



[54] HYBRID MECHANICAL HEART VALVE PROSTHESIS

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WO 99/04731 2/1999 WIPO A61F 2/24

[73] Assignee: Medtronic, Inc., Minneapolis, Minn.

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[21] Appl. No.: 09/286,095

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[51] Int. Cl.⁷ A61F 2/06

[52] U.S. Cl. 623/2.12; 623/2.2

[58] Field of Search 623/2.1, 2.12, 623/2.13, 2.14, 2.15, 2.16, 2.17, 2.19, 2.2

[57] ABSTRACT

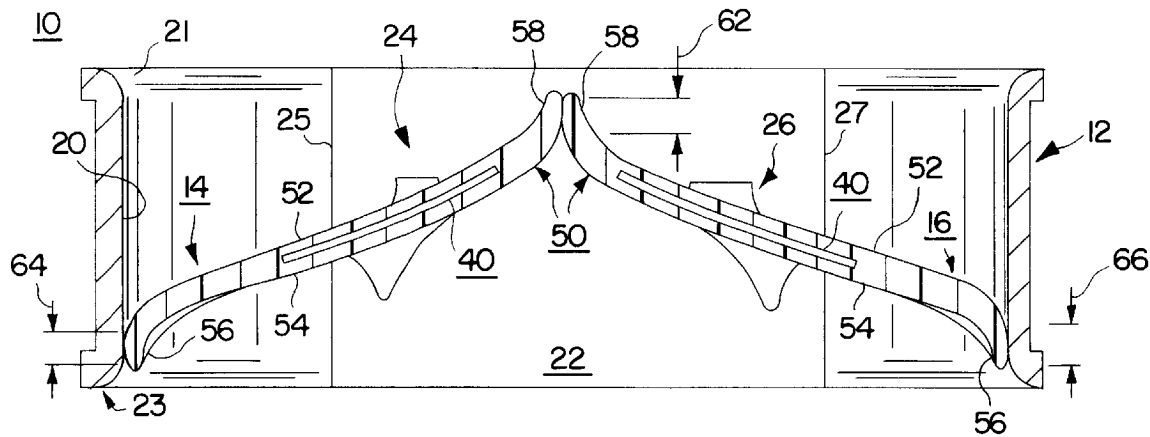
A prosthetic mechanical heart valve, and in particular, a bi-leaflet and/or a trileaflet mechanical valve formed with rigid frame and hinge elements for providing a stable reliable hinge mechanism with flexible leaflets formed of a thin elastomeric material adhering to and extending from the valve frame to form leaflet occluding sections bounded by outer peripheral edges for softening the opening and closing action of the valve leaflets. In one embodiment, the valve leaflet is formed of a rigid pyrolytic carbon frame supporting hinge elements and defining a leaflet pivot axis and a flexible leaflet body attached to the frame and defining a leaflet abutting section extending from one side of the valve frame and an occluding section extending from the other side of the valve frame to an arcuate leaflet seat. In the closing phase of operation, the abutting sections of the leaflet bodies contact one another in an abutting contact band, and the arcuate leaflet seats bear against arcuate seat regions of the valve body. The seat regions of the valve body may also be coated with an elastomeric material.

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23 Claims, 11 Drawing Sheets



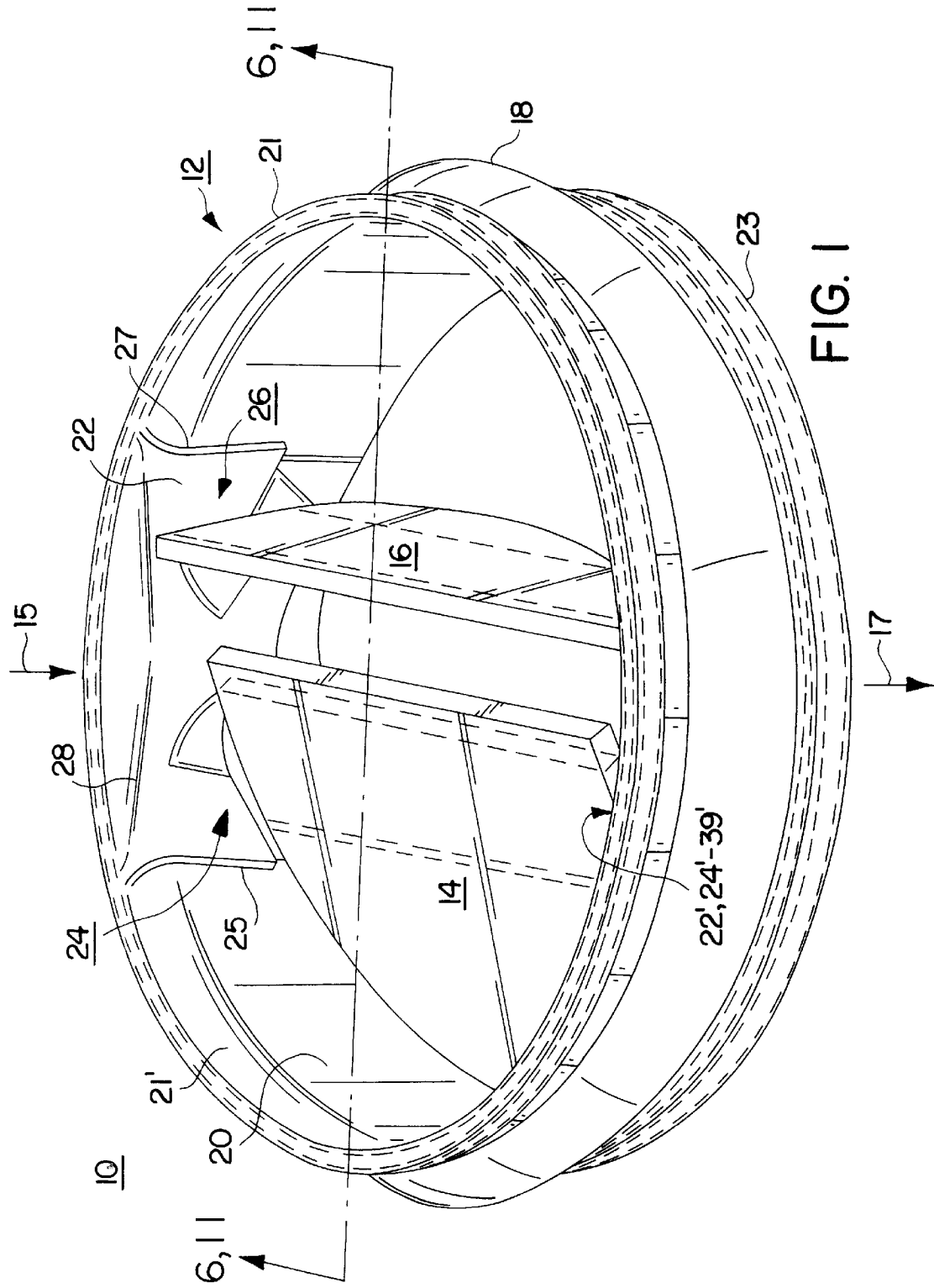


FIG. 1

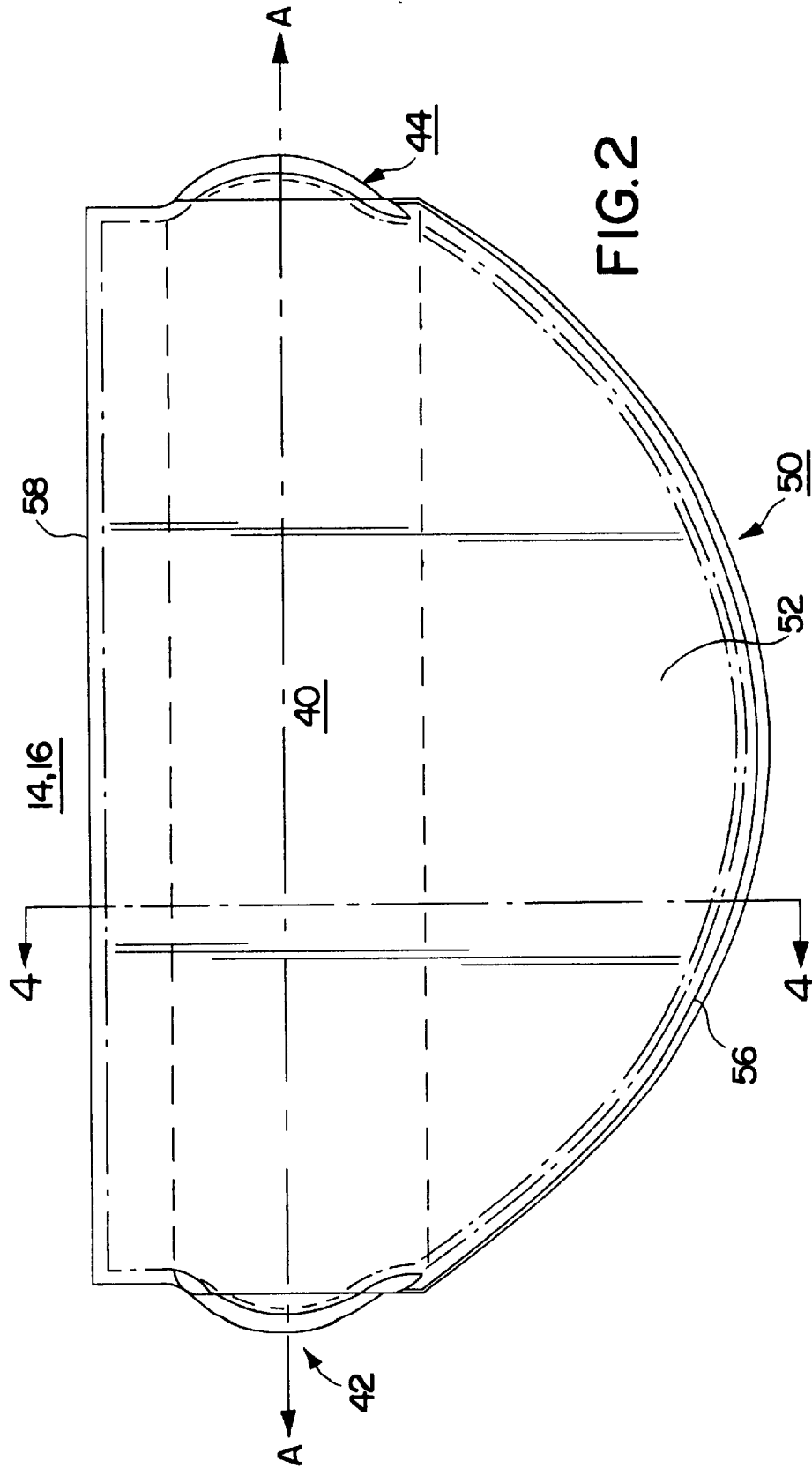


FIG. 2

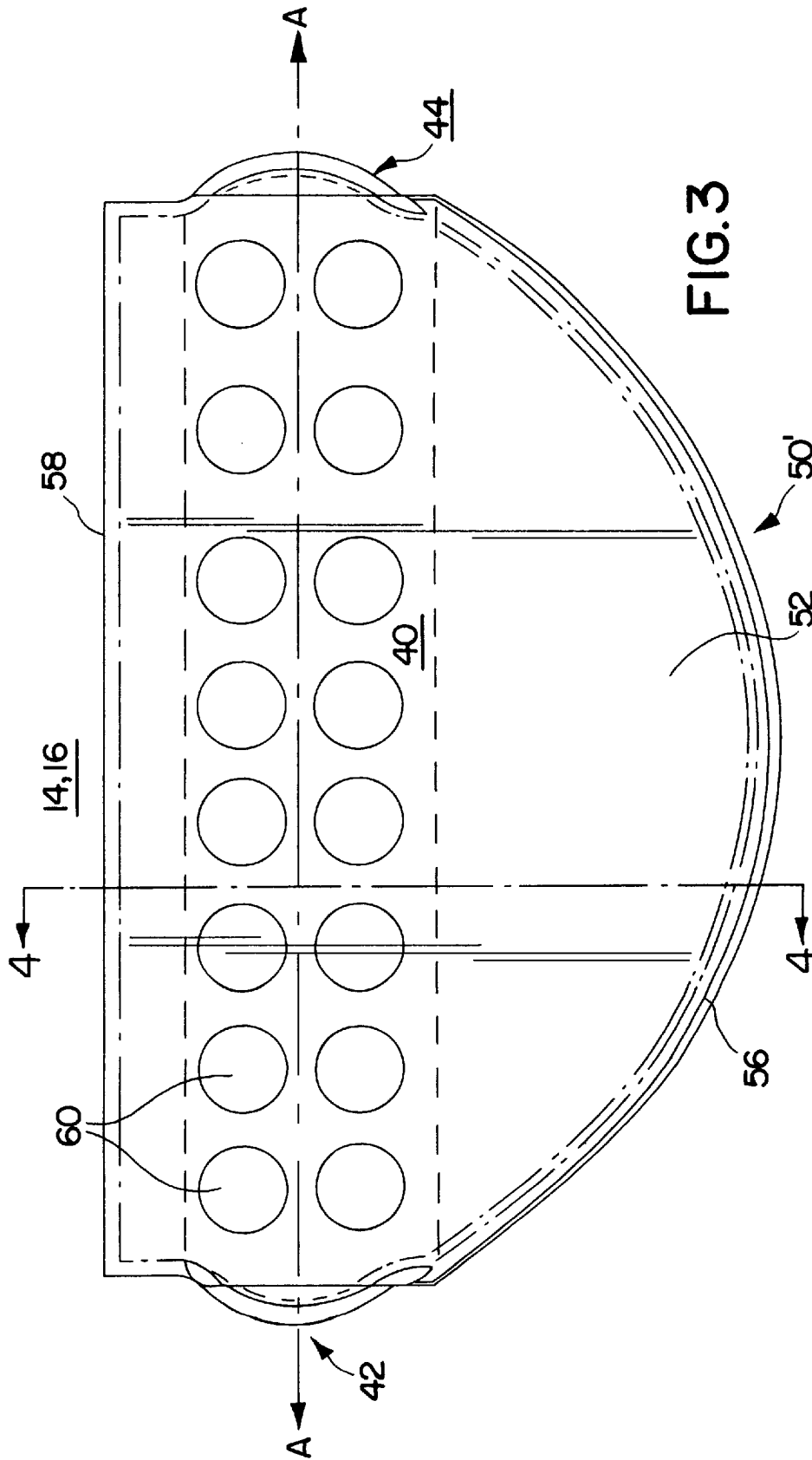
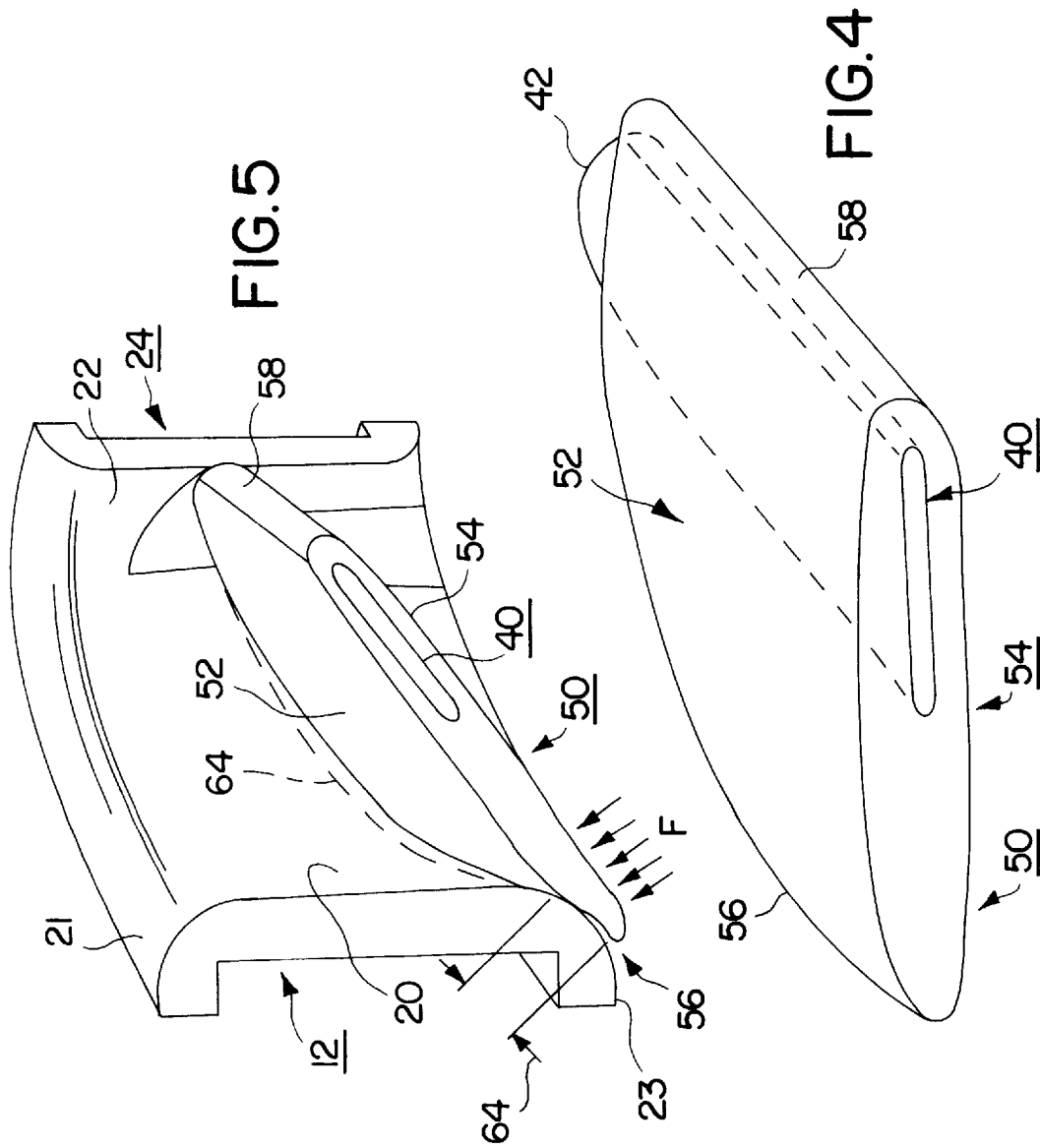


FIG. 3



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