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# United States Patent [19]

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Steinke et al.

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[54] **CATHETER WITH FLEXIBLE SIDE PORT ENTRY**

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[51] Int. Cl.<sup>5</sup> ..... **A61M 29/00**

[52] U.S. Cl. .... **604/102; 604/96; 604/282; 606/194**

[58] Field of Search ..... **604/96, 102, 280, 282; 128/656-658, 772; 606/191, 192, 194**

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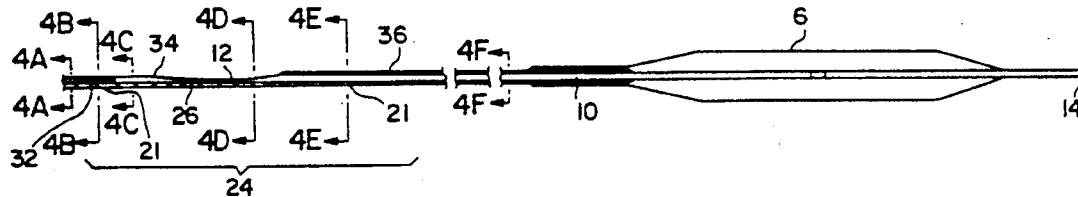
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[57] **ABSTRACT**

An improved balloon catheter is disclosed which is comprised of two jacketed spring coils placed end-to-end and joined by a linking element which contains a lumen communicating between the inflation lumens formed by the two spring coils. A side port entry to a guidewire lumen, which extends through the distal coil to the distal end of the catheter, is located in the transition region formed by the linking element. The linking element may include two polyimide tubes or may be a multilumen insert. The catheter is stiffened by a core wire which is bonded directly to the spring coils. A catheter comprised of a single spring coil with a side port entry in the coil is also disclosed, and a method and apparatus for crimping the coil to create the entry.

**12 Claims, 7 Drawing Sheets**



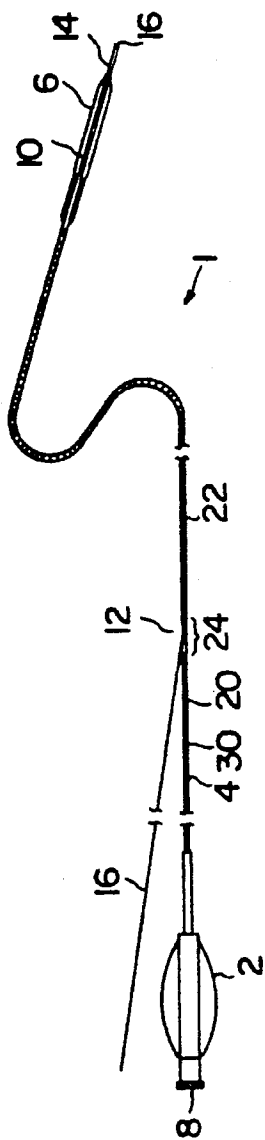


FIG. 1

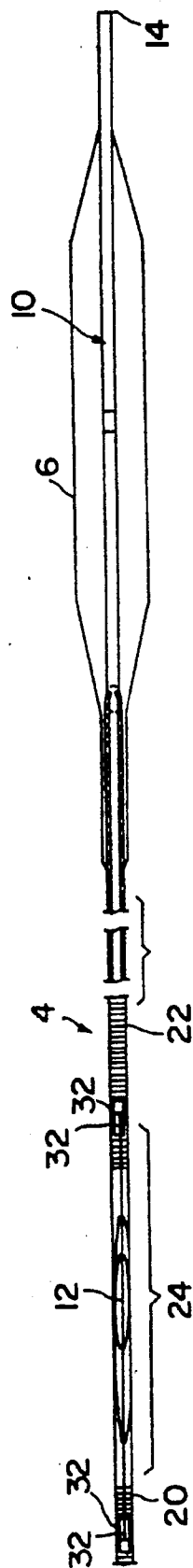
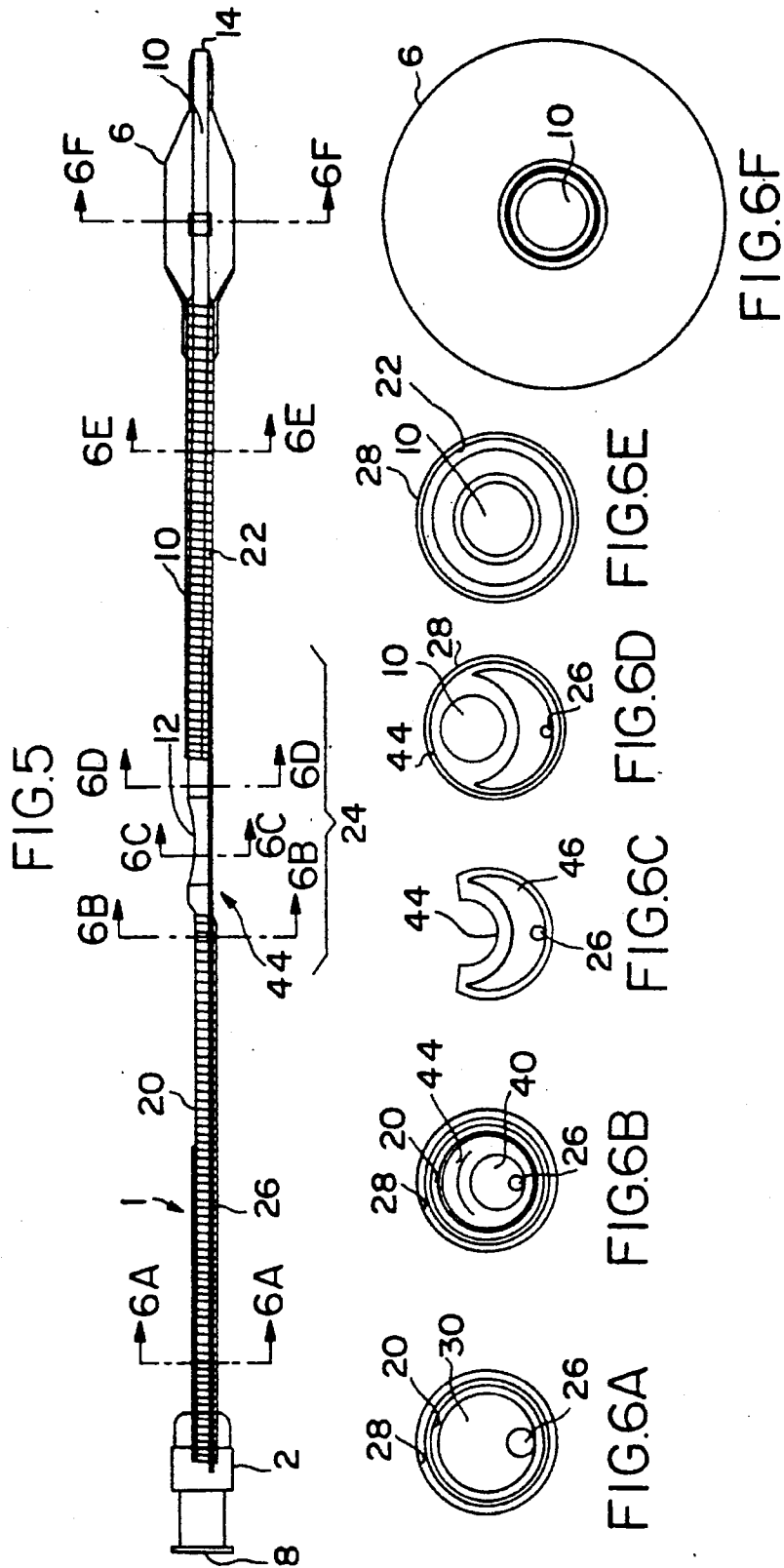
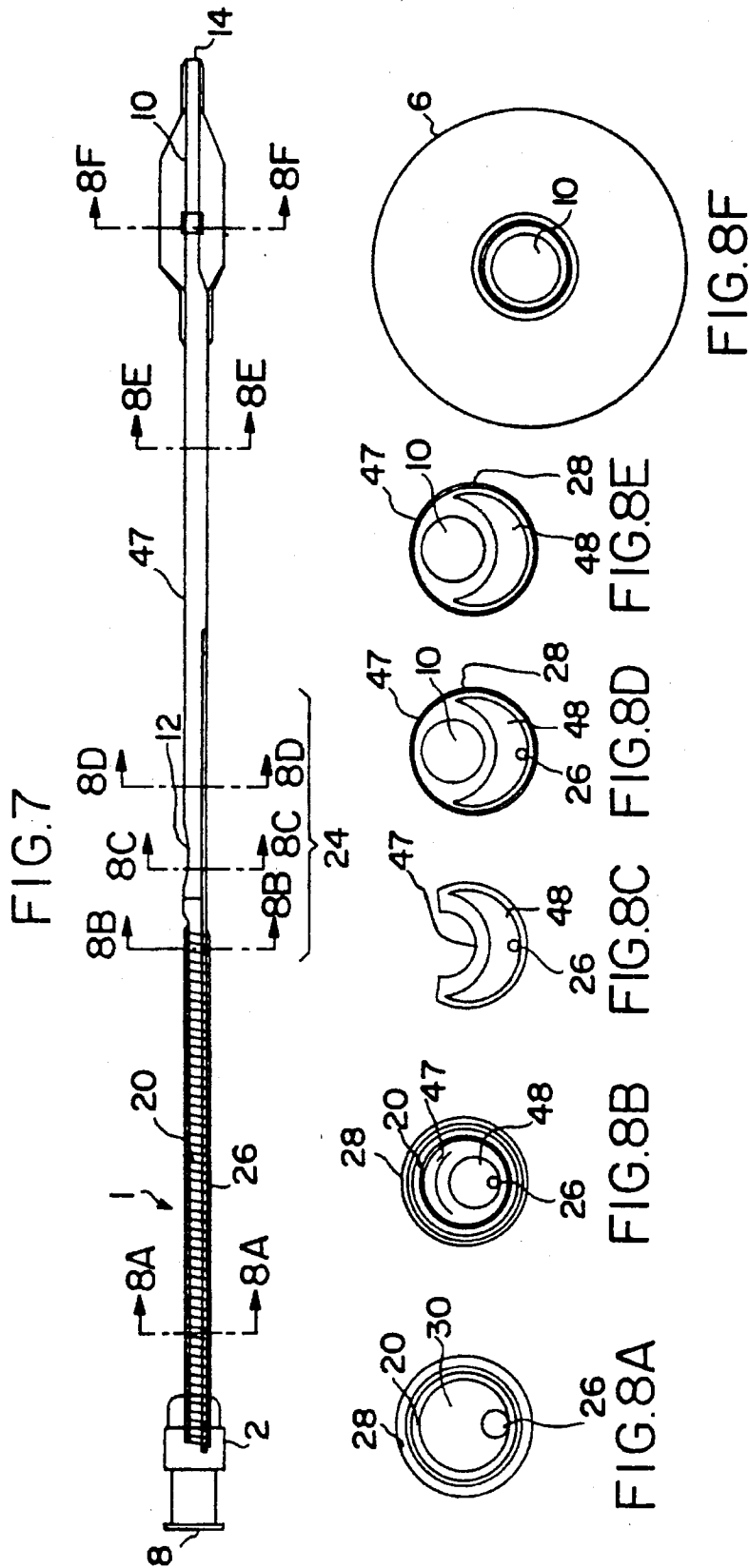


FIG. 2







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