



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

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(54) **VALVE WITH SMART HANDLE**
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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 237 days.

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§ 371 (c)(1),
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Griffinger and Vecchione

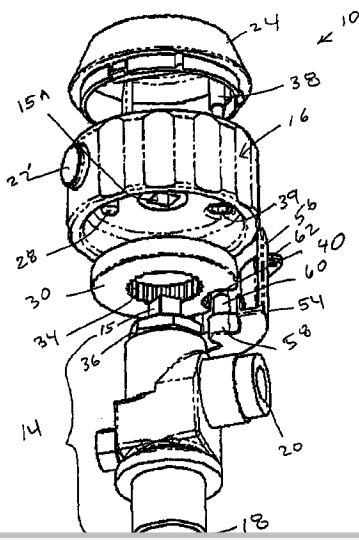
(65) **Prior Publication Data**
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(57) **ABSTRACT**

A valve with a smart handle including a memory module to log relevant data. A sensor on the handle determines when the valve is open, and this triggers the start of timers and recording of the “open” event in a log in the memory module. When the valve is closed, the sensor triggers stopping of the timers and recording of the “closed” event in the log. The timer information is used to calculate the duration of the time “open” event, and this, together with the actual date and time of the opening and closing of the valve are recorded in the log. Other relevant information, such as cylinder fill date, cylinder I.D. number, batch number, and patient name or account number may also be logged in the memory module. The log of the events and the corresponding dates and times may be used to prepare invoices for billing gas treatments, for inventory control, and for other record-keeping and control functions.

Related U.S. Application Data
(60) Provisional application No. 60/249,765, filed on Nov. 17, 2000.
(51) **Int. Cl.**
F16K 37/00 (2006.01)
(52) **U.S. Cl.** **137/1; 137/552.7; 251/129.04;**
4/623
(58) **Field of Classification Search** **137/552.7;**
137/1; 4/623; 251/129.04
See application file for complete search history.

18 Claims, 12 Drawing Sheets



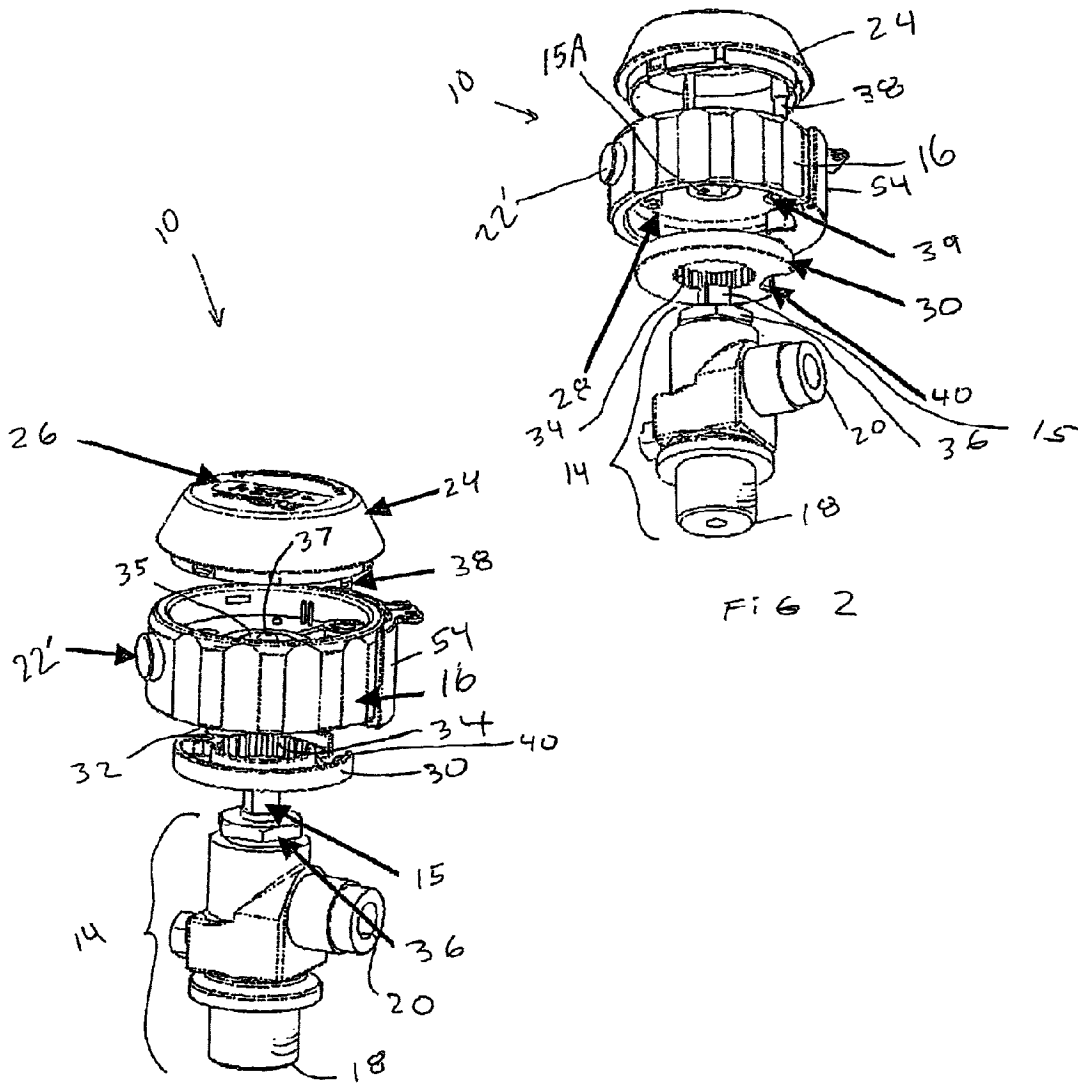


FIG 1

FIG 2

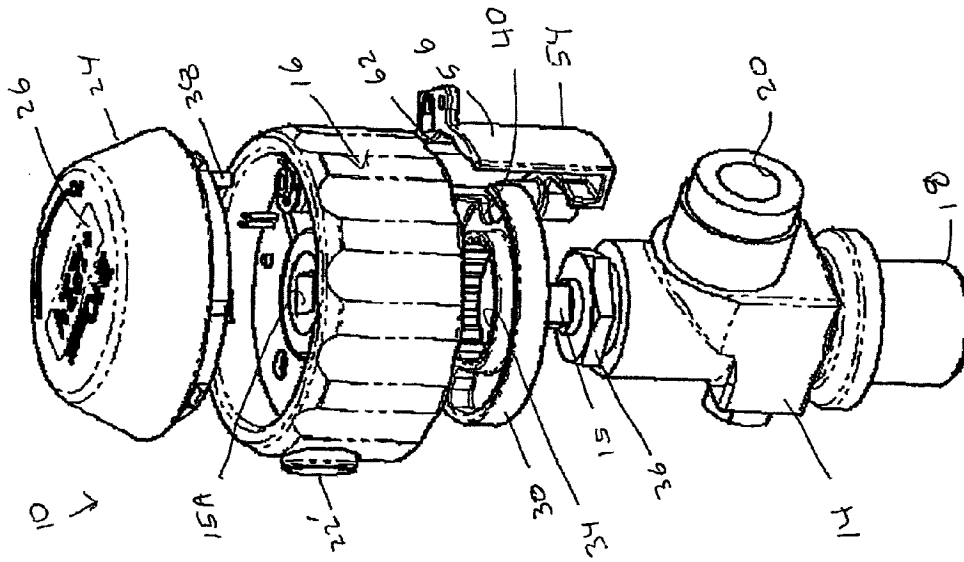


FIG 2A

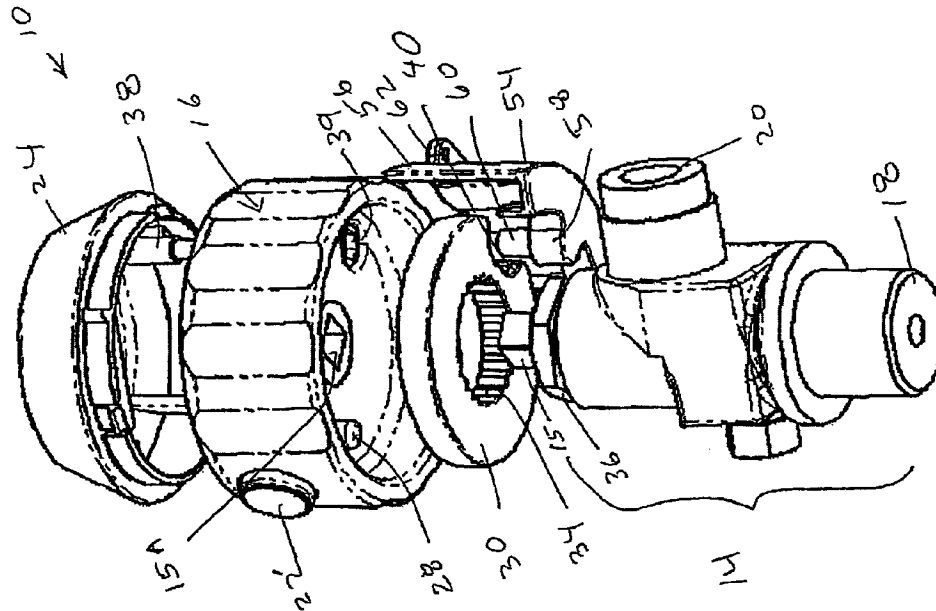


FIG 1A

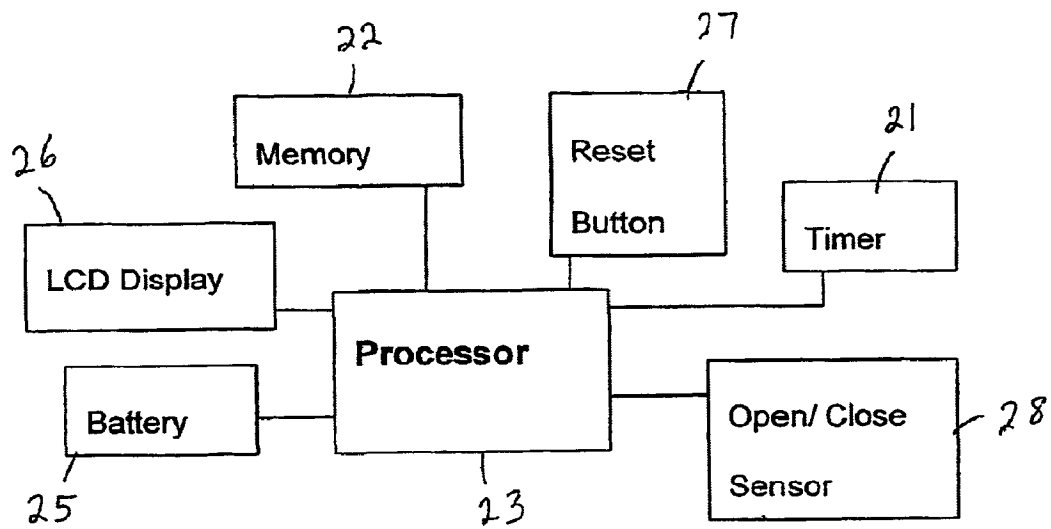


FIG 2B

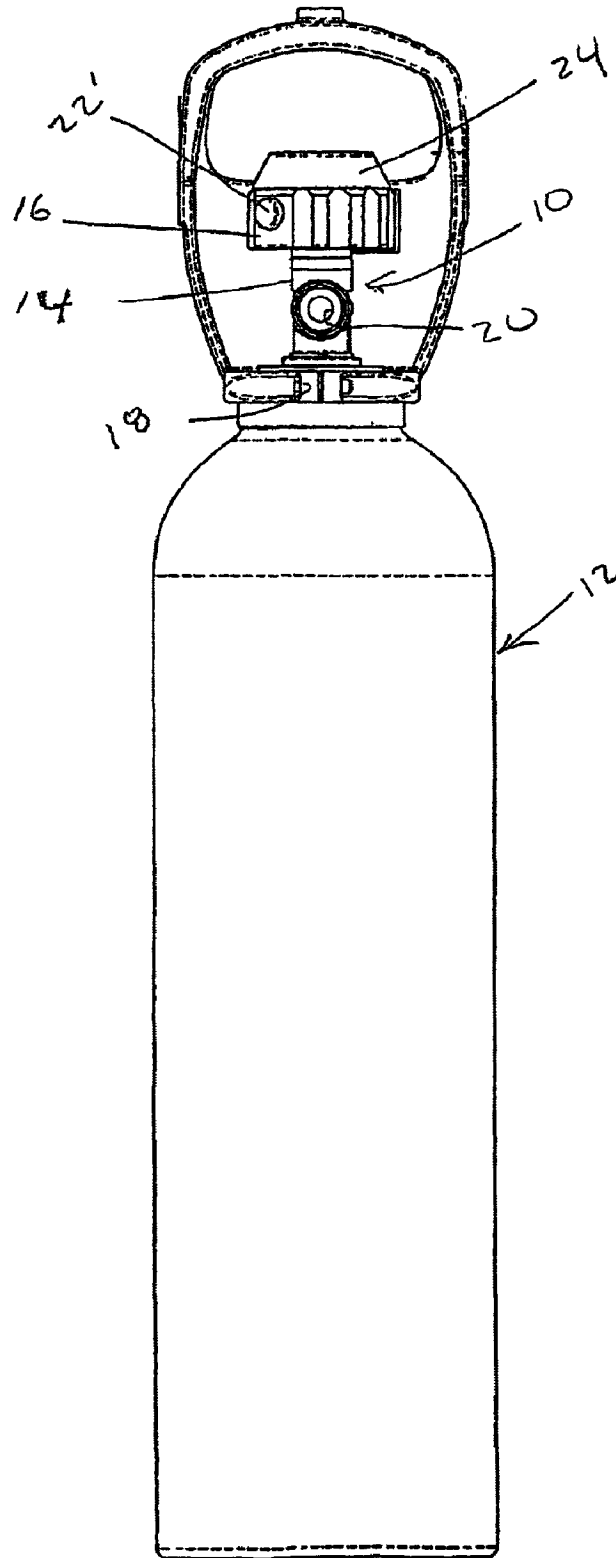


FIG. 3

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