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**United States Patent** [19]  
**Raley**

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[54] **SEGMENTED  
PHOTOPLETHYSMOGRAPHIC SENSOR  
WITH UNIVERSAL PROBE-END**

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[21] Appl. No.: **09/031,575**

[22] Filed: **Feb. 27, 1998**

[51] **Int. Cl.**<sup>7</sup> ..... **A61B 5/00**

[52] **U.S. Cl.** ..... **600/344; 600/310; 600/322**

[58] **Field of Search** ..... **600/310, 322,  
600/323, 326, 333, 344**

[56] **References Cited**

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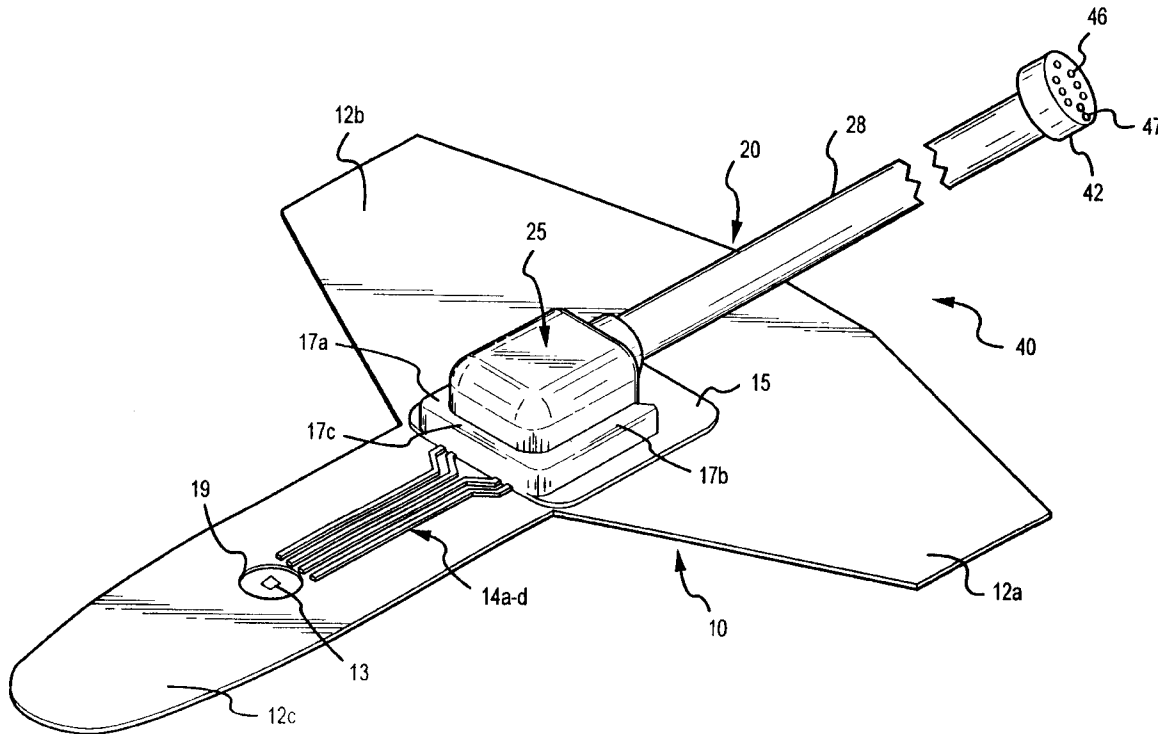
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*Attorney, Agent, or Firm*—Holme Robert & Owen LLP

[57] **ABSTRACT**

A two piece probe having a universal probe end and an interconnect cable segment provides for the use of the universal probe end with a variety of different photoplethysmographic devices. The universal probe end includes a detector, a substrate for removably affixing the probe end to a patient, a window or aperture and a connector. The interconnect cable has a connector mated to the connector on the probe end for mechanical and electrical connection of the probe-end to the interconnect cable and the photoplethysmographic monitor. The connector end of the interconnect cable also houses a plurality of emitters which are directed through the window or aperture in the probe end in order to illuminate the patient. The interconnect cable also houses the resistors or other elements which identify the type of probe, monitor manufacturer or actual emitter wavelengths. Alternatively, the emitters may be housed in the main monitor and an optical fiber may be used to direct light to the patient. An electrical conductor transmits light received by the detector back to the photoplethysmographic monitor.

**21 Claims, 7 Drawing Sheets**



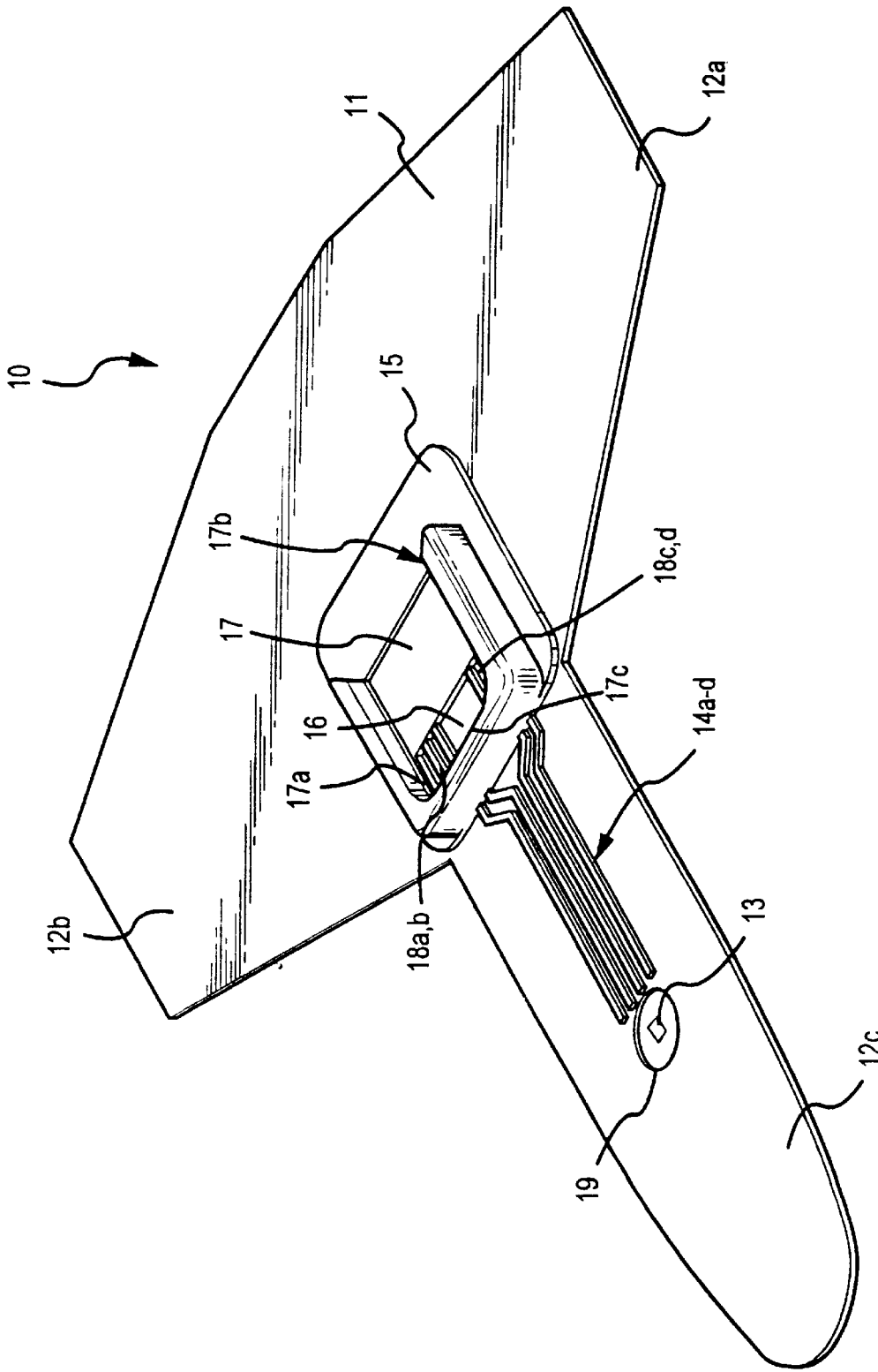


FIG. 1

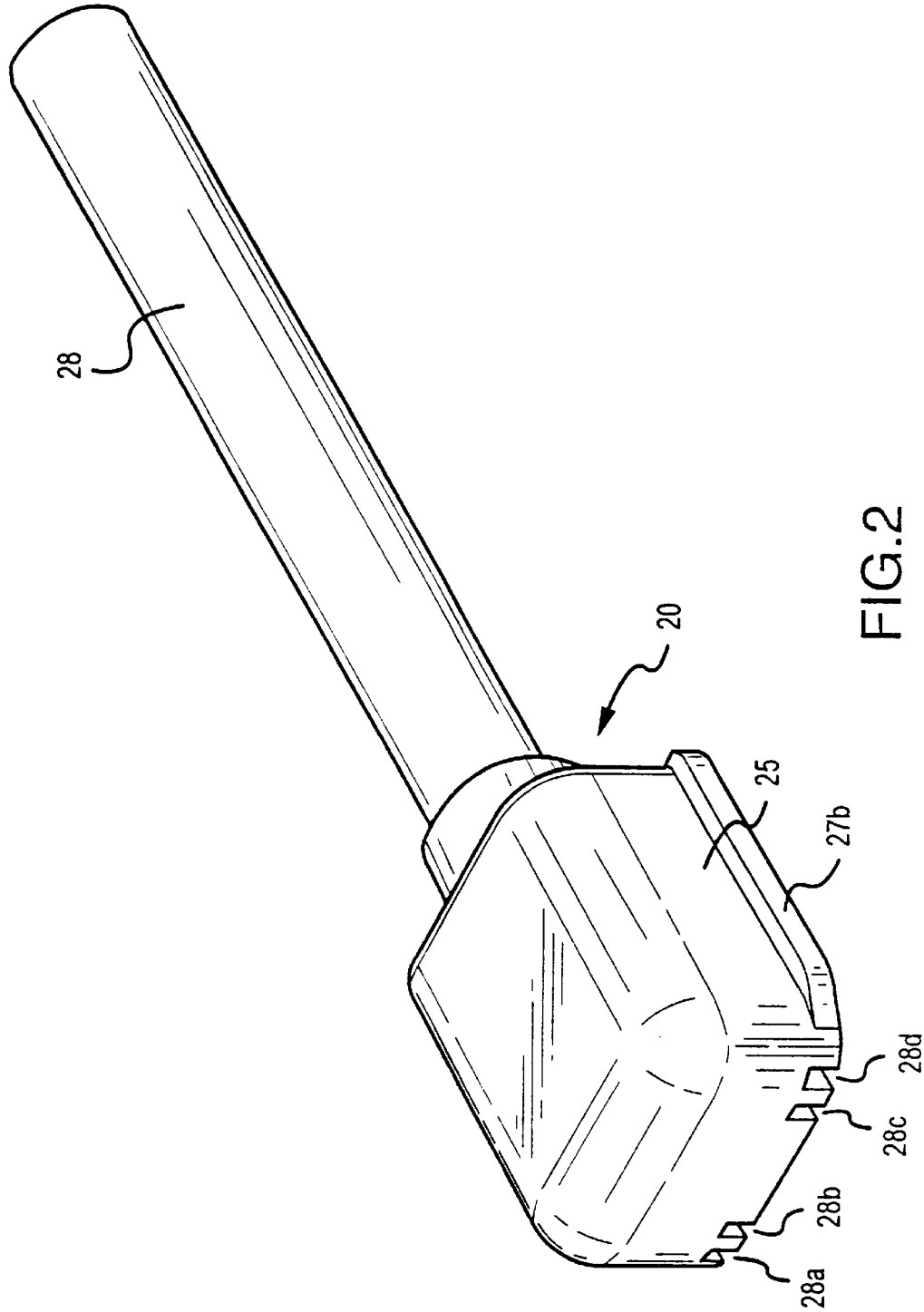
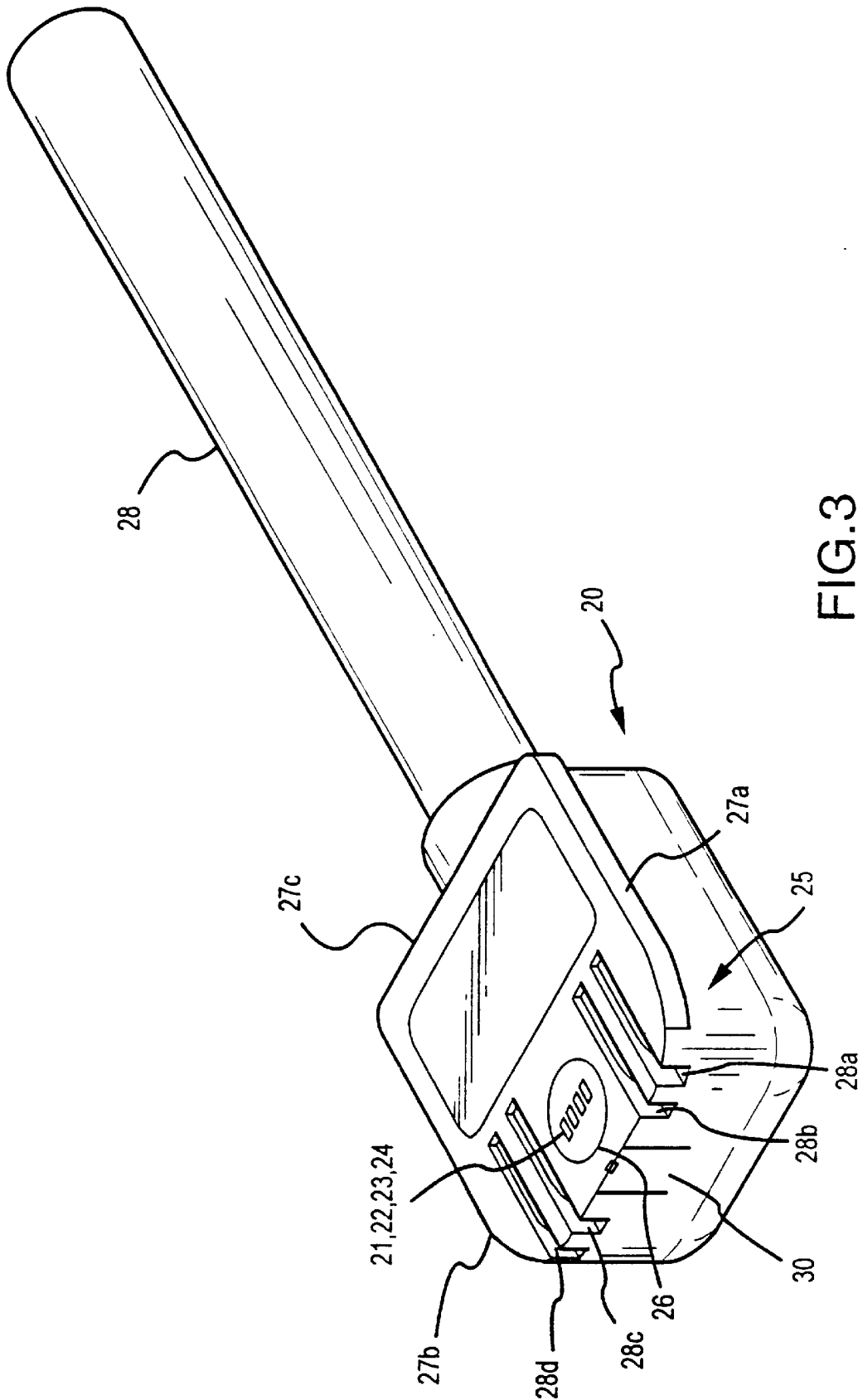


FIG. 2



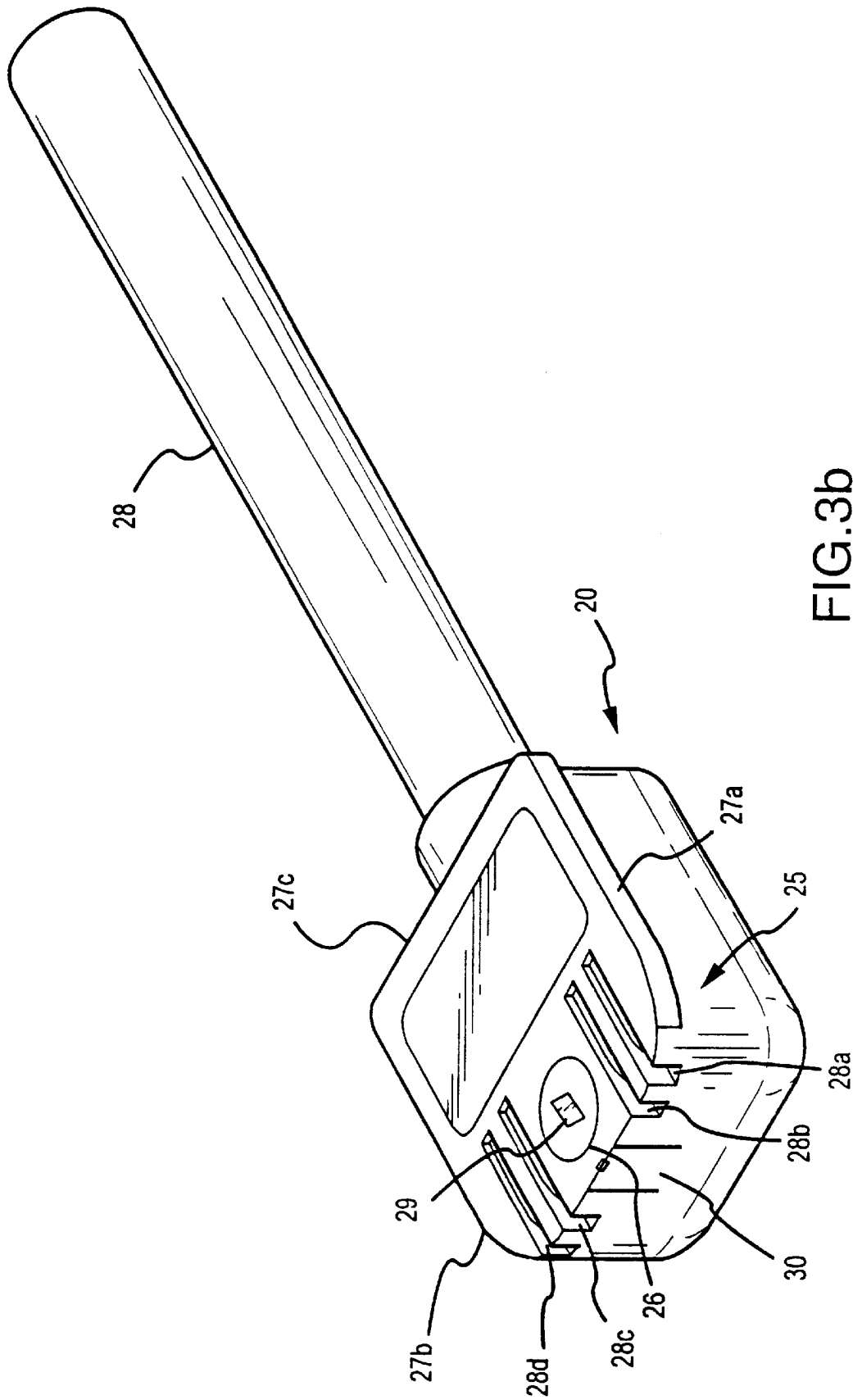


FIG. 3b

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