



US006976487B1

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

(10) **Patent No.:** **US 6,976,487 B1**  
(45) **Date of Patent:** **Dec. 20, 2005**

(54) **VENTILATORY METHOD UTILIZING BODY LENGTH-BASED PARAMETER CALCULATIONS**

(75) Inventors: **Richard J. Melker**, Gainesville, FL (US); **Michael J. Banner**, Gainesville, FL (US); **Samsun Lampotang**, Gainesville, FL (US); **Paul B. Blanch**, Alachua, FL (US); **Neil R. Euliano**, Gainesville, FL (US); **Ronald G. Carovano**, Gainesville, FL (US)

(73) Assignee: **University of Florida Research Foundation, Inc.**, Gainesville, FL (US)

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

4,713,888 A	12/1987	Broselow
4,805,613 A	2/1989	Bird
4,823,469 A	4/1989	Broselow
4,823,787 A	4/1989	Adahan
4,870,960 A	10/1989	Hradek
4,905,688 A	3/1990	Vicenzi et al.
4,926,885 A *	5/1990	Hinkle ..... 128/898
4,941,469 A	7/1990	Adahan
4,990,894 A	2/1991	Loescher et al.
5,042,470 A *	8/1991	Kanesaka ..... 128/202.22
5,052,395 A *	10/1991	Burton et al. .... 600/455
5,092,326 A *	3/1992	Winn et al. .... 128/205.13
5,116,088 A	5/1992	Bird
5,156,145 A	10/1992	Flood et al.
5,183,038 A *	2/1993	Hoffman et al. .... 128/204.21
5,211,170 A	5/1993	Press
5,211,171 A	5/1993	Choromokos
5,303,699 A	4/1994	Bonassa et al.

(Continued)

(21) Appl. No.: **09/457,709**

(22) Filed: **Dec. 10, 1999**

**Related U.S. Application Data**

(63) Continuation of application No. 08/516,478, filed on Aug. 17, 1995, now Pat. No. 6,000,396.

(51) **Int. Cl.**<sup>7</sup> ..... **A61M 15/00**

(52) **U.S. Cl.** ..... **128/200.24**; 128/204.21; 128/204.23

(58) **Field of Search** ..... 128/204.18, 204.21, 128/204.23, 205.23, 205.22, 204.26

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

4,141,354 A	2/1979	Ismach
4,188,946 A *	2/1980	Watson et al. .... 128/204.22
4,326,513 A *	4/1982	Schulz et al. .... 128/203.14
4,393,869 A	7/1983	Boyarsky et al.
4,493,614 A	1/1985	Chu et al.
4,622,963 A	11/1986	Ansite
D287,050 S	12/1986	Perkins et al.
4,651,731 A	3/1987	Vicenzi et al.
4,658,832 A	4/1987	Brugnoli

**FOREIGN PATENT DOCUMENTS**

EP	0753320	*	1/1997	.....	128/204.23
----	---------	---	--------	-------	------------

(Continued)

**OTHER PUBLICATIONS**

Haluszka et al., Application of Whole Body Plethysmography in Examination of Pediatric Lungs, 1977.\*

(Continued)

*Primary Examiner*—Aaron J. Lewis  
(74) *Attorney, Agent, or Firm*—Saliwanchik, Lloyd & Saliwanchik

(57) **ABSTRACT**

A method and apparatus for operating a ventilator in a primary electronic mode or in a back-up pneumatic mode during primary electronic mode failure. A method and apparatus for operating a ventilator in an advanced mode, having a number of ventilatory modes, or in a basic mode, having a limited number of ventilatory modes is also disclosed.

**49 Claims, 16 Drawing Sheets**

