

- [54] **BIPOLAR ELECTRODES FOR FETAL HEART-RATE RECORDING DURING LABOR**
- [76] Inventor: **Mario Zilianti**, Apartado del Este 62320, Caracas, Venezuela
- [21] Appl. No.: **50,016**
- [22] Filed: **Jun. 19, 1979**
- [51] Int. Cl.³ **A61B 5/04**
- [52] U.S. Cl. **128/642; 128/643**
- [58] Field of Search 128/642, 643, 784, 785, 128/788, 802, 635

[56] **References Cited**

U.S. PATENT DOCUMENTS

2,660,175	11/1953	Thrasher et al.	128/643
3,505,993	4/1970	Lewes et al.	128/643
3,534,733	10/1970	Phipps et al.	128/643
4,157,710	6/1979	Abitol	128/642

FOREIGN PATENT DOCUMENTS

2152808	4/1973	Fed. Rep. of Germany	128/643
1535432	8/1968	France	128/643
1260919	1/1972	United Kingdom	128/642
162281	10/1962	U.S.S.R.	128/642

OTHER PUBLICATIONS

Rosen et al., "The Human Fetal Electroencephalogram", *Am. J. Ob. & Gyn.*, vol. 104, pp. 1057-1060, 1969.

Primary Examiner—Lee S. Cohen
Attorney, Agent, or Firm—Ladas & Parry

[57] **ABSTRACT**

A bipolar electrode for fetal heart-rate recording comprises a flexible cup having a base portion and a substantially frusto-conical portion secured to and flaring outwardly from the base portion and defining a rim of the cup. The electrode further comprises a first electrode pole which is pointed and is of rod form and extends into the interior of the cup from the base portion. A second electrode pole is exposed to the exterior of the cup. The cup is applied to the fetal scalp and upon pressing the rim of the cup into contact with the fetal scalp the point of the first electrode pole pierces the fetal skin and the cup becomes adhered by suction to the fetal scalp while the second electrode pole makes electrical contact with maternal liquid.

6 Claims, 5 Drawing Figures

