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Antanavich et al.

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[54] **APPARATUS FOR APPLYING TISSUE SEALANT**

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[57] **ABSTRACT**

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A device and method for applying a fibrinogen-based tissue sealant to seamlessly connect human or animal tissues or organ parts, to seal wounds, stop bleeding and the like by mixing fibrin or fibrinogen with blood clot-promoting coagulation factors are disclosed. The device includes two cylindrical compartments for separately containing the separate fluid components of the sealant preparation, which are simultaneously displaced from the respective compartments by plungers commonly depressable with the same effective strokes. The plungers may be depressed directly or by a common mechanism (e.g., rack and pinion) for accurately controlling the rate of dispensing fluid. The cylindrical compartments are of the same or different cross-sectional area and are arranged either concentrically or side-by-side. The device further includes structure for merging the two fluid components within an outer sleeve housing an inner needle. The sleeve and needle contain conduits for the flow of the two fluid sealant components as they are expressed from the respective compartments. Also disclosed are a convenient device for filling the two compartments, structure for mixing the fluid components, and for atomizing the effluent sealant fluid stream (i.e., spraying).

Related U.S. Application Data

[62] Division of application No. 08/595,936, Feb. 6, 1996, Pat. No. 5,814,022.

[51] **Int. Cl.**⁷ **A61M 37/00**

[52] **U.S. Cl.** **604/82; 604/83; 141/18**

[58] **Field of Search** 604/191, 82, 83, 604/85, 187, 86; 222/137, 145.6, 153.09, 459, 135; 239/399; 606/213, 214; 141/18, 20; 206/219, 220

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13 Claims, 7 Drawing Sheets

