

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

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(45) **Date of Patent:** **Mar. 11, 2003**

(54) **BATTERY CHARGING**

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(73) Assignee: **Nokia Mobile Phones Limited**, Espoo (FI)

(\* ) 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.<sup>7</sup>** ..... **H02J 7/00**

(52) **U.S. Cl.** ..... **320/107**

(58) **Field of Search** ..... 320/106, 107,  
320/110

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*Primary Examiner*—Edward H. Tso

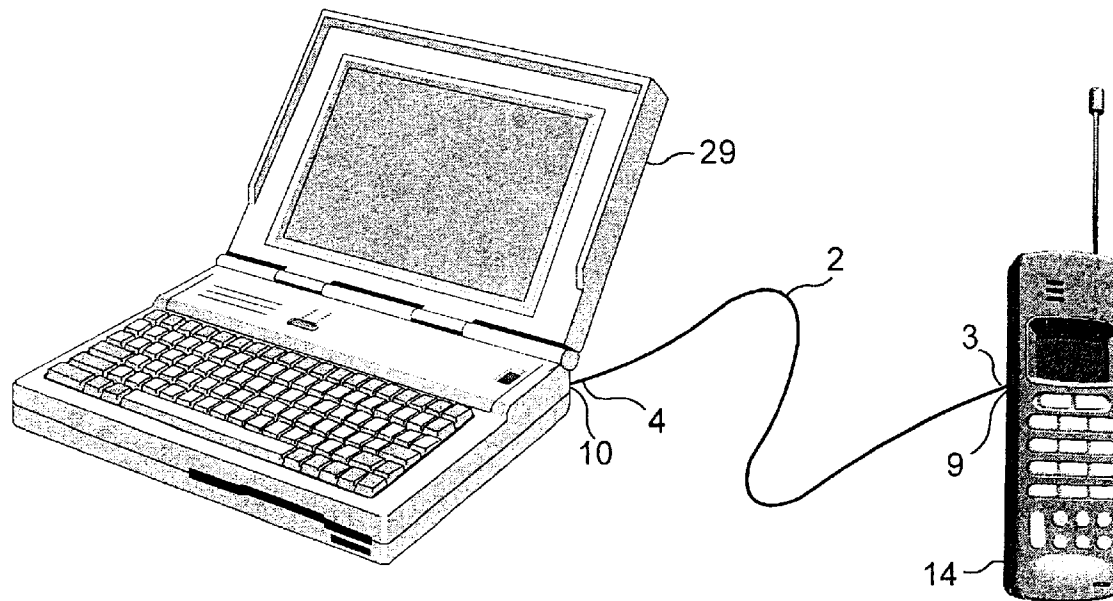
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(57) **ABSTRACT**

A battery charging circuit is described in which power is derived from a communications port such as a USB interface (22) and is supplied to a rechargeable battery of a communications device. The communications device, which may be a mobile radio telephone, can be charged from the power supply or internal battery of a laptop computer equipped with a USB port and connected thereto with a suitable cable thereby avoiding the need for a user to carry a dedicated battery charger for the radio telephone.

**44 Claims, 6 Drawing Sheets**



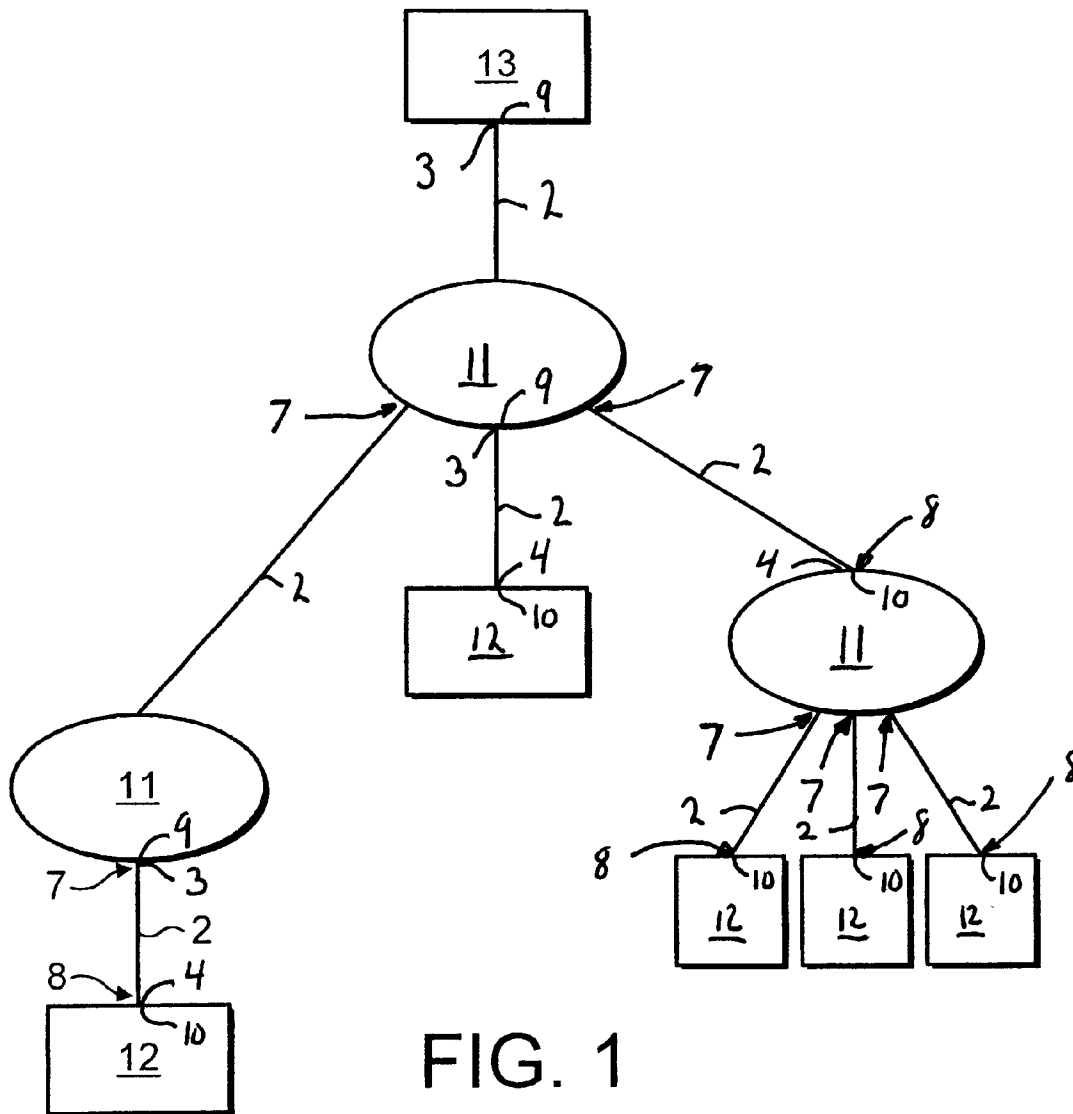


FIG. 1

(PRIOR ART)

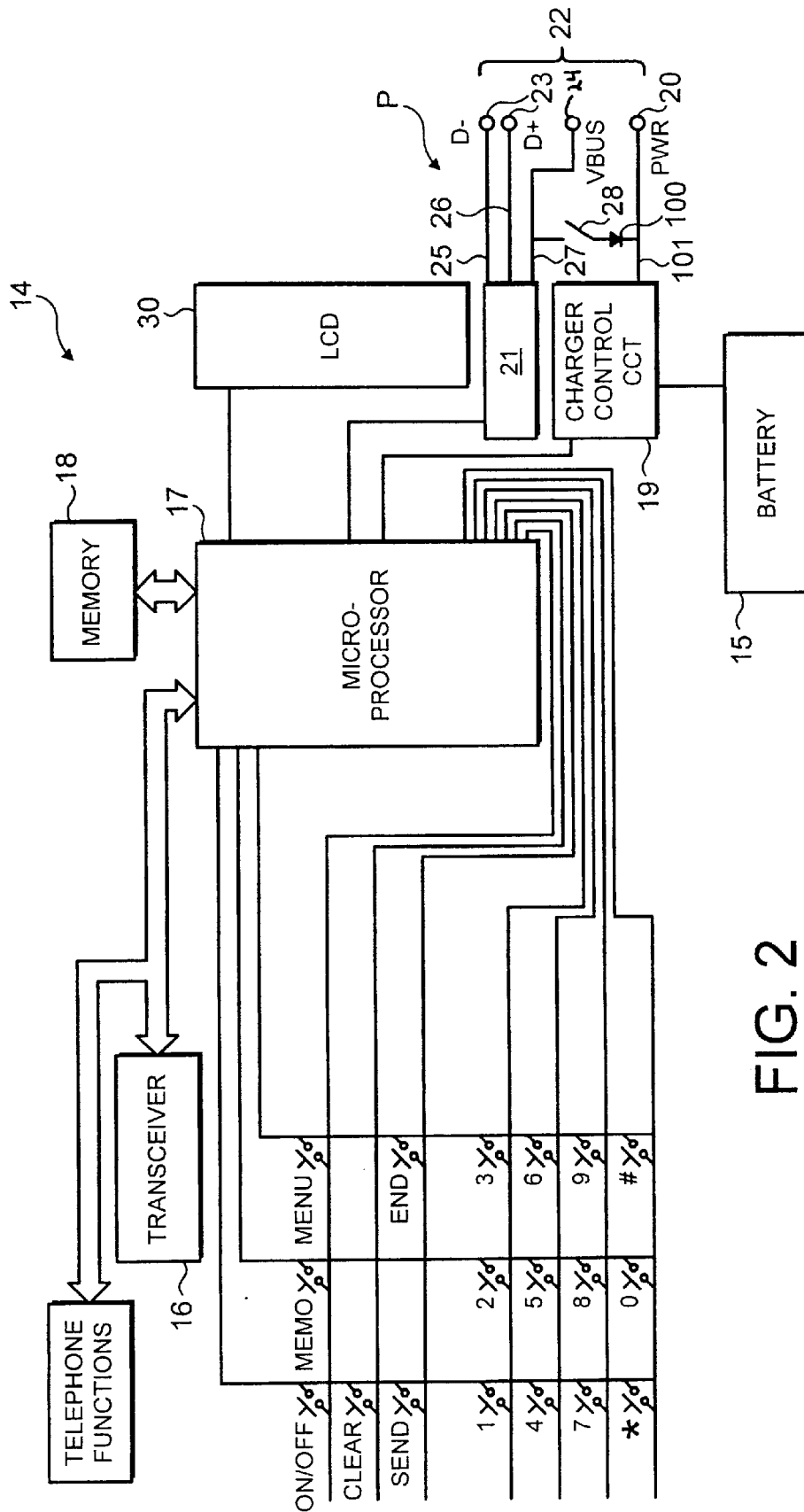


FIG. 2

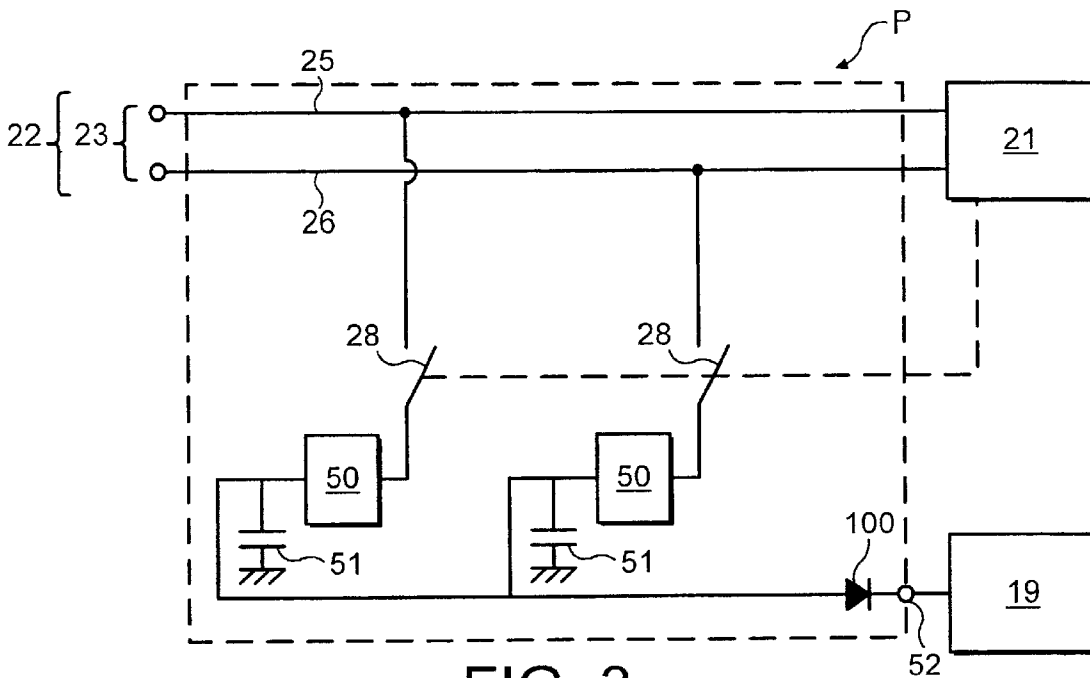


FIG. 3

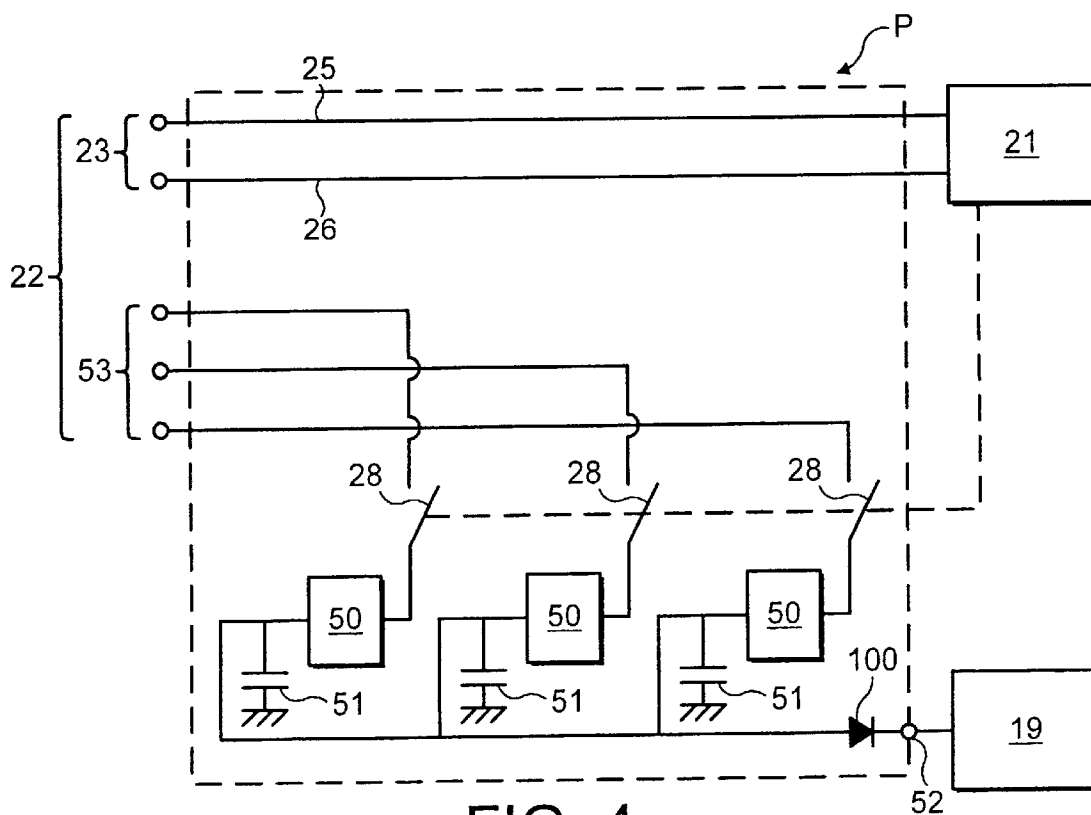


FIG. 4

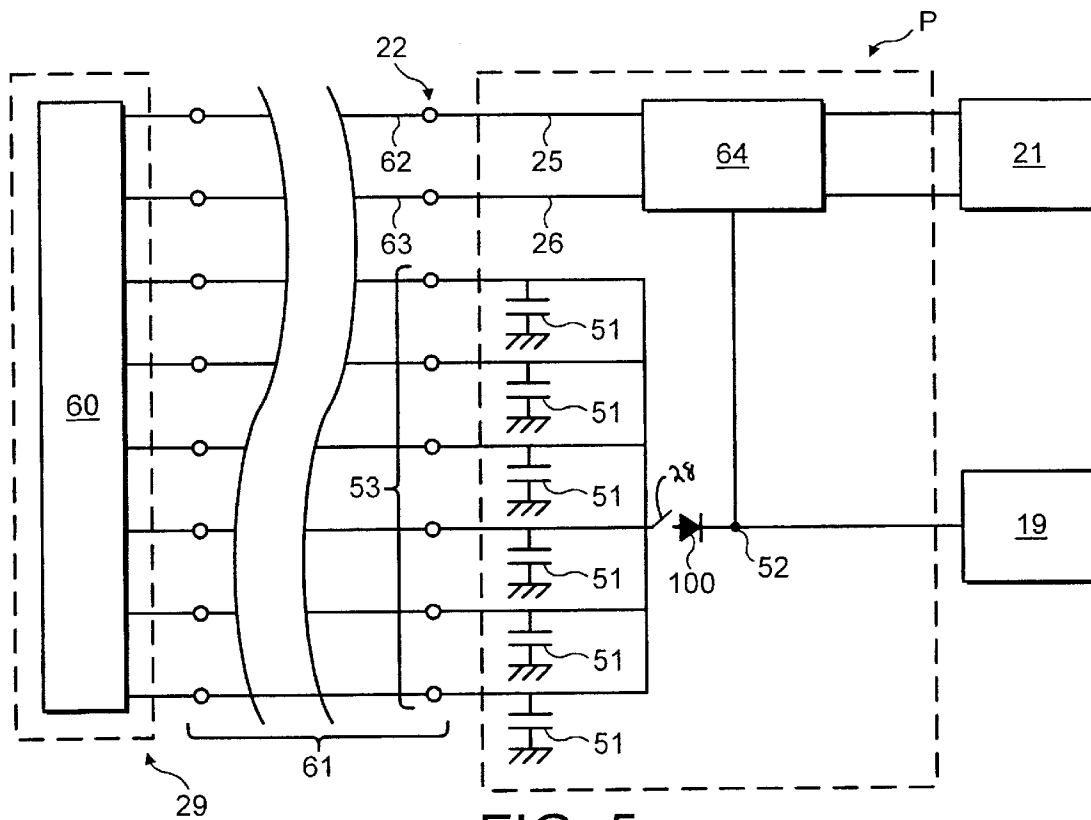


FIG. 5

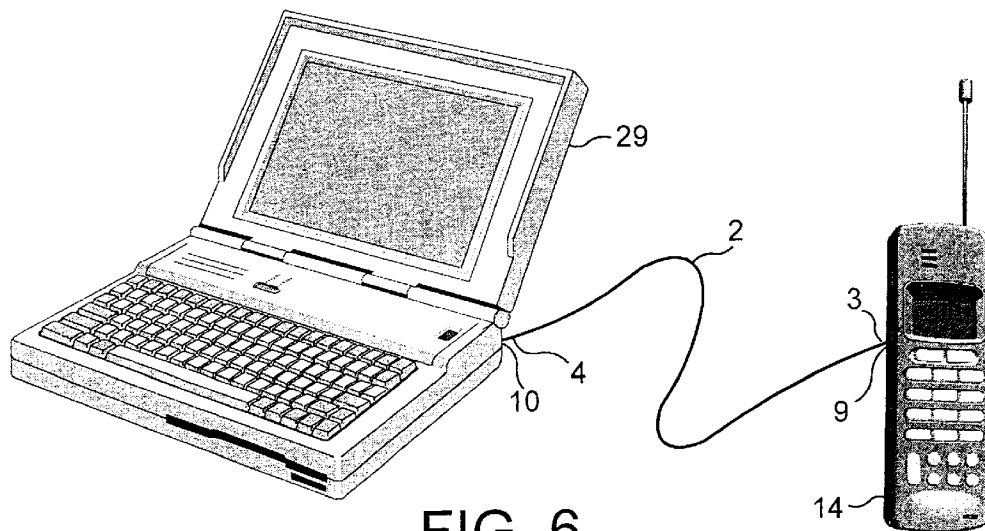


FIG. 6

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