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United States Patent [19]

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Cheney, II et al.

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[54] **METHOD OF FABRICATING THIN FILM SENSORS**

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William P. Van Antwerp, Los Angeles, both of Calif.

[73] Assignee: **MiniMed Inc.**, Sylmar, Calif.

[21] Appl. No.: **212,961**

[22] Filed: **Mar. 15, 1994**

[51] Int. Cl.⁶ **B29C 65/00; B32B 31/00**

[52] U.S. Cl. **156/268; 156/286; 156/290**

[58] Field of Search **156/286, 290, 306.6, 156/297, 268, 60, 631, 632, 638; 428/901; 128/637; 204/403; 29/846**

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Primary Examiner—Michael W. Ball

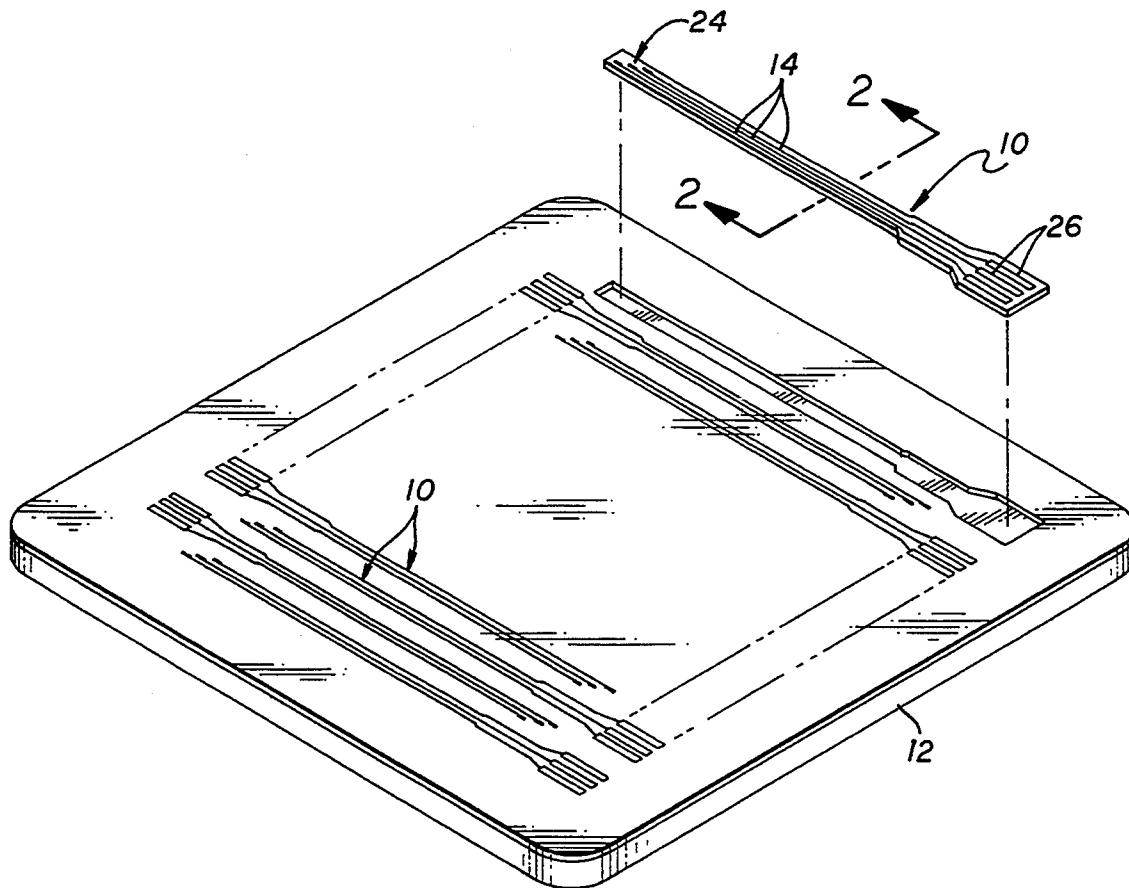
Assistant Examiner—Richard Crispino

Attorney, Agent, or Firm—Kelly Bauersfeld & Lowry

[57] **ABSTRACT**

An improved method is provided for making thin film electrochemical sensors, such as subcutaneous glucose sensors used to monitor blood glucose levels in a diabetic patient. The fabrication method comprises placing a thin film base layer of insulative material onto a rigid flat substrate, with a curable adhesive interposed between the perimeter of the base layer and substrate to define a shallow cavity underlying a central portion of the base layer. The subassembly is subjected to heat and pressure to cure the adhesive, resulting in air expulsion from the cavity such that the central portion of the base layer is drawn into intimate contact with the substrate. Appropriate conductor elements for one or more sensors are formed on the base layer as by conventional contact mask photolithography, and a thin film cover layer of insulative material is applied thereover with apertures in the cover layer exposing distal end sensor electrodes and proximal end contact pads. The insulative cover and base layers are then cut along a line surrounding each finished sensor which is lifted and separated easily from the substrate.

13 Claims, 4 Drawing Sheets



**DEXCOM
EXHIBIT 1048**

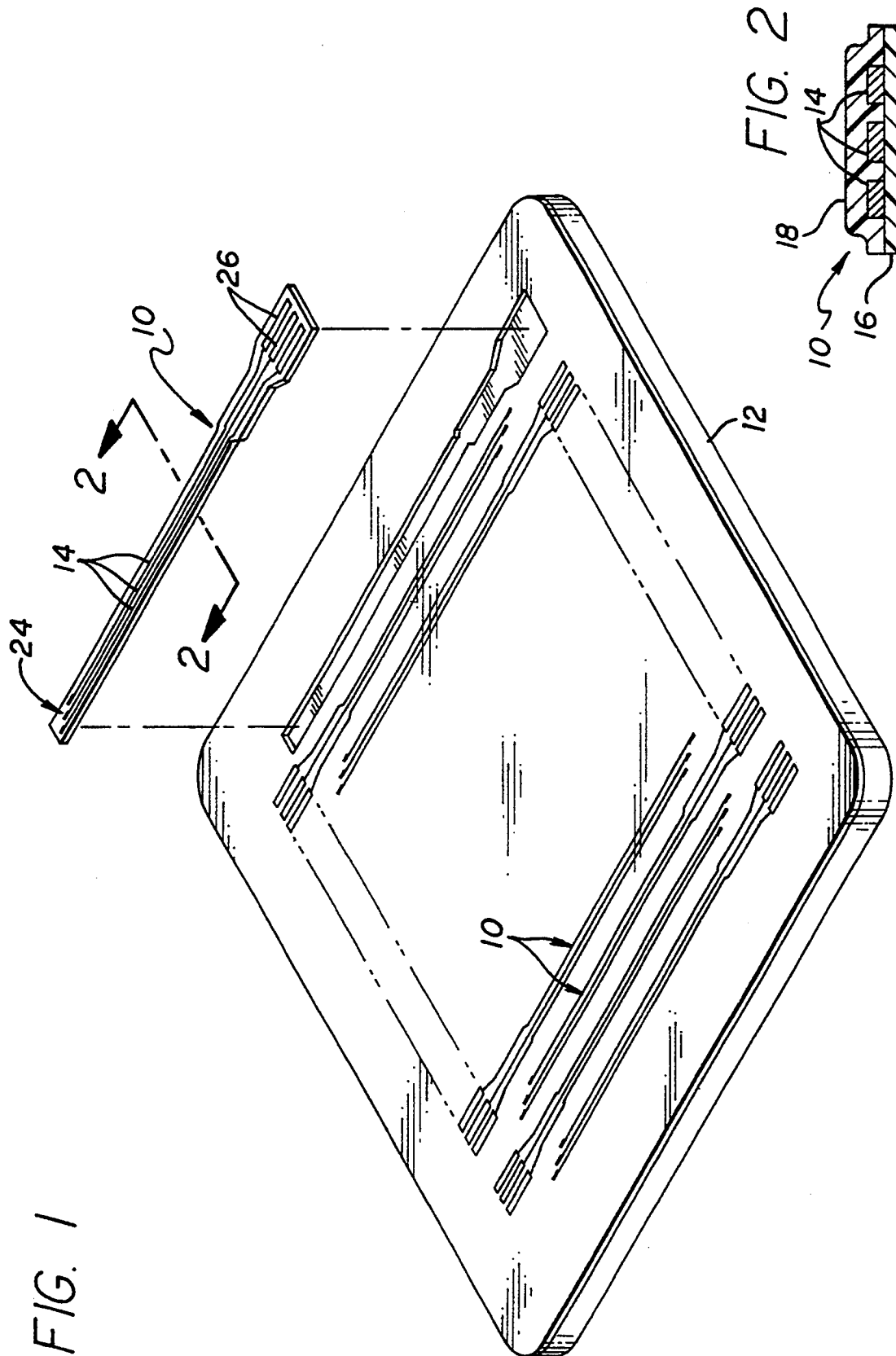


FIG. 1

FIG. 2

FIG. 3

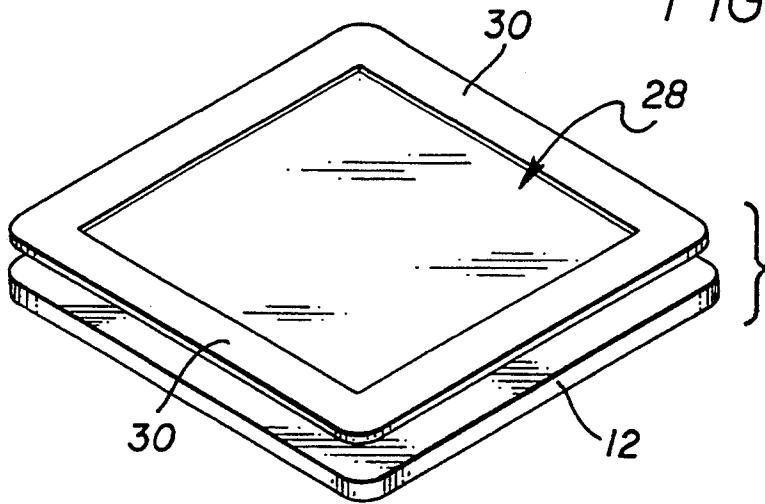


FIG. 4

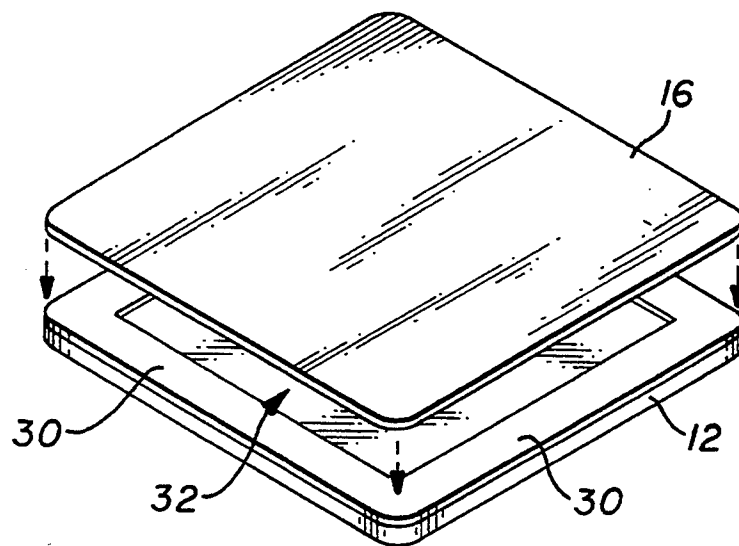


FIG. 5

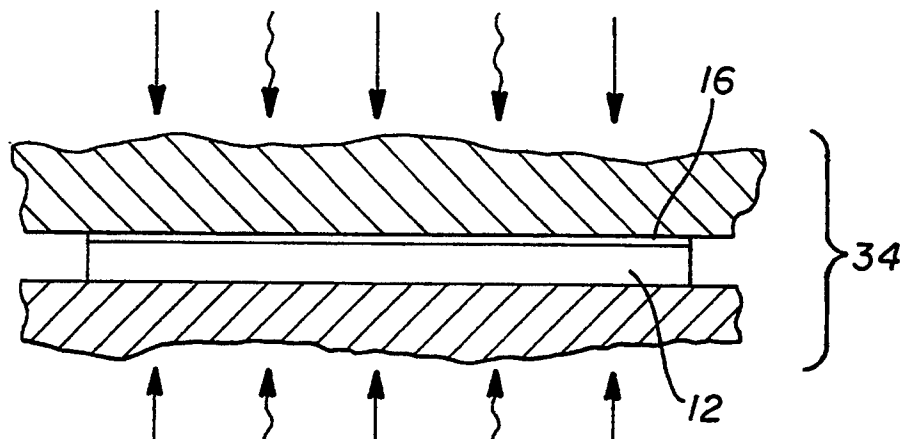


FIG. 6

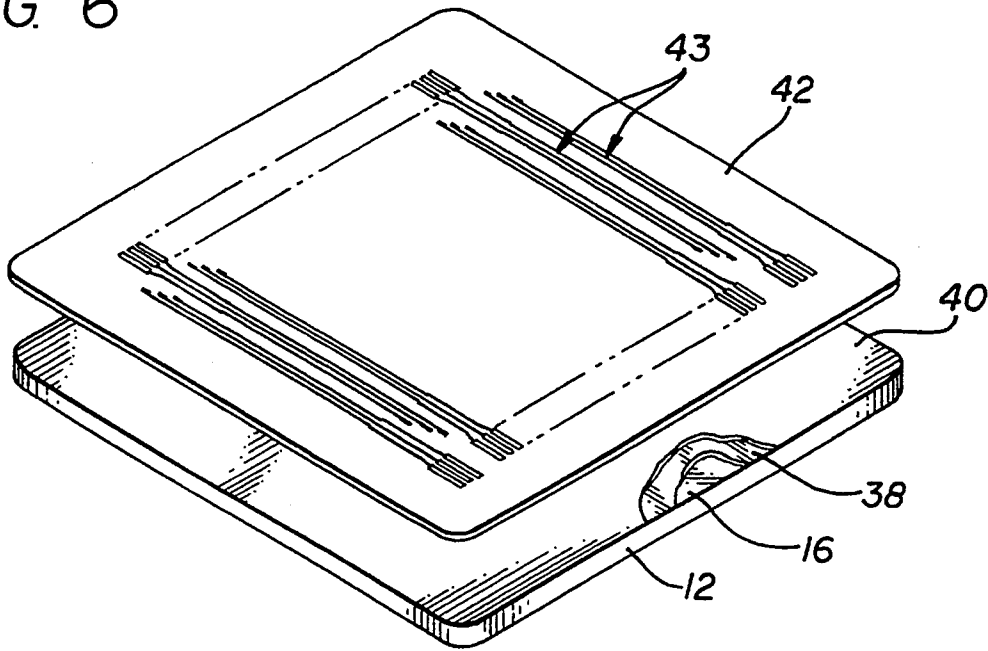


FIG. 7

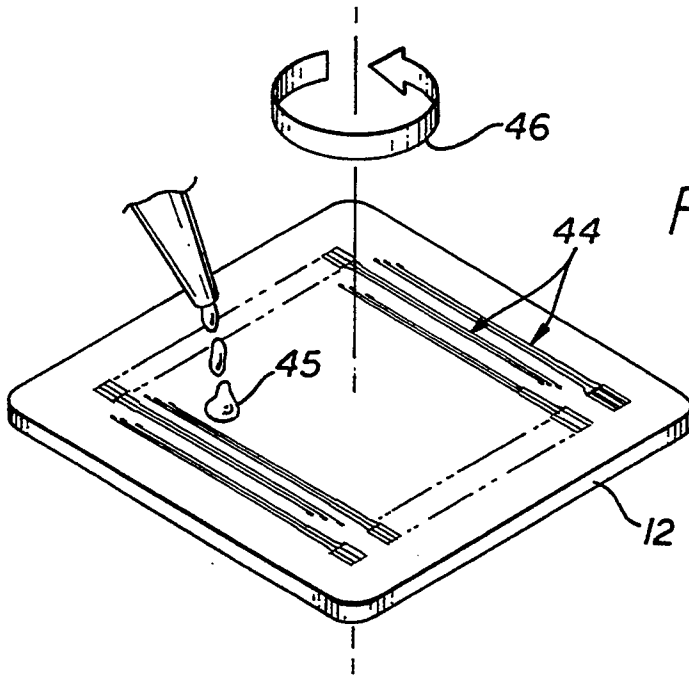
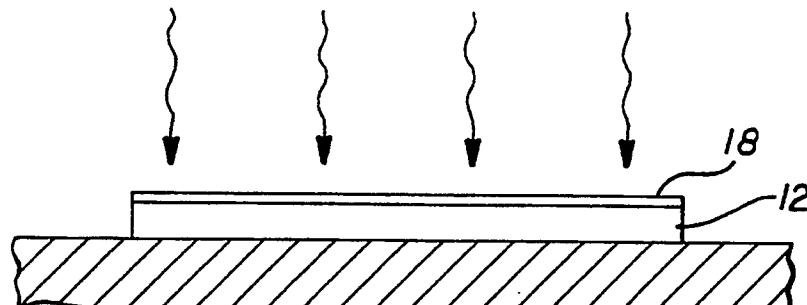


FIG. 8



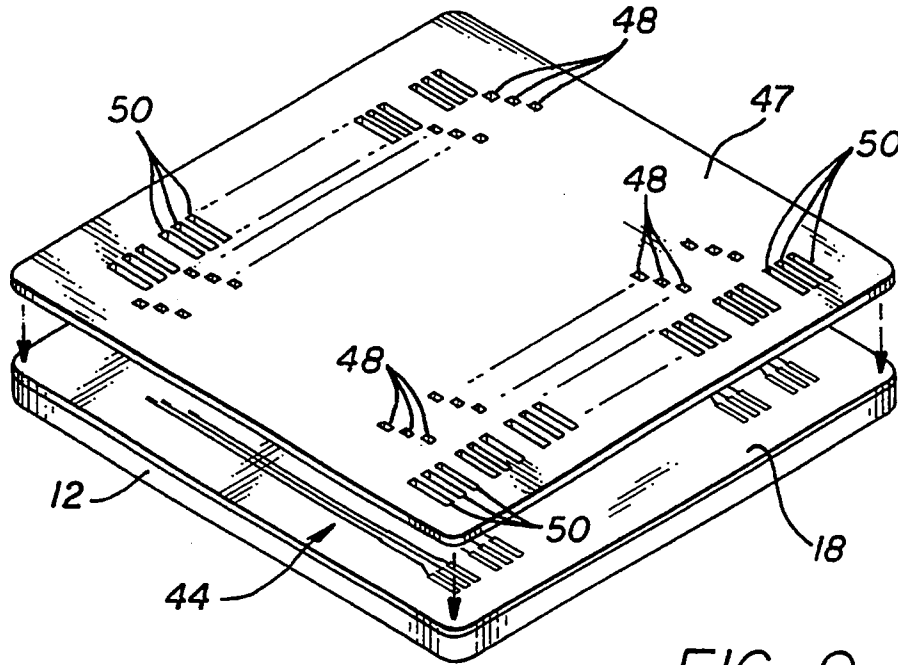


FIG. 9

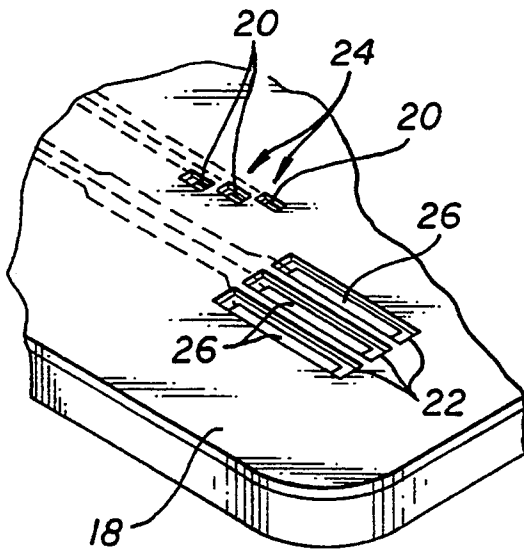


FIG. 10

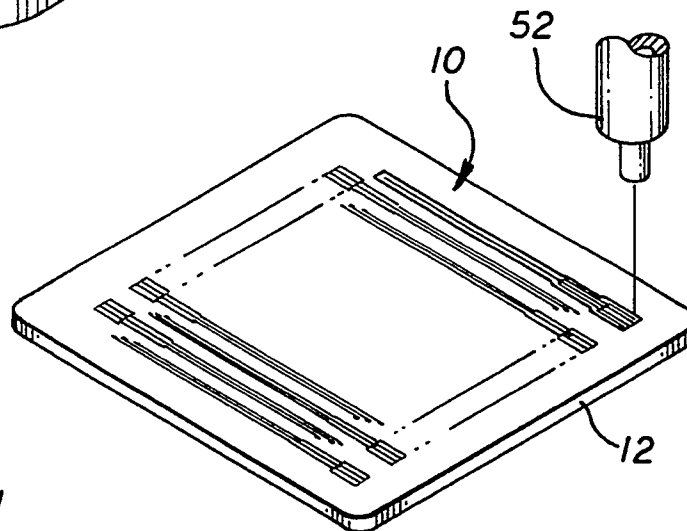


FIG. 11

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