



(12) **United States Patent**  
**Spenser et al.**

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(54) **PARAVALVULAR LEAK DETECTION, SEALING, AND PREVENTION**

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(\* ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 434 days.

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(58) **Field of Classification Search** ..... 623/2.1–2.41  
See application file for complete search history.

(57) **ABSTRACT**

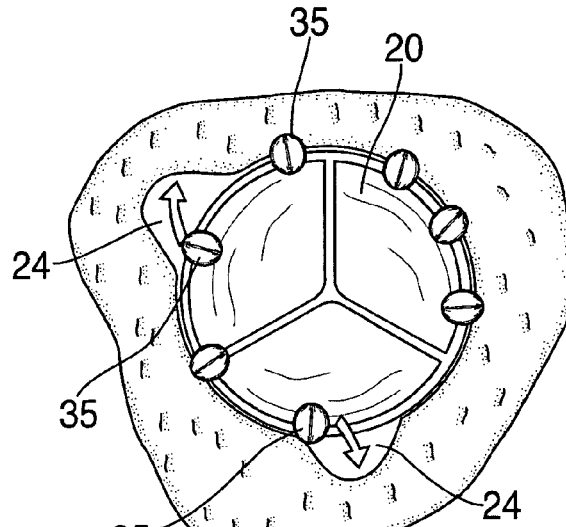
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The present invention provides a series of new percutaneous concepts of paravalvular repairs including identifying the leak location, several repair techniques and finally built-in means for leak prevention, built on percutaneous valves. A catheter-delivered device locates cavities occurring between a prosthetic valve and the wall of the body vessel where the valve is implanted, the cavities producing paravalvular leaks during diastole, the device comprising at least one of a plurality of flexible wires, the wire having attached to it a balloon, wherein the balloon is pulled by the leak through the cavity and wherein the wire then serves to mark the cavity location.

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**6 Claims, 20 Drawing Sheets**



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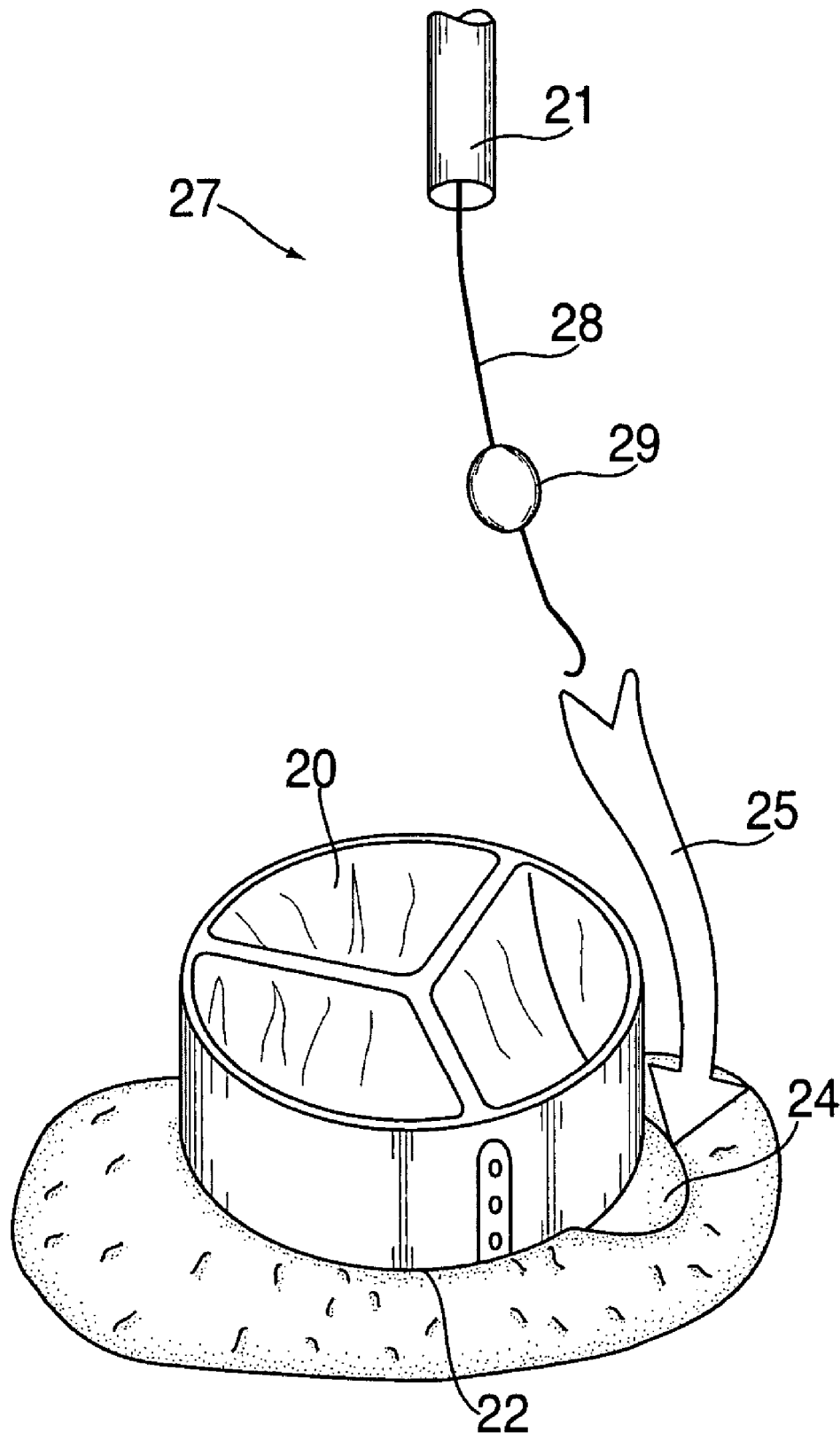


FIG. 1

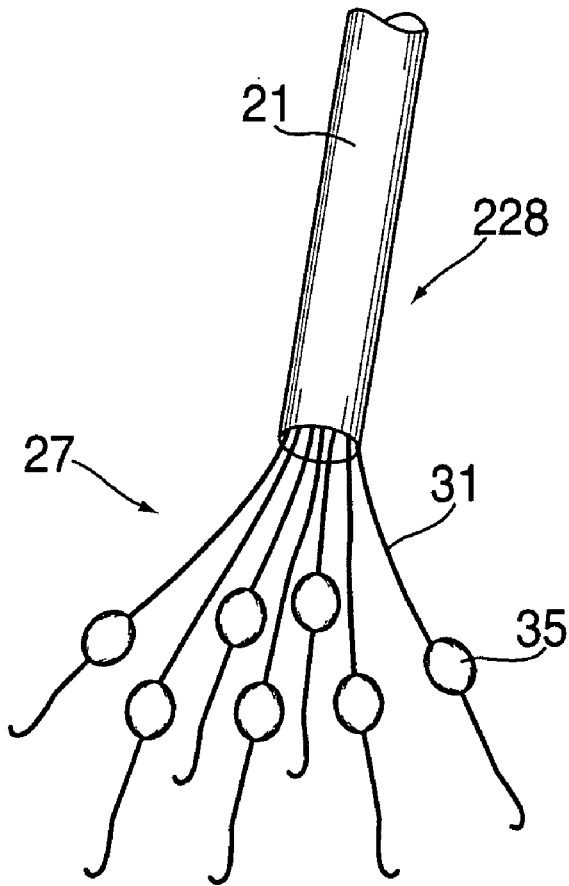


FIG. 2a

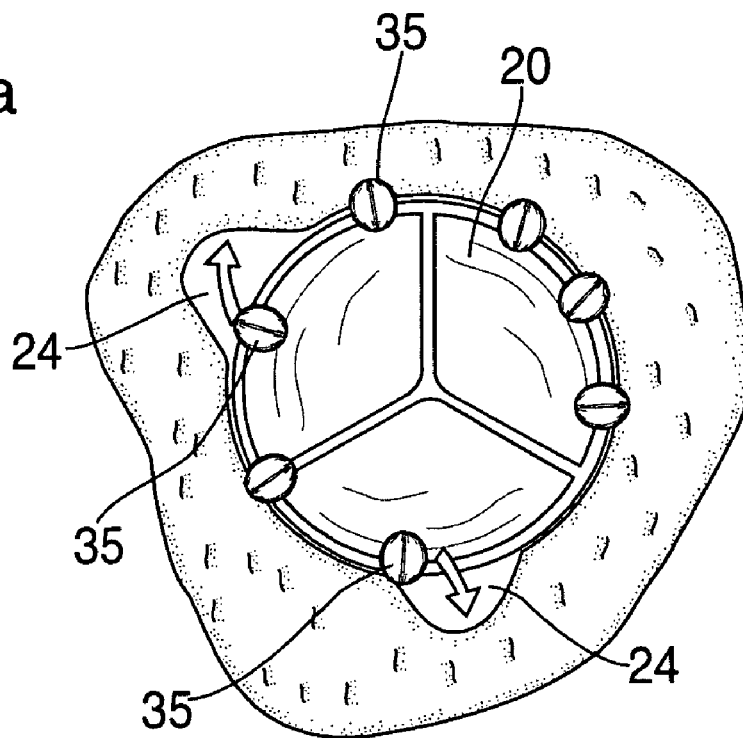


FIG. 2b

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