

WHAT IS CLAIMED IS:

1. A docking device for docking a prosthetic valve at a native heart valve, the docking device comprising:

a flexible body comprising an elongate tubular structure, a first lumen extending at least partially through the flexible body, and a second lumen extending at least partially through the flexible body;

a first coil more rigid than the flexible body, comprising a first plurality of circular turns, the first coil configured to fit within the first lumen, and the first plurality of circular turns comprising a first diameter in a relaxed state;

a second coil more rigid than the flexible body, comprising a second plurality of circular turns, the second coil configured to fit within the second lumen, and the second plurality of circular turns comprising a second diameter in a relaxed state that is less than the first diameter;

wherein the docking device has a first configuration with a third diameter when the first coil is positioned within the first lumen;

wherein the docking device has a second configuration with a fourth diameter when the second coil is positioned within the second lumen, and wherein the fourth diameter is less than the first diameter and the third diameter.

2. The device of claim 1, wherein the third diameter is greater than or equal to the first diameter.
3. The device according to any one of claims 1 and 2, wherein the fourth diameter is greater than the second diameter.
4. The device according to any one of claims 1 and 2, wherein the fourth diameter is equal to the second diameter.
5. The device according to any one of the preceding claims, wherein:
 - the first diameter is between 20 to 40 mm; and
 - the second diameter is between 15 to 30 mm.

6. The device according to any one of claims 1-4, wherein the first diameter is between 2 to 10 times greater than the second diameter.
7. The device according to any one of claims 1-6, wherein the first coil further comprises an upper turn extending in a proximal direction from the plurality of turns, wherein the upper turn of the first coil is configured as a stabilization turn to help prevent migration of the docking device, the upper turn of the first coil defining an upper turn diameter greater than the first diameter.
8. The device of claim 7, wherein the upper turn diameter is between 40 to 100 mm.
9. The device according to any one of claims 1-8, wherein the flexible body is comprised of an extruded thermoplastic material.
10. The device according to any one of claims 1-9, wherein a proximal end of the first lumen is open.
11. The device according to any one of claims 1-10, wherein a proximal end of the second lumen is open.
12. The device according to any one of claims 1-11, further comprising a high-friction cover on a portion of the flexible body configured such that slippage of the docking device relative to the native leaflets is inhibited when implanted.
13. The device according to any one of claims 1-11, further comprising a covering having a large amount of surface area to promote tissue ingrowth.
14. A system for replacing a heart valve, the system comprising:
a replacement valve; and
a docking device, wherein the docking device comprises:
a flexible body comprising an elongate tubular, a first lumen extending at least partially through the flexible body, and a second lumen extending at least partially through the flexible body;

a first coil more rigid than the flexible body, comprising a first plurality of circular turns, the first coil configured to fit within the first lumen, and the first plurality of circular turns comprising a first diameter in a relaxed state;

a second coil more rigid than the flexible body, comprising a second plurality of circular turns, the second coil configured to fit within the second lumen, and the second plurality of circular turns comprising a second diameter in a relaxed state that is less than the first diameter;

wherein the docking device has a first configuration with a third diameter when the first coil is positioned inside the first lumen;

wherein the docking device has a second configuration defining an inner space having a fourth diameter when the second coil is positioned inside the second lumen, and wherein the fourth diameter is less than the first diameter and the third diameter;

wherein the replacement valve comprises an expandable frame and a plurality of leaflets and is configured to be inserted in the inner space and expanded, the expandable frame defining an expanded outer diameter when in an expanded configuration; and

wherein the replacement valve in the expanded configuration is configured to apply an outward pressure to the docking device sufficient to maintain a stable position of the replacement valve within the inner space of the docking device.

15. The system of claim 14, wherein:

the first diameter is between 20 to 40 mm;

the second diameter is between 15 to 30 mm.

16. The system according to any one of claims 14 and 15, wherein

the first coil further comprises an upper turn extending in a proximal direction from the plurality of turns, wherein the upper turn of the first coil is configured as a stabilization turn to help prevent migration of the docking device, the upper turn of the first coil defining an upper turn diameter greater than the first diameter.

17. The system of claim 16, wherein the upper turn is between 40 to 100 mm.
18. The system according to any one of claims 14-17, wherein the flexible body is comprised of a co-extruded thermoplastic material.