

[009] In some embodiments, the outer skirt can comprise a plurality of axially extending creases. In some embodiments, the creases are formed by suturing and/or ultrasonic welding portions of the outer skirt to each other.

[010] In some embodiments, each of the openings of the outer skirt can be circumferentially aligned with a respective crease of the outer skirt. In some embodiments, each of the creases of the outer skirt can be circumferentially aligned with a respective projection of the outer skirt.

[011] In some embodiments, the outer skirt can be positioned relative to the frame such that each of the creases of the outer skirt is circumferentially positioned between a respective pair of apices formed by struts at the inflow end of the frame. In some embodiments, each of the creases can be positioned equidistantly between a respective pair of apices.

[012] In some embodiments, the prosthetic valve can further comprise an annular inner skirt positioned around an inner surface of the frame, wherein the inner skirt can comprise an inflow edge secured to the frame at a third location, an outflow edge secured to the frame at a fourth location. In some of those embodiments, the inflow edge of the outer skirt can be attached to the inflow edge of the inner skirt. In such embodiments, the inflow edge of the outer skirt can be attached to the inflow edge of the inner skirt with ultrasonic welding.

[013] In some embodiments, at least a portion of the outer skirt can be configured to retract radially within the frame when the frame is the radially collapsed configuration. In some embodiments, the outer skirt can be configured such that blood can flow through the openings and the notches of the outer skirt and blood can flow through a space between the outer skirt and the frame. In some embodiments, the outer skirt is attached to the frame such that each of the projections of the outer skirt is circumferentially positioned between a respective pair of apices formed by struts at the inflow end of the frame.

[014] In another representative embodiment, an assembly for implanting a prosthetic heart valve is provided. The assembly can comprise a delivery

apparatus comprising an elongate shaft, and a prosthetic heart valve mounted on the shaft in a radially collapsed configuration for delivery into a body. The prosthetic heart valve comprises an annular frame comprising an inflow end and an outflow end and being radially collapsible and expandable between a radially collapsed configuration and a radially expanded configuration, the frame defining an axial direction extending from the inflow end to the outflow end, a leaflet structure positioned within the frame and secured thereto, and an annular outer skirt positioned around an outer surface of the frame. The outer skirt comprises an inflow edge secured to the frame at a first location, an outflow edge comprising a plurality of alternating projections and notches, wherein the projections are secured to the frame at a second location, and the notches are not directly secured to the frame, and an intermediate portion between the inflow edge and the outflow edge that comprises a plurality of openings.

[015] In another representative embodiment, a method of manufacturing a prosthetic valve is provided. The method can comprise forming at least one permanent crease in an annular outer skirt of the prosthetic valve, and securing the outer skirt to an annular frame of the prosthetic valve. In some embodiments, forming the at least one crease comprises suturing and/or ultrasonic welding portions of the outer skirt to each other.

[016] In some embodiments, the method can further comprise forming at least one opening in the outer skirt, wherein the at least one opening is circumferentially aligned with a respective at least one crease. In some embodiments, the method can further comprise positioning the outer skirt relative to an annular frame such that the at least one crease is circumferentially disposed between struts of the frame.

[017] In another representative embodiment, an implantable prosthetic valve can comprise an annular frame comprising an inflow end and an outflow end and being radially collapsible and expandable between a radially collapsed configuration and a radially expanded configuration, the frame defining an axial direction extending from the inflow end to the outflow end, a leaflet structure positioned within the frame and secured thereto, and an annular outer skirt positioned around an outer surface of the frame, wherein the outer skirt comprises an inflow edge secured to the frame at a first location,

an outflow edge secured to the frame at a second location, a plurality of axially extending creases, wherein the creases are configured to cause at least a portion of the outer skirt to retract radially within the frame when the frame is radially collapsed from the expanded configuration.

[018] In some embodiments, the outer skirt can further comprise an intermediate portion between the inflow edge and the outflow edge that comprises a plurality of openings.

[019] The foregoing and other features and advantages of this disclosure will become more apparent from the following detailed description of several embodiments which proceeds with reference to the accompanying figures.