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(19) **United States**(12) **Patent Application Publication****Dove et al.**(10) **Pub. No.: US 2013/0310929 A1**(43) **Pub. Date: Nov. 21, 2013**(54) **METHODS OF CONDITIONING SHEET  
BIOPROSTHETIC TISSUE**

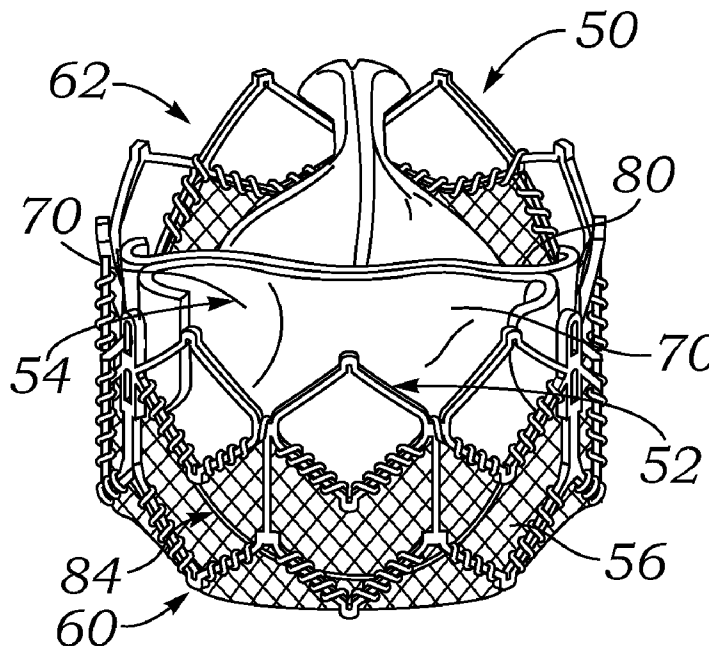
(60) Provisional application No. 61/316,801, filed on Mar. 23, 2010, provisional application No. 61/381,858, filed on Sep. 10, 2010.

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Irvine, CA (US)**Publication Classification**(72) Inventors: **Jeffrey S. Dove**, Santa Ana, CA (US); **Bin Tian**, Irvine, CA (US); **Ralph Schneider**, Trabuco Canyon, CA (US); **Jeffrey S. Cohen**, Irvine, CA (US); **Ivan Jankovic**, Costa Mesa, CA (US); **John F. Migliazza**, Belmont Shore, CA (US); **Gregory A. Wright**, Orange, CA (US); **James Young**, Ladera Ranch, CA (US); **Louis A. Campbell**, Santa Ana, CA (US)(51) **Int. Cl.**  
**A61F 2/24** (2006.01)(52) **U.S. Cl.**  
CPC ..... **A61F 2/2415** (2013.01)  
USPC ..... **623/2.13**; 264/299; 264/138(73) Assignee: **EDWARDS LIFESCIENCES  
CORPORATION**, Irvine, CA (US)(21) Appl. No.: **13/950,154**(22) Filed: **Jul. 24, 2013****Related U.S. Application Data**

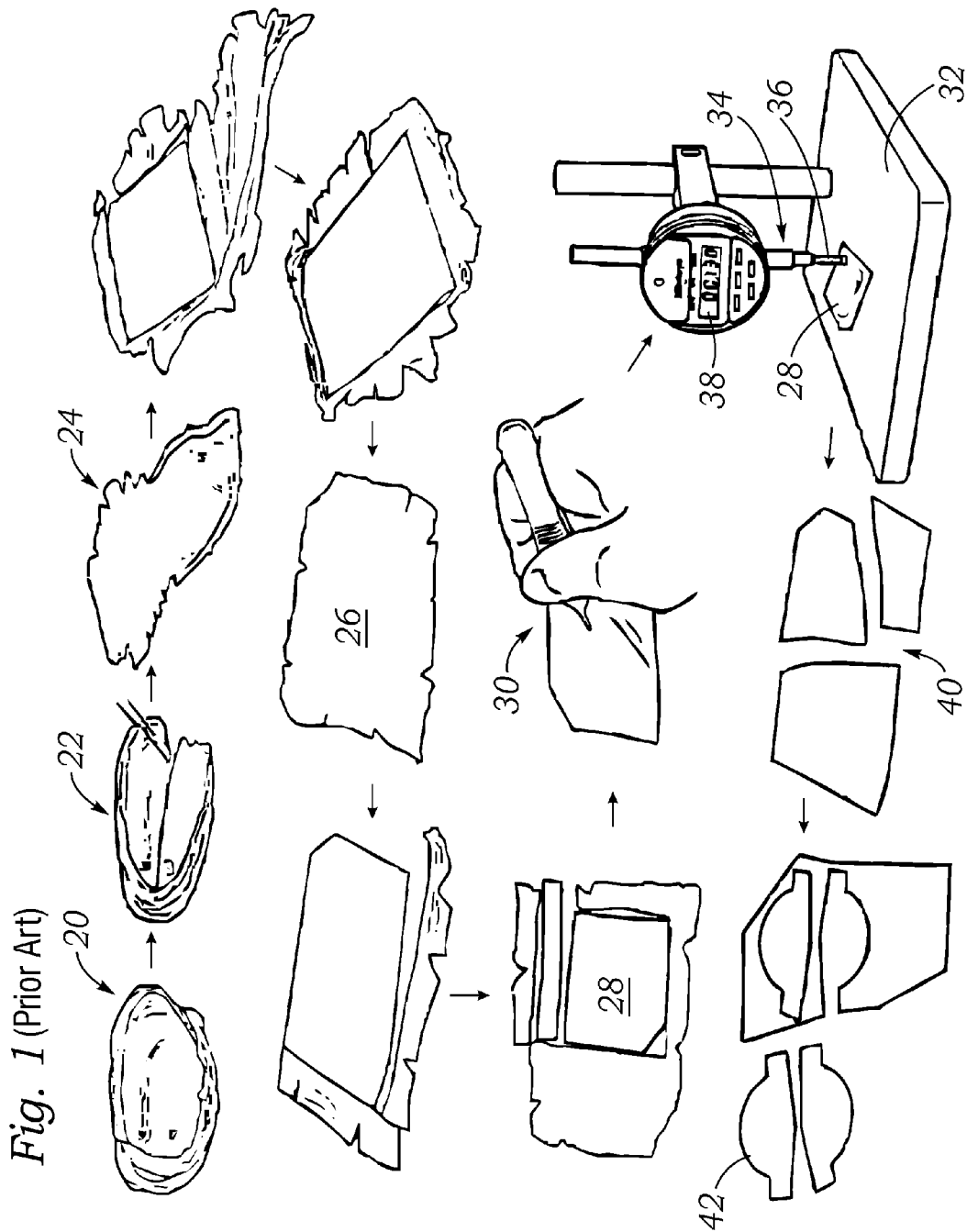
(63) Continuation of application No. 13/069,827, filed on Mar. 23, 2011.

(57) **ABSTRACT**

Methods for the conditioning of bioprosthetic material employ bovine pericardial membrane. A laser directed at the fibrous surface of the membrane and moved relative thereto reduces the thickness of the membrane to a specific uniform thickness and smoothes the surface. The wavelength, power and pulse rate of the laser are selected which will smooth the fibrous surface as well as ablate the surface to the appropriate thickness. Alternatively, a dermatome is used to remove a layer of material from the fibrous surface of the membrane. Thinning may also employ compression. Stepwise compression with cross-linking to stabilize the membrane is used to avoid damaging the membrane through inelastic compression. Rather, the membrane is bound in the elastic compressed state through addition cross-linking. The foregoing several thinning techniques may be employed together to achieve strong thin membranes.



**Edwards Lifesciences v. Boston Scientific**  
**U.S. Patent No. 6,915,560**  
**IPR2017-00444 EX. 2035**



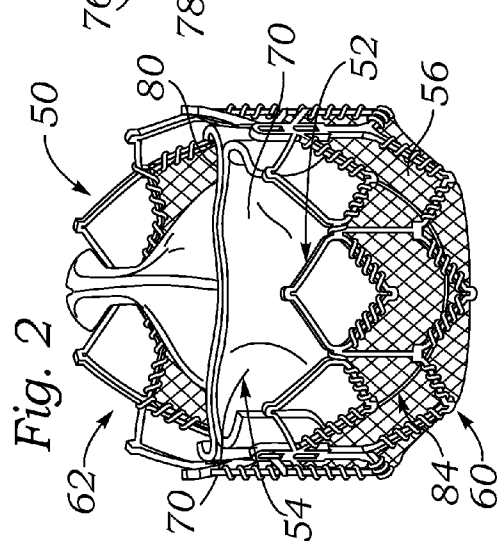
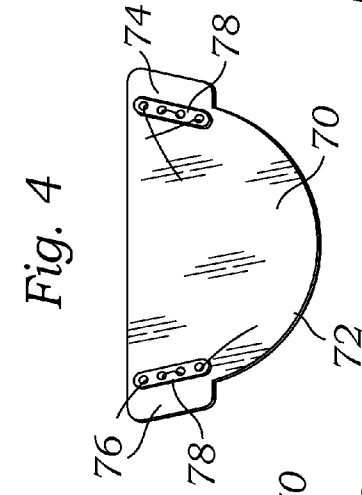
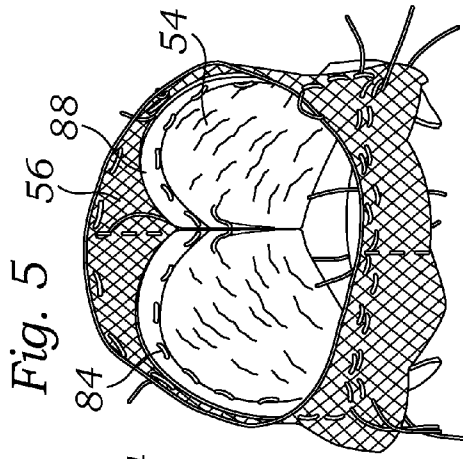


Fig. 6A

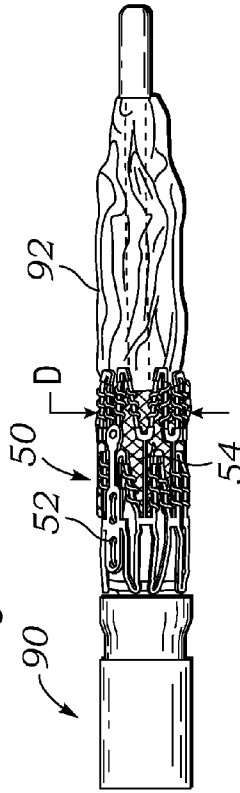


Fig. 6B

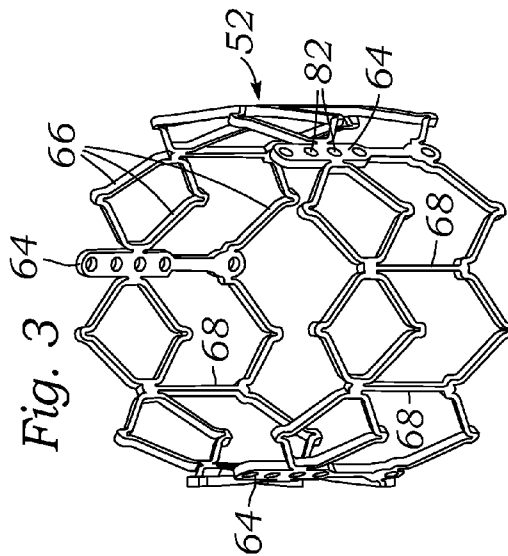
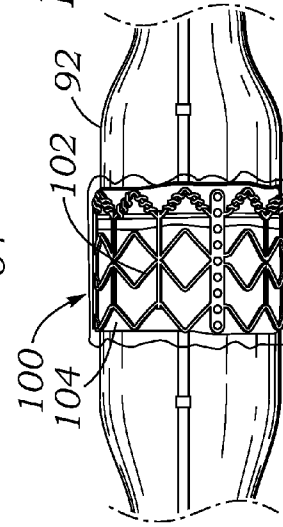


Fig. 7

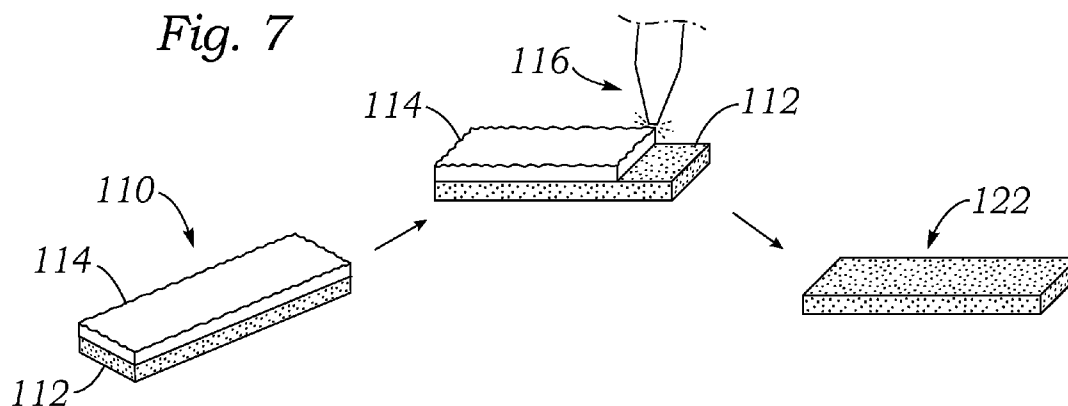


Fig. 8

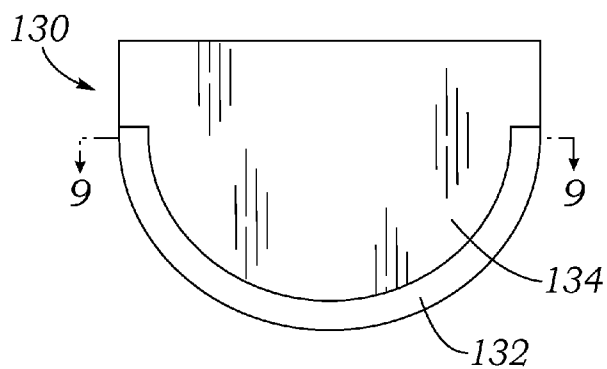
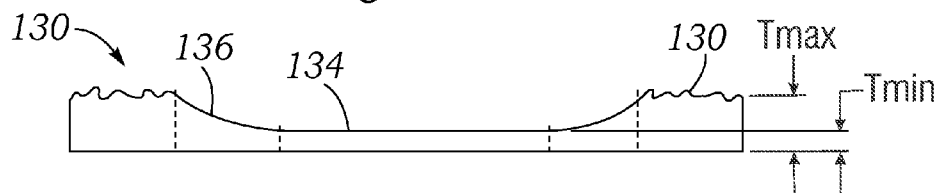
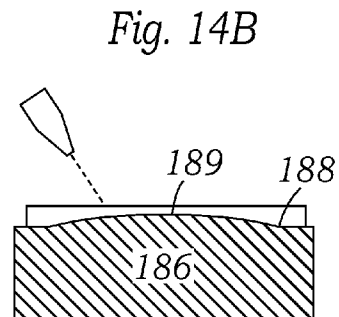
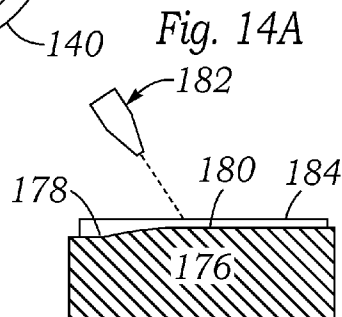
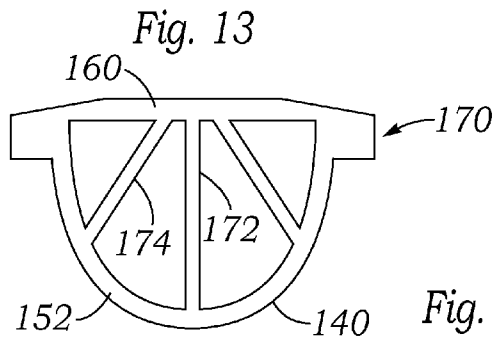
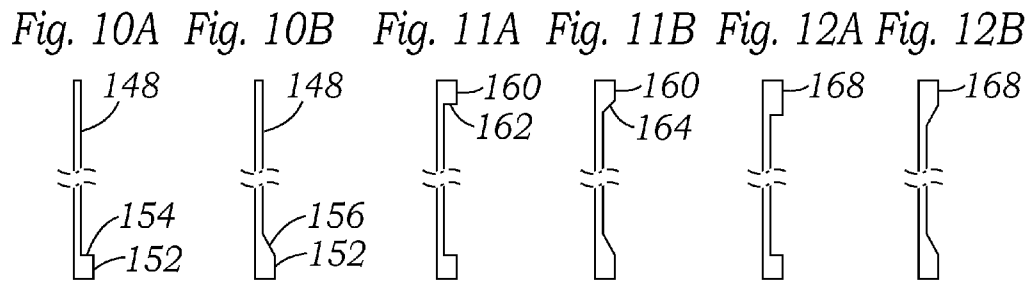
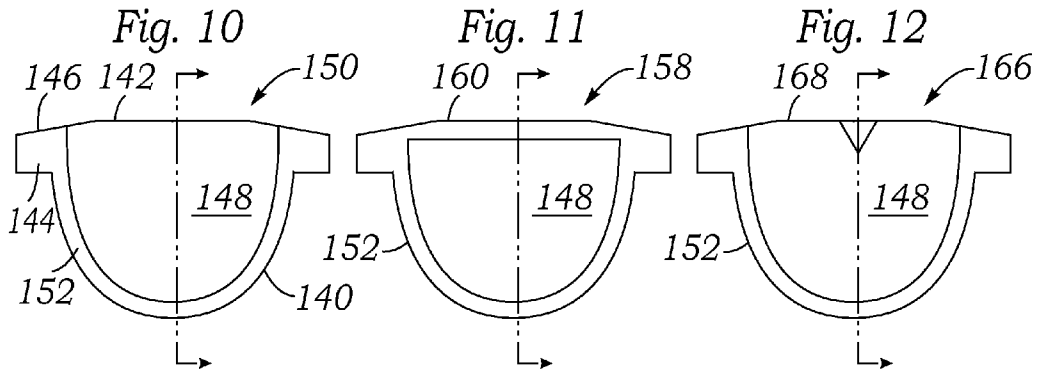


Fig. 9





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