We claim:

1. An implantable prosthetic device, comprising:

a frame that is radially expandable and compressible between a radially compressed configuration and a radially expanded configuration, the frame comprising

a first set of a plurality of struts extending in a first direction, and

a second set of a plurality of struts extending in a second direction;

wherein each strut of the first set of struts is pivotably connected to at least one strut of the second set of struts;

wherein each strut is curved helically with respect to a first, longitudinal axis of the frame; and

wherein each strut is curved with respect to a second axis that is perpendicular to the first, longitudinal axis of the frame.

2. The implantable prosthetic device of claim 1, wherein each strut is concave with respect to an outflow end of the frame.

3. The implantable prosthetic device of claim 1, wherein each strut is convex with respect to an outflow end of the frame.

4. The implantable prosthetic device of claims 1-3, wherein when the frame is in the radially expanded configuration the frame tapers from a first diameter at a first location on the frame to a second diameter at a second location on the frame axially spaced from the first location, the first diameter being greater than the second diameter.

5. The implantable prosthetic device of claims 1-4, wherein each strut comprises a plurality of segments between locations where struts are pivotally connected to each other and wherein each segment is curved with respect to the second axis such that the strut is curved along a length of the strut.

6. The implantable prosthetic device of claims 1-4, wherein each strut comprises a plurality of segments between locations where struts are pivotally connected to each other and each segment is offset from each adjacent segment such that the strut is curved along a length of the strut.

7. The implantable prosthetic device of claims 1-6, wherein each strut extends from a first end of the frame to an axially opposed second end of the frame.

8. The implantable prosthetic device of claims 1-7, further comprising a valve assembly comprising a plurality of leaflets mounted inside the frame.