

We claim:

1. ~~— An assembly, comprising:
a holder device; and
a non-self-expandable prosthetic heart valve being radially compressible from an expanded configuration to a compressed configuration;
wherein the holder device is configured to hold the prosthetic heart valve in the expanded configuration and to allow the prosthetic heart valve to be inserted in a crimping device so that the prosthetic heart valve can be crimped onto a valve mounting portion of a delivery apparatus.~~

2. ~~— The assembly of claim 1, wherein the holder device comprises one or more retaining members configured to secure the prosthetic heart valve to the holder device when the prosthetic heart valve is in the expanded configuration and configured to release the prosthetic heart valve from the holder device when the prosthetic heart valve is compressed from the expanded configuration to the compressed configuration on the valve mounting portion of the delivery apparatus.~~

3. ~~— The assembly of claim 2, wherein a distal portion of each retaining member extends distally into the prosthetic heart valve when the prosthetic heart valve is in the expanded configuration, and wherein the distal portion of each retaining member is disposed proximal to the prosthetic heart valve when the prosthetic heart valve is in the compressed configuration.~~

4. ~~— The assembly of any of claims 2-3, wherein each of the retaining members has a protrusion extending radially outwardly at a distal end of the retaining member, and wherein each protrusion is configured to extend radially outwardly into an opening of the prosthetic heart valve when the prosthetic heart valve is in the expanded configuration.~~

5. ~~— The assembly of any of claims 2-4, wherein the holder device comprises a first portion and a second portion, and wherein the one or more retaining members extend distally from the second portion and are axially moveable relative to a distal face of the first portion.~~

~~6.——The assembly of claim 5, wherein the prosthetic heart valve elongates unidirectionally when the prosthetic heart valve is crimped from the expanded configuration to the compressed configuration such that the prosthetic heart valve can elongate distally while the distal face of the first portion prevents proximal elongation of the prosthetic heart valve.~~

~~7.——The assembly of any of claims 5-6, wherein the retaining members are configured to extend distally relative to the distal face of the first portion for coupling to the prosthetic heart valve in the expanded configuration, and move proximally relative to the distal face of the first portion after releasing the prosthetic heart valve when the prosthetic heart valve is radially compressed.~~

~~8.——The assembly of claim 7, wherein when the prosthetic heart valve is held by the holder device, a proximal end portion of the prosthetic heart valve abuts the distal face of the first portion when the prosthetic heart valve is in the expanded configuration and is secured to the holder device by the retaining members.~~

~~9.——The assembly of any of claims 5-8, wherein the second portion of the holder device comprises one or more sloped projections corresponding to the one or more retaining members, and wherein each sloped projection interfaces with a sloped member on the corresponding retaining member such that the retaining members can slide distally into an interior space of the prosthetic heart valve when the prosthetic heart valve is in the expanded configuration.~~

~~10.——The assembly of any of claims 5-9, wherein the holder device comprises one or more biasing members configured to bias the second portion proximally relative to the first portion.~~

~~11.——The assembly of any of claims 5-10, wherein the second portion comprises one or more arms, wherein a distal end of each arm extends distally relative to the distal face of the first portion when the retaining members are coupled to the prosthetic heart valve.~~

~~12.—The assembly of claim 11, wherein at least one arm is circumferentially disposed between a pair of adjacent retaining members, wherein the retaining members extend radially outwardly relative to the arms when the prosthetic heart valve is in the expanded configuration, and wherein the retaining members are compressed radially inwardly and radially align with at least a portion of the arms as the prosthetic heart valve is radially compressed.~~

~~13.—The assembly of any of claims 11-12, wherein the distal end of each arm comprises a sloped surface configured to interface with a crimping jaw such that a radially inward movement of the crimping jaw exerts a force to the sloped surface and urges the corresponding arm to move proximally relative to the first portion.~~

~~14.—The assembly of any of claims 1-13 further comprising a positioning device configured to be releasably coupled to a shaft of the delivery apparatus and to be releasably coupled to the holder device.~~

~~15.—The assembly of claim 14, wherein the positioning device comprises a body comprising an interior surface defining an axially extending passage that is sized to form an interference fit with a segment of the shaft.~~

~~16.—The assembly of claim 15, wherein the segment of the shaft is located distally by a predefined distance relative to the valve mounting portion.~~

~~17.—The assembly of any of claims 15-16, wherein the inner surface of the body comprises a row of a plurality of circumferentially oriented grooves extending from a proximal end of the body to a distal end of the body such that a sterilization gas can permeate into the passage through the plurality of grooves when the body is coupled to the shaft.~~

~~18.—The assembly of any of claims 14-17, wherein the holder device comprises one or more first coupling members that are mateable with one or more second coupling members of the positioning device.~~

~~19. The assembly of any of claims 1-18 further comprising the crimping device, which is configured to radially compress the prosthetic heart valve from the expanded configuration to the compressed configuration, wherein the holder device comprises one or more third coupling members that are mateable with one or more fourth coupling members of the crimping device.~~

~~201.~~ A holder device for a prosthetic heart valve, comprising:
one or more retaining members configured to secure a prosthetic heart valve to the holder device when the prosthetic heart valve is in a radially expanded configuration and configured to release the prosthetic heart valve from the holder device when the prosthetic heart valve is compressed with a crimping device from the radially expanded configuration to a radially compressed configuration;

~~wherein the holder device comprises a first portion and a second portion, and wherein the one or more retaining members extend distally from the second portion and are axially moveable relative to a distal face of the first portion along a central axis.~~

~~2. The holder device of claim 1, wherein a distal portion of each retaining member extends distally into the prosthetic heart valve when the prosthetic heart valve is in the expanded configuration, and wherein the distal portion of each retaining member is disposed proximal to the prosthetic heart valve when the prosthetic heart valve is in the compressed configuration.~~

~~3. The holder device of any of claims 1 to 2, wherein each of the retaining members has a protrusion extending radially outwardly at a distal end of the retaining member, and wherein each protrusion is configured to extend radially outwardly into an opening of the prosthetic heart valve when the prosthetic heart valve is in the expanded configuration.~~

~~4. The holder device of any of claims 1 to 3, wherein the retaining members are configured to extend distally relative to the distal face of the first portion for coupling to the prosthetic heart valve in the expanded configuration, and move proximally relative to the distal face of the first portion after releasing the prosthetic heart valve when the prosthetic heart valve is radially compressed.~~

5. The holder device of claim 4, wherein when the prosthetic heart valve is held by the holder device, a proximal end portion of the prosthetic heart valve abuts the distal face of the first portion when the prosthetic heart valve is in the expanded configuration and is secured to the holder device by the retaining members.

6. The holder device of any of claims 1 to 5, wherein the second portion of the holder device comprises one or more sloped projections corresponding to the one or more retaining members, and wherein each sloped projection interfaces with a sloped member on the corresponding retaining member such that the retaining members can slide distally into an interior space of the prosthetic heart valve when the prosthetic heart valve is in the expanded configuration.

7. The holder device of any of claims 1 to 6, wherein the holder device comprises one or more biasing members configured to bias the second portion proximally relative to the first portion.

8. The holder device of any of claims 1 to 7, wherein the second portion comprises one or more arms, wherein a distal end of each arm extends distally relative to the distal face of the first portion when the retaining members are coupled to the prosthetic heart valve.

9. The holder device of claim 8, wherein at least one arm is circumferentially disposed between a pair of adjacent retaining members, wherein the retaining members extend radially outwardly relative to the arms when the prosthetic heart valve is in the expanded configuration, and wherein the retaining members are compressed radially inwardly and radially align with at least a portion of the arms as the prosthetic heart valve is radially compressed.

10. The holder device of any of claims 8 to 9, wherein the distal end of each arm comprises a sloped surface configured to interface with a crimping jaw such that a radially inward movement of the crimping jaw exerts a force to the sloped surface and urges the corresponding arm to move proximally relative to the first portion.

11. An assembly, comprising:
a holder device according to any of claims 1 to 10; and
a non-self-expandable prosthetic heart valve being radially compressible from an expanded configuration to a compressed configuration;
wherein the holder device is configured to hold the prosthetic heart valve in the expanded configuration and to allow the prosthetic heart valve to be inserted in a crimping device so that the prosthetic heart valve can be crimped onto a valve mounting portion of a delivery apparatus.

12. The assembly of claim 11, wherein the prosthetic heart valve elongates unidirectionally when the prosthetic heart valve is crimped from the expanded configuration to the compressed configuration such that the prosthetic heart valve can elongate distally while the distal face of the first portion prevents proximal elongation of the prosthetic heart valve.

13. The assembly of claim 11 or 12, further comprising a positioning device configured to be releasably coupled to a shaft of the delivery apparatus and to be releasably coupled to the holder device.

14. The assembly of claim 13, wherein the positioning device comprises a body comprising an interior surface defining an axially extending passage that is sized to form an interference fit with a segment of the shaft.

15. The assembly of claim 14, wherein the segment of the shaft is located distally by a predefined distance relative to the valve mounting portion.

16. The assembly of claim 14 or 15, wherein the inner surface of the body comprises a row of a plurality of circumferentially oriented grooves extending from a proximal end of the body to a distal end of the body such that a sterilization gas can permeate into the passage through the plurality of grooves when the body is coupled to the shaft.

17. The assembly of any of claims 11-16, wherein the holder device comprises one or more first coupling members that are mateable with one or more second coupling members of the positioning device.

18. The assembly of any of claims 11-17, further comprising the crimping device, which is configured to radial compress the prosthetic heart valve from the expanded configuration to the compressed configuration, wherein the holder device comprises one or more third coupling members that are mateable with one or more fourth coupling members of the crimping device.