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United States Patent [19] Gravenstein et al.

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[54] **TRANSTRACHEAL ENERGY APPLICATION AND SENSING SYSTEM FOR INTUBATION: METHOD AND APPARATUS**

4,244,362	1/1981	Anderson	128/207.14
4,567,882	2/1986	Heller	600/120
4,943,770	7/1990	Ashley-Rollman et al.	128/737
5,125,406	6/1992	Goldstone et al.	128/733
5,257,636	11/1993	White	128/897
5,445,144	8/1995	Wodicka et al.	128/207.14

[75] Inventors: **Dietrich Gravenstein**, Salt Lake City, Utah; **Nikolaus Gravenstein**, Gainesville, Fla.; **Richard J. Melker**, Gainesville, Fla.; **Samsun Lampotang**, Gainesville, Fla.; **Anwer Sultan**, Gainesville, Fla.

Primary Examiner—Aaron J. Lewis
Attorney, Agent, or Firm—Miles & Stockbridge; Dennis P. Clarke

[73] Assignee: **University of Florida**, Gainesville, Fla.

[57] **ABSTRACT**

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An intubation scope assembly adapted to facilitate the positioning of an endotracheal tube in a patient comprising an electromagnetic or sound energy source which enters the vocal cords exteriorly of the neck of the patient with energy having a direction, wavelength and intensity capable of entering the trachea, substantially avoiding encompassing the entire pharynx and capable of being transmitted cephalad substantially between and/or around the vocal cords. A suitable sensor for the energy emitted by such source comprises a stylet assembly, the distal end of which can detect or collect the energy transmitted between and/or around the vocal cords and the proximal end of which can monitor the detected or collected energy to thereby locate the vocal cords for positioning an endotracheal tube therebetween. A system and method of intubating a patient with the foregoing assembly are also disclosed.

Related U.S. Application Data

[62] Division of application No. 08/319,543, Oct. 7, 1994, Pat. No. 5,560,351.

[51] **Int. Cl.⁷** **A61M 16/00**

[52] **U.S. Cl.** **128/200.26**; 128/207.14; 128/205.23

[58] **Field of Search** 128/200.26, 205.23, 128/207.14, 207.15

[56] **References Cited**

U.S. PATENT DOCUMENTS

4,063,561 12/1977 McKenna 128/207.15

3 Claims, 4 Drawing Sheets

