

- [54] **CLOSED-LOOP INFUSION SYSTEM, BOTH METHOD AND APPARATUS, BASED ON REAL TIME URINE MEASUREMENT**
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[57] **ABSTRACT**

A closed loop system for controlled infusion of fluids, medication or diagnostic substances into a patient based on real time measurement of urine output. Proper urine flow techniques and a self compensating drop count apparatus provide accurate representation as to cumulative number of drops and flow rate, with drop volume variations being compensated by a control algorithm which corrects computer parameters reflecting drop volume to correspond with urine volume measured. This real time urine flow rate is compared with a preset, desired flow rate to develop an error signal which is processed by a computer. Such processing includes modification by a PID control algorithm which governs infusion of fluids into the patient to effect the proper fluid resuscitation, medication or diagnostic treatment.

[56] **References Cited**

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22 Claims, 2 Drawing Figures

