited**, Sunnyvale, Calif.

[21] Appl. No.: **339,990**

[22] Filed: **Nov. 14, 1994**

[51] Int. Cl.⁶ **G01S 5/02**

[52] U.S. Cl. **342/357; 342/419; 455/33.1; 455/89**

[58] **Field of Search** **342/357, 419; 455/33.1, 90, 89**

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Primary Examiner—Thomas H. Tarcza

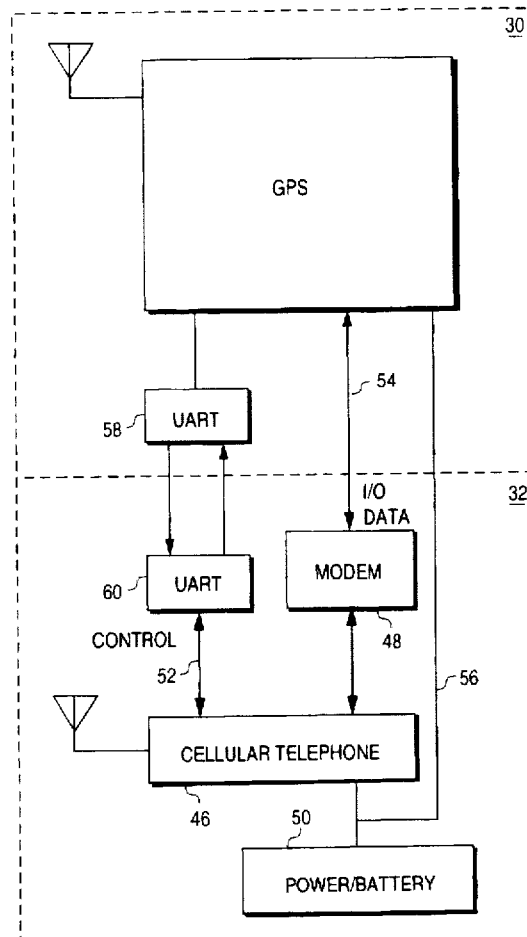
Assistant Examiner—Dao L. Phan

Attorney, Agent, or Firm—Patrick T. King

[57] **ABSTRACT**

A GPS unit and a cellular telephone unit each have add-on modules for providing additional functionality. A battery powered hand-held GPS unit has a battery power module with a built-in cellular telephone. The controls on the GPS unit are used to control cellular telephone operations. The GPS controlled cellular telephone transmits position location information obtained by the GPS unit. Alternatively, a battery powered hand-held cellular telephone unit has a battery power module with a built-in GPS device. The controls on the cellular telephone portion are used to control GPS device operations. The cellular telephone portion is able to transmit position location information obtained by the GPS device. The GPS and a cellular telephone device can function with either a standard battery module, or with a battery module having a cellular telephone or a GPS device built into the battery module.

14 Claims, 9 Drawing Sheets



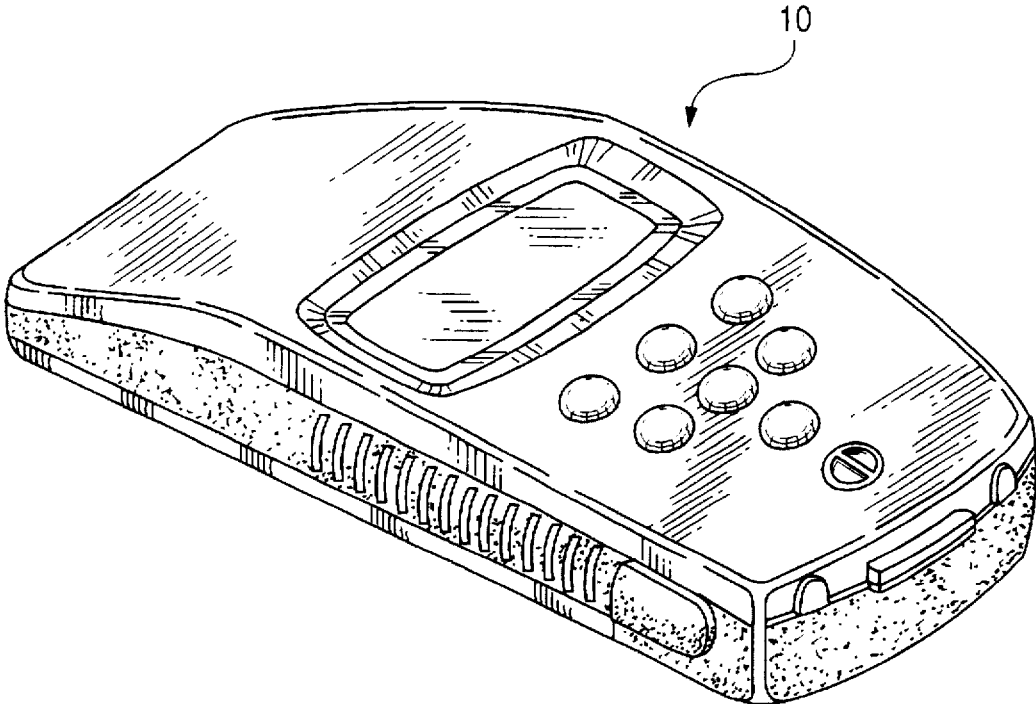


Figure 1A (Prior Art)

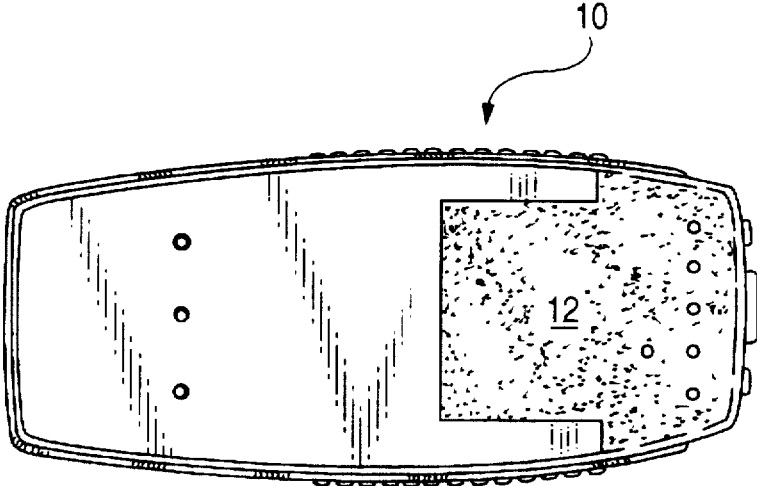


Figure 1B (Prior Art)

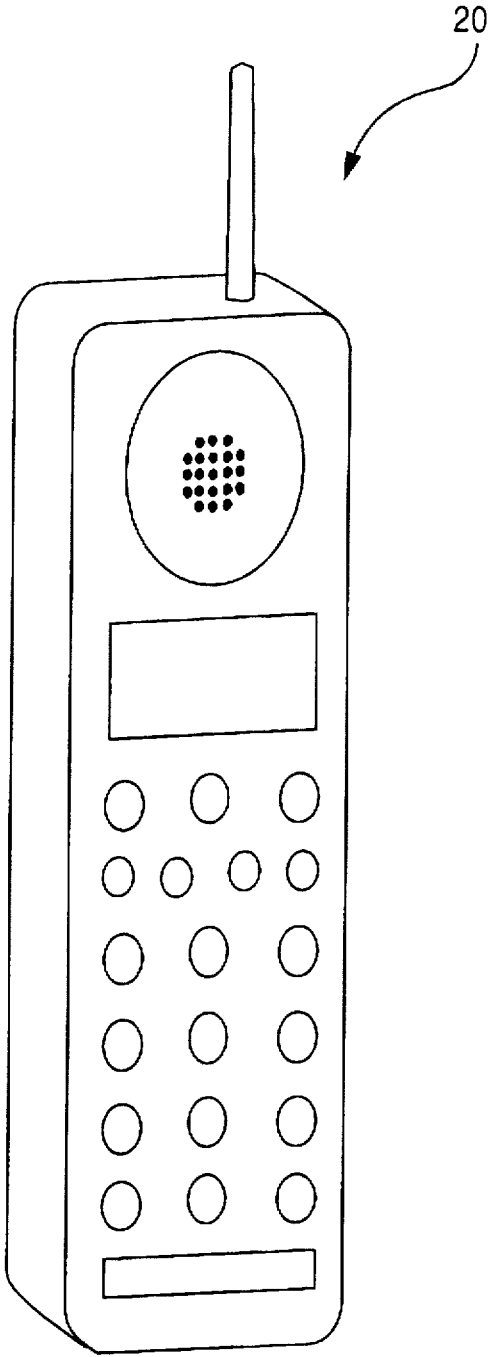


Figure 2 (Prior Art)

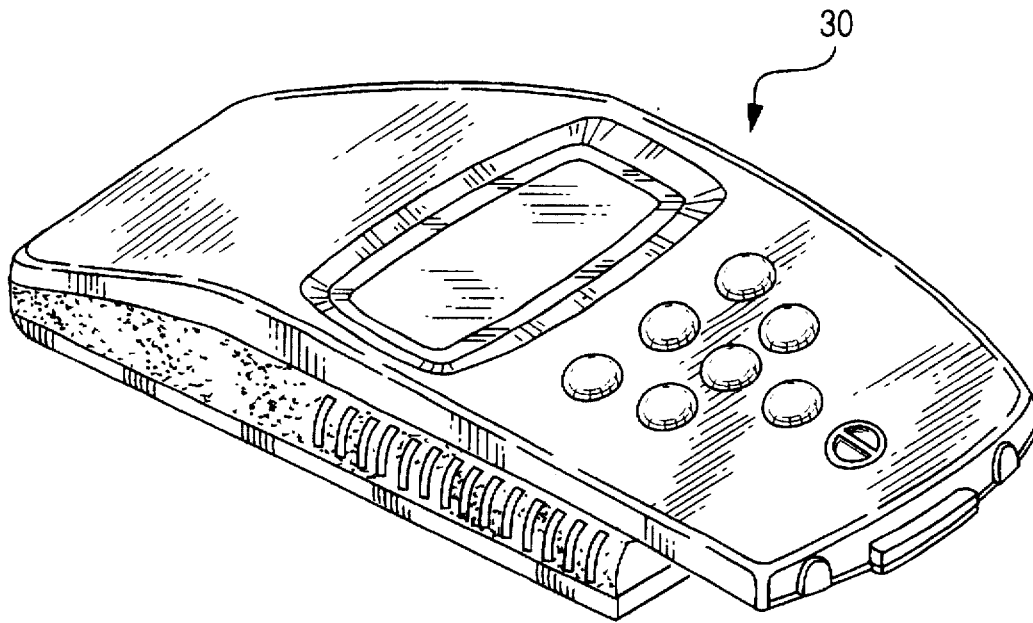


Figure 3A

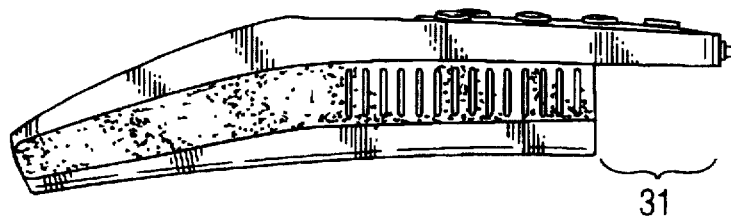


Figure 3B

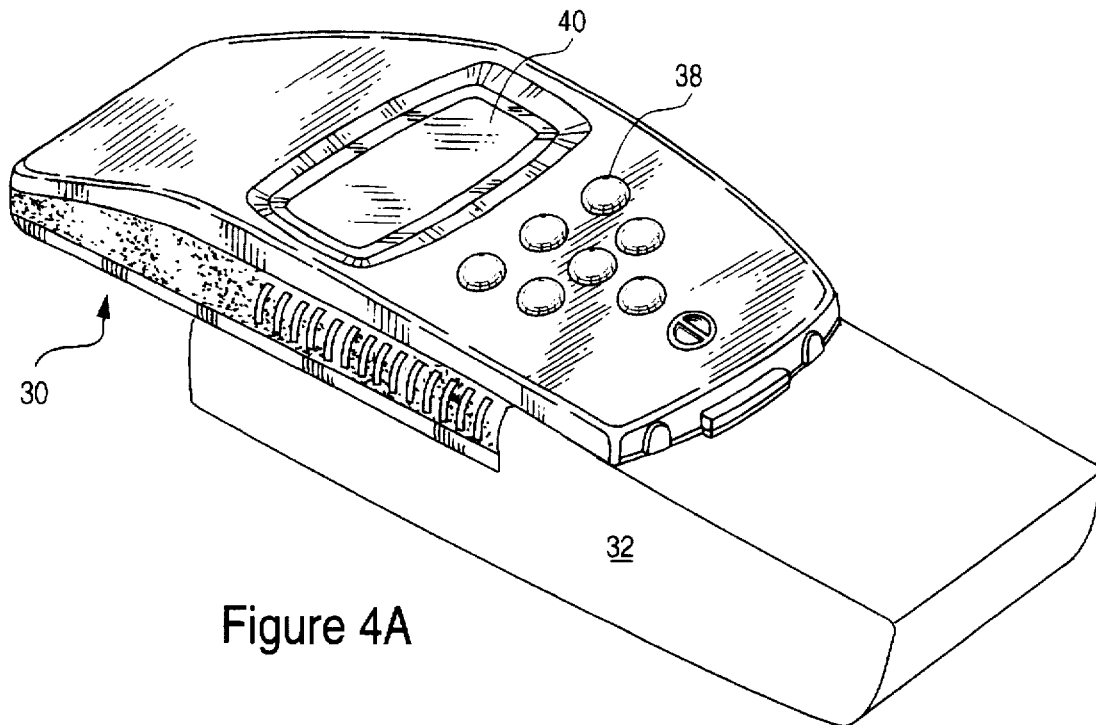


Figure 4A

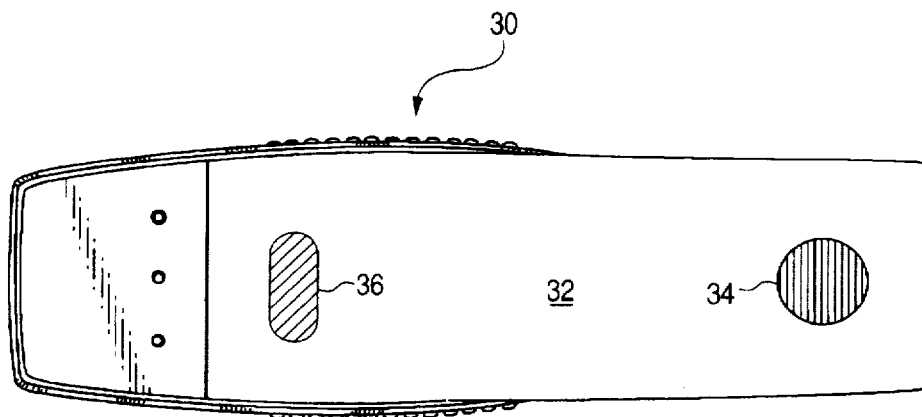


Figure 4B

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