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United States Patent [19]

Rabenau et al.

[11] **Patent Number:** **5,972,028**[45] **Date of Patent:** **Oct. 26, 1999**[54] **STENT HOLDER/COMPRESSION INSTRUMENT**

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[21] Appl. No.: **09/006,748**

[22] Filed: **Jan. 13, 1998**

Related U.S. Application Data

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[51] **Int. Cl.⁶** **A61F 2/06**

[52] **U.S. Cl.** **623/1**

[58] **Field of Search** 623/1, 11, 12;
 606/1, 8, 194, 195, 198; 604/104

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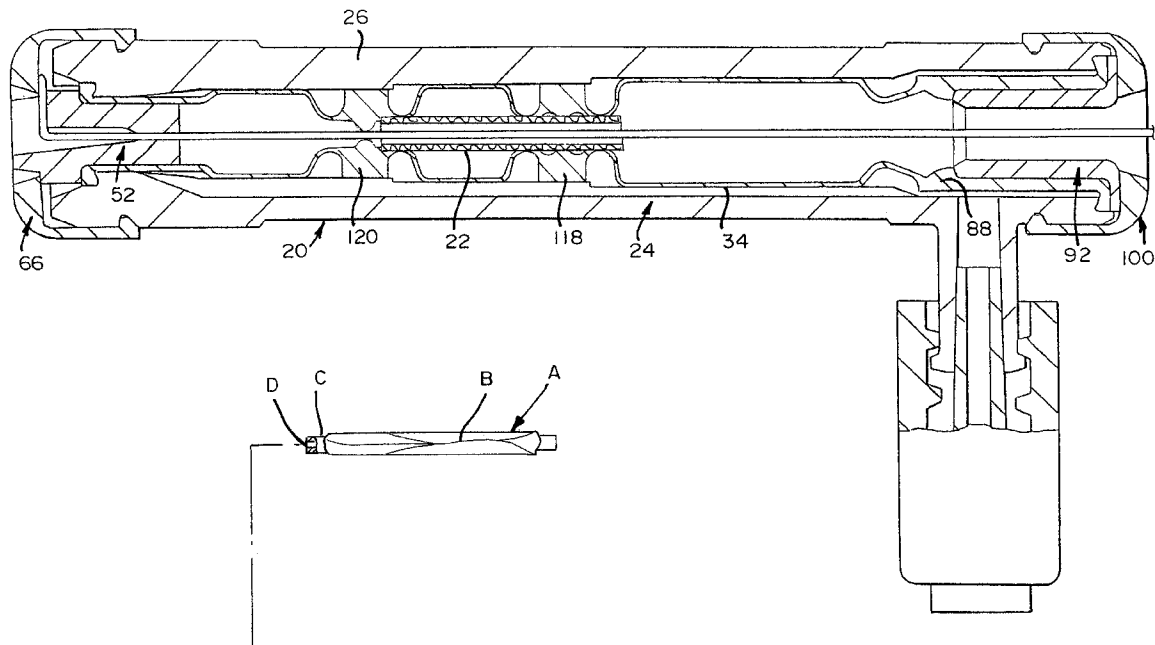
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Primary Examiner—Michael J. Milano

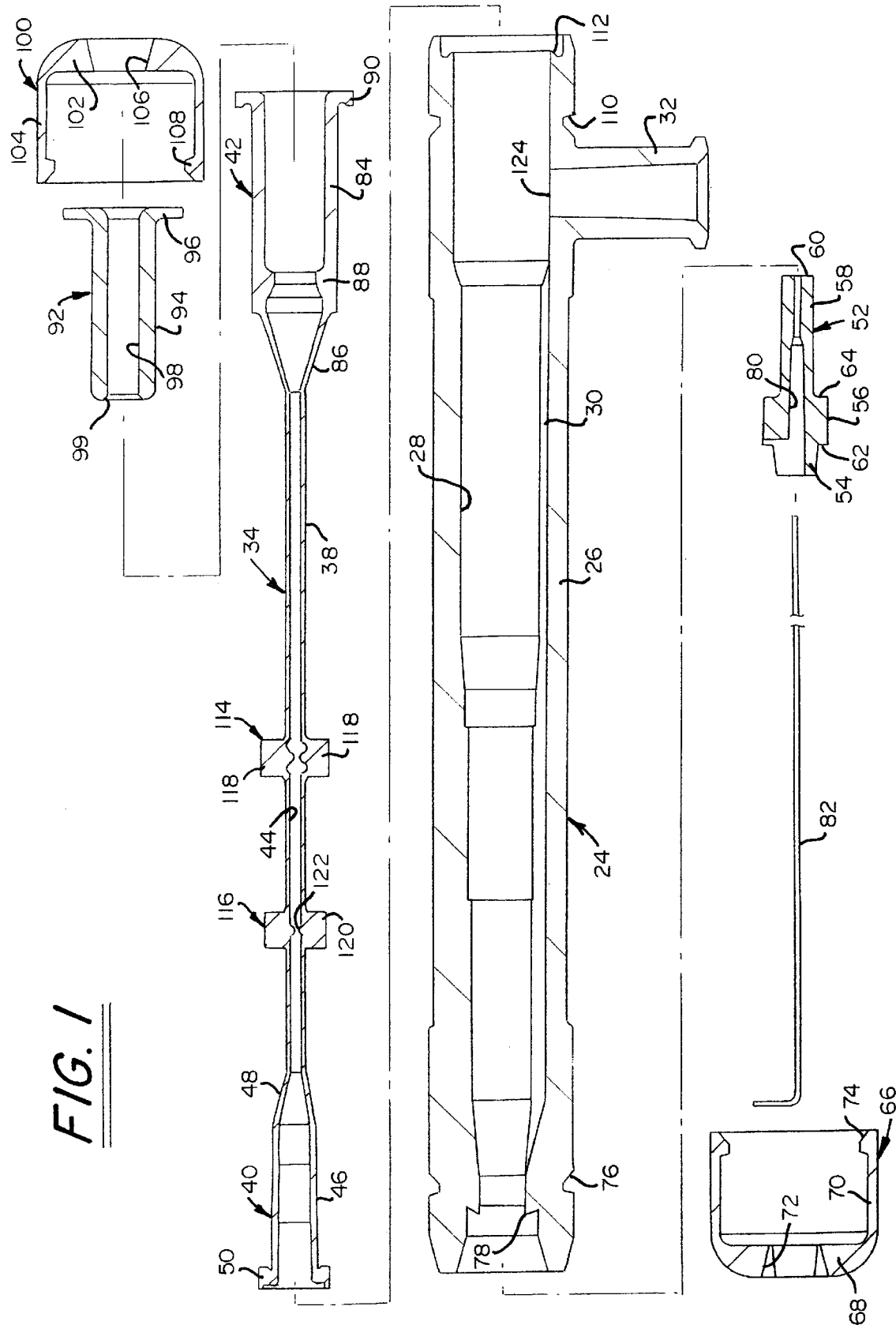
Attorney, Agent, or Firm—Trexler, Bushnell, Giangiorgi & Blackstone, Ltd.

[57] **ABSTRACT**

A novel stent compression instrument is used for holding a stent therein during shipping to a hospital and for thereafter crimping the stent onto a balloon catheter. The stent compression instrument includes a body having a central bore; a flexible diaphragm having an axial lumen and mounted within the body central bore, thereby defining a chamber between the body and the diaphragm, and first and second sealing structures for providing seals at opposite ends of the chamber. The diaphragm is formed from a generally tubular, thin wall into which the stent is placed therein and is expandable under a negative pressure condition to expand within the body and compressible under pressure to crimp the stent onto a balloon catheter. Holding structure, which is formed from at least one thickened wall portion along the length of the diaphragm wall, is associated with the diaphragm for holding the stent therewithin and to prevent movement of the stent once positioned therewithin when the diaphragm is subjected to a negative pressure condition. In the preferred embodiment, positioning structure is provided which is formed from a thickened wall portion along the length of the diaphragm wall which is spaced from the holding structure, is also associated with the diaphragm for positioning the stent within the lumen and preventing the further axial movement of the stent relative to the lumen when the stent is placed therein.

58 Claims, 10 Drawing Sheets

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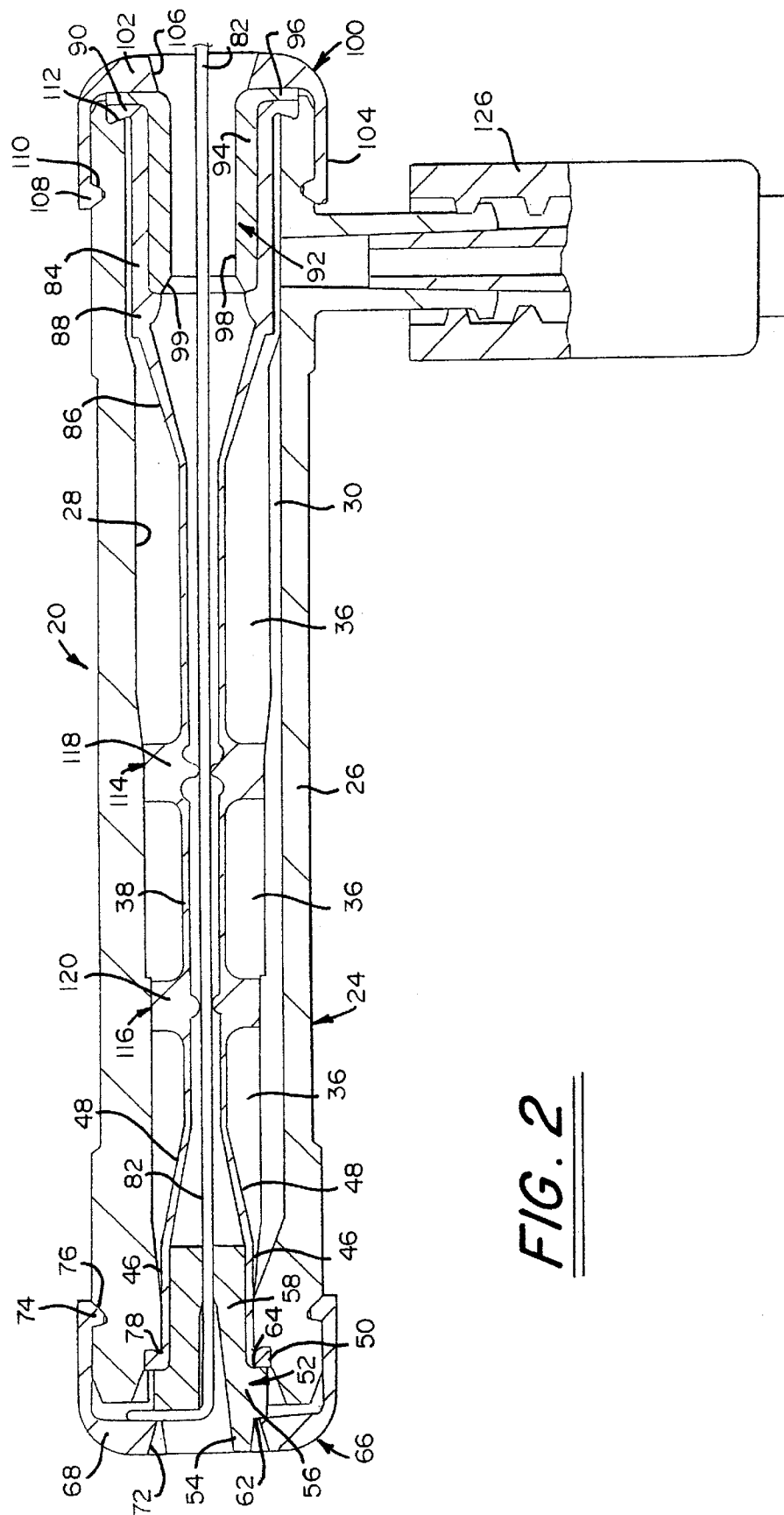


FIG. 2

FIG. 3

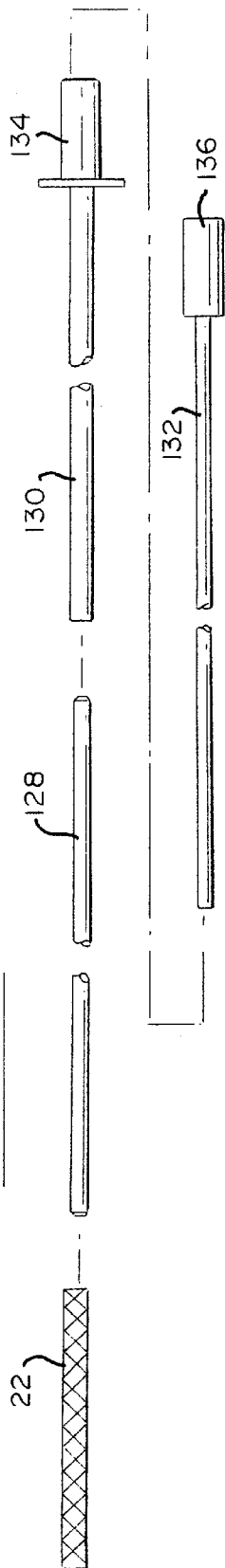


FIG. 5

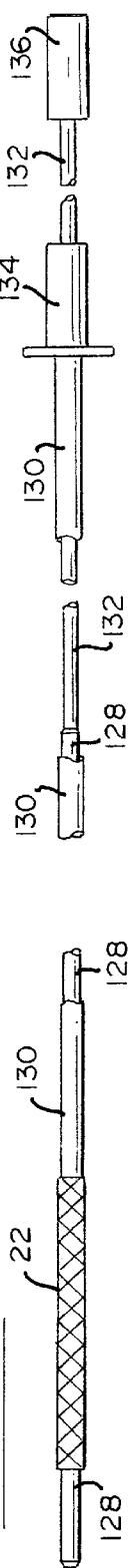


FIG. 4

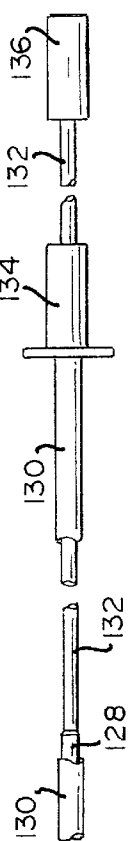
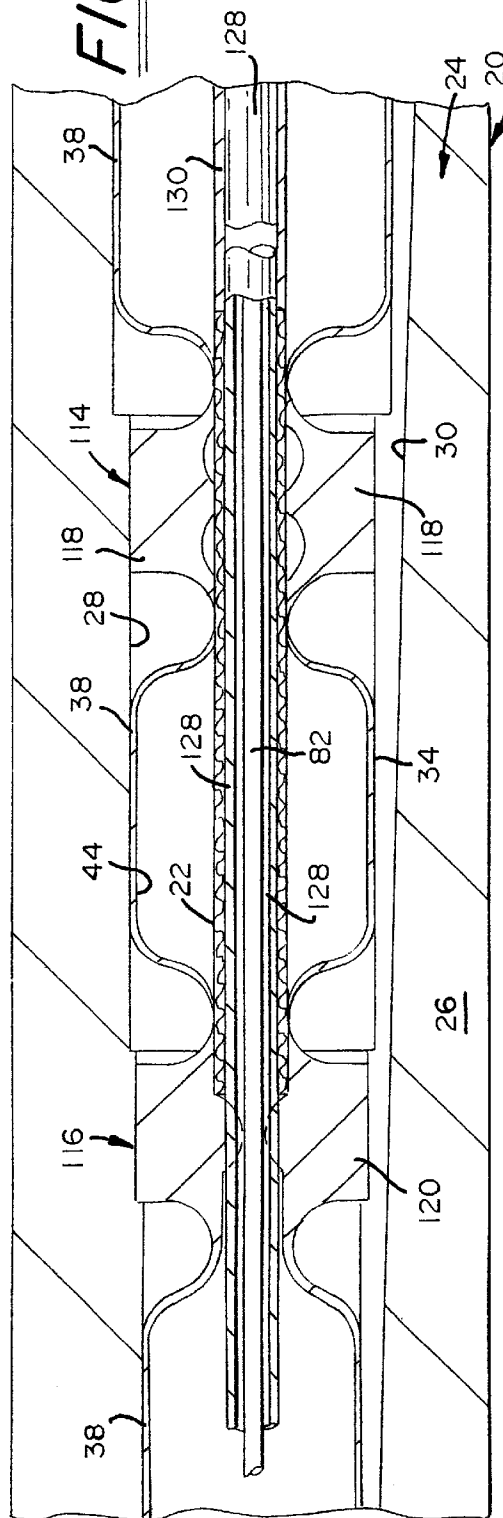
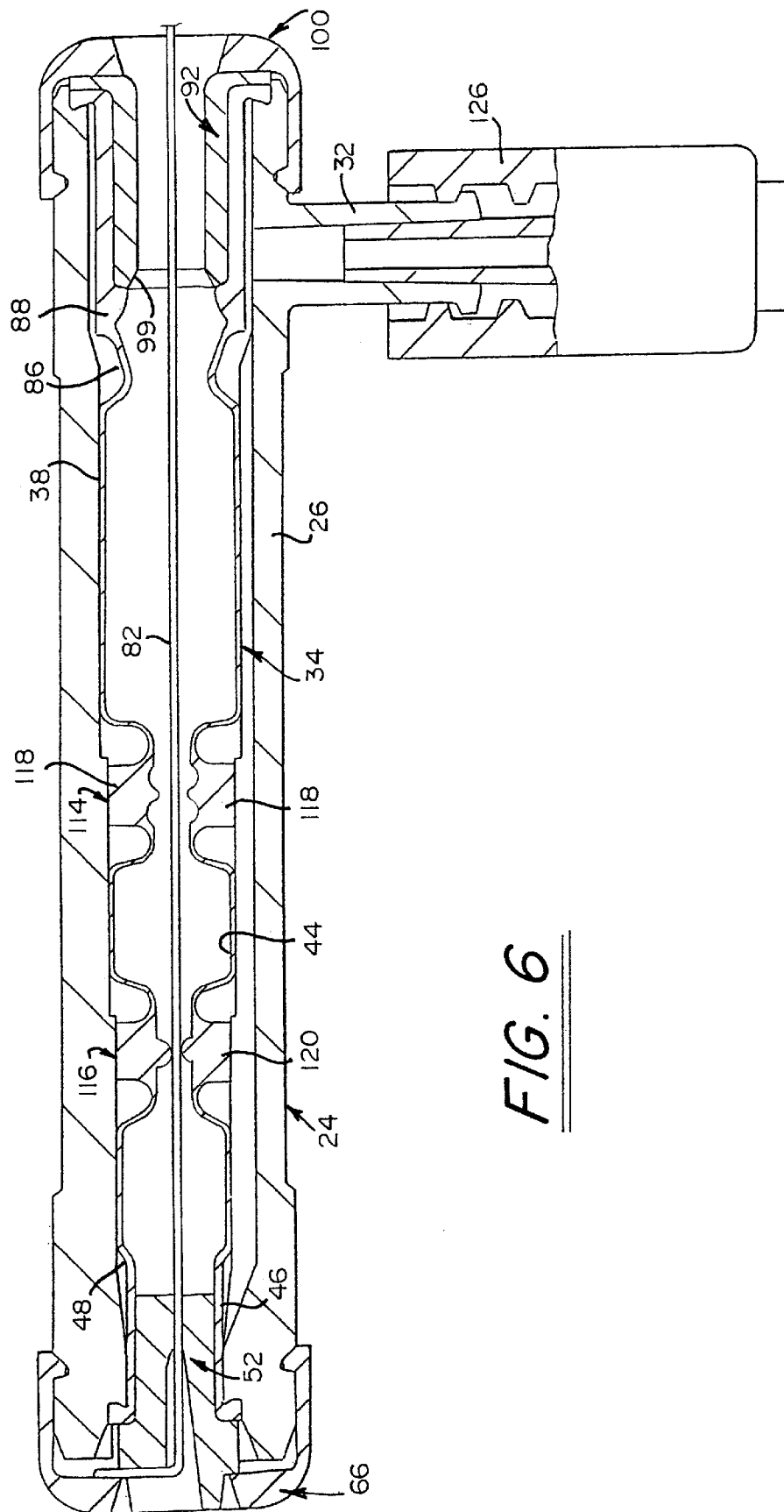


FIG. 7



FIG. 6

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