

CLAIMS:

1. A frame for a prosthetic heart valve, comprising:

a plurality of strut members arranged to form an annular main body of the frame and coupled together by a plurality of pivot joints, the main body of the frame being radially collapsible to a collapsed configuration and radially expandable to an expanded configuration, the main body of the frame having an inflow end and an outflow end; and

a plurality of leaflet clamps disposed on an exterior of the main body of the frame and coupled to the strut members, the plurality of leaflet clamps being movable between an open position corresponding to the collapsed configuration of the main body of the frame and a closed position corresponding to the expanded configuration of the main body of the frame; and

wherein the leaflet clamps each comprise a pair of strut members pivotably coupled to the strut members of the main body of the frame;

wherein motion of the main body of the frame between the collapsed configuration and the expanded configuration causes corresponding motion of the leaflet clamps between the open position and the closed position; and

wherein when the frame is in the collapsed configuration, central portions of the strut members are offset radially outwardly from respective inflow end portions and outflow end portions of the strut members with respect to a longitudinal axis of the frame such that the main body of the frame has a barrel-shaped profile.

2. The frame of claim 1, wherein:

the leaflet clamps comprise a first end portion coupled to the main body of the frame and a free second end portion; and

when the leaflet clamps are in the open position, the free second end portions are spaced radially outwardly from the main body of the frame.

3. The frame of claim 2, wherein when the leaflet clamps are in the closed position, the free second end portions are disposed adjacent the main body of the frame.

4. The frame of any of claims 1-3, wherein:

the strut members have respective inflow end portions located at the inflow end of the main body of the frame, respective outflow end portions located at the outflow end of the main body of the frame, and respective central portions between the inflow end portions and the outflow end portions; and

when the frame is in the expanded configuration, the central portions of the strut members are offset radially inwardly from the inflow end portions and from the outflow end portions of the strut members relative to a longitudinal axis of the frame such that the main body of the frame has an hourglass-shaped profile.

~~5. The frame of claim 4, wherein when the frame is in the collapsed configuration, the central portions of the strut members are offset radially outwardly from the respective inflow end portions and outflow end portions of the strut members with respect to the longitudinal axis of the frame such that the main body of the frame has a barrel-shaped profile.~~

~~6. The frame of any of claims 1-5, wherein the leaflet clamps each comprise a pair of strut members pivotably coupled to the strut members of the main body of the frame.~~

75. The frame of claim 61, wherein:

the strut members of the leaflet clamps each comprise a first end portion and a second end portion; and

when the leaflet clamps are in the open position, the second end portions of the strut members of the leaflet clamps are spaced radially outwardly from the main body of the frame.

86. The frame of claim 75, wherein the second end portions of the strut members of each leaflet clamp are coupled to each other such that the leaflet clamps are V-shaped when the frame is in the expanded configuration.

97. The frame of claim 75 or claim 86, wherein the first end portions of the strut members of the leaflet clamps are coupled to apices of the outflow end of the main body of the frame.

108. A prosthetic heart valve, comprising:
the frame of any of claims 1-97; and
a leaflet structure disposed at least partially within the frame.

~~11. A frame for a prosthetic heart valve, comprising:
a plurality of strut members arranged to form an annular main body, the main body of the frame being radially collapsible to a collapsed configuration and radially expandable to an expanded configuration, the main body of the frame having an inflow end and an outflow end and defining a longitudinal axis;~~

~~wherein the strut members of the frame have respective inflow end portions located at the inflow end of the main body, respective outflow end portions located at the outflow end of the main body, and respective central portions between the inflow end portions and the outflow end portions; and~~

~~wherein when the frame is in the expanded configuration, the central portions of the strut members are offset radially inwardly from the inflow end portions and from the outflow end portions of the strut members relative to the longitudinal axis such that the main body of the frame has an hourglass-shaped profile.~~

~~12. The frame of claim 11, wherein when the main body of the frame is in the collapsed configuration, the central portions of the strut members are offset radially outwardly from the respective inflow end portions and outflow end portions of the strut members with respect to the longitudinal axis of the frame such that the main body of the frame has a barrel-shaped profile.~~

~~13. The frame of claim 12, further comprising a plurality of leaflet clamps disposed on the exterior of the main body of the frame and coupled to the strut members.~~

14. — ~~The frame of claim 13, wherein the leaflet clamps are movable between an open position corresponding to the collapsed configuration of the main body of the frame and a closed position corresponding to the expanded configuration of the main body of the frame.~~

15. — ~~The frame of claim 13 or claim 14, wherein the leaflet clamps each comprise a pair of strut members pivotably coupled to the strut members of the main body of the frame.~~

16. — ~~The frame of claim 15, wherein:~~
~~the strut members of the leaflet clamps each comprise a first end portion and a second end portion; and~~
~~when the leaflet clamps are in the open position, the second end portions of the strut members of the leaflet clamps are spaced radially outwardly from the main body of the frame.~~

17. — ~~The frame of claim 16, wherein the second end portions of the strut members of each leaflet clamp are coupled to each other such that the leaflet clamps are V-shaped when the frame is in the expanded configuration.~~

18. — ~~The frame of any of claims 13–17, wherein the leaflet clamps are bowed when the frame is in the expanded configuration.~~

19. — ~~The frame of any of claims 11–18, wherein the strut members of the main body of the frame are coupled together by a plurality of pivot joints.~~