reason, it is difficult to sheathe the narrowed stent in a thin catheter. Since the stent of Patent Document 1 includes the plurality of struts, it is assumed that shape followability and diameter reducibility are significantly degraded if the surface area is merely increased.

[0006]

~~An object~~Embodiments of the present invention ~~is to~~ provide a stent having a large surface area and having excellent shape followability to a vascular structure and excellent diameter reducibility.

Means for Solving the Problems

[0007]

~~The present invention relates to a stent that is inserted into a catheter and pushed out of the catheter in a blood vessel to expand the blood vessel. The stent includes a first stent body configured such that a plurality of first cells including struts arranged in a frame shape spreads in a circumferential direction and is continuously arranged in a center axis direction, and a second stent body configured such that a plurality of second cells including struts arranged in a frame shape spreads in a circumferential direction and is continuously arranged in a center axis direction and inserted into the first stent body. In a state in which the second stent body is inserted into the first stent body, an intersection between the second cells is arranged in a hole of each first cell. The first stent body and the second stent body are not coupled to each other in a radial direction.~~

According to a first aspect of the present invention, there is provided a stent that is inserted into a catheter and pushed out of the catheter in a blood vessel to expand the blood vessel, including: a first stent body configured such that a plurality of first cells including struts arranged in a frame shape spreads in a circumferential direction and is continuously arranged in a center axis direction; and a second stent body configured such that a plurality of second cells including struts arranged in a frame shape spreads in a circumferential direction and is continuously arranged in a center axis direction and inserted into the first stent body, wherein in a state in which the second stent body is inserted into the first stent body, an intersection between the second cells is arranged in a hole of each first cell, wherein in a diameter-expanded state, the first stent body and the second stent body closely contact each other and are not coupled to each other in a radial direction and, wherein a proximal side end portion of the first stent body and a proximal side end portion of the second stent body are connected to a push wire undetachably.

[0007a]

According to a second aspect of the present invention, there is provided a stent that is inserted into a catheter and pushed out of the catheter in a blood vessel to expand the blood vessel, including: a first stent body configured such that a plurality of first cells including struts arranged in a frame shape spreads in a circumferential direction and is

continuously arranged in a center axis direction; and a second stent body configured such that a plurality of second cells including struts arranged in a frame shape spreads in a circumferential direction and is continuously arranged in a center axis direction and inserted into the first stent body, wherein in a state in which the second stent body is inserted into the first stent body, an intersection between the second cells is arranged in a hole of each first cell, wherein in a diameter-expanded state, the first stent body and the second stent body closely contact each other and are not coupled to each other in a radial direction and, wherein a proximal side end portion of the first stent body and a proximal side end portion of the second stent body are connected at different positions in an axial direction of a push wire.

[0007b]

According to a third aspect of the present invention, there is provided a recovery stent that is inserted into a catheter and pushed out of the catheter in a narrowed or occluded blood vessel to expand the blood vessel, the recovery stent including a proximal side end portion to which a push wire is connected, an operation of moving the push wire back and forth allowing for temporary implantation and recovery of the recovery stent in the blood vessel, the recovery stent including: a first stent body configured such that a plurality of first cells including struts arranged in a frame shape spreads in a circumferential direction and is continuously arranged in a center axis direction; a second stent body configured such that a plurality of second cells including struts arranged in a frame shape spreads in a circumferential direction and is continuously arranged in a center axis direction and inserted into the first stent body, wherein in a state in which the second stent body is inserted into the first stent body, an intersection between the second cells is arranged in a hole of each first cell, wherein the first stent body and the second stent body are not coupled to each other in a radial direction, and wherein a proximal side end portion of the first stent body and a proximal side end portion of the second stent body are connected to the push wire.

[0007c]

According to a fourth aspect of the present invention, there is provided a stent that is pushed out of a catheter at a location where restenosis or reocclusion in a blood vessel occurs to expand the blood vessel, the stent being temporarily implanted at the location and resheathed in the catheter to be recovered from the blood vessel, the stent including a proximal side end portion to which a push wire is connected, the stent including: a first stent body including a plurality of first cells, and a second stent body including a plurality of second cells and inserted into the first stent body, wherein a proximal side end portion of the first stent body and a proximal side end portion of the second stent body are connected to a push wire undetachably.

[0008]

In the state in which the second stent body is inserted

into the first stent body, the second stent body may press the first stent body outward in the radial direction.

[0009]

In a configuration in which the intersection between the second cells is arranged in the hole of each first cell, one intersection between the second cells may be arranged in one hole of each first cell.

[0010]

In the state in which the second stent body is inserted into the first stent body, the percentage of a non-hole portion per unit surface area in a portion where the first stent body and the second stent body overlap with each other may be 5 to 50%.

[0011]

Each first cell may include, in an annular direction inclined with respect to the circumferential direction, a pair of first struts and one first strut arranged with a clearance from the pair of first struts, and each second cell may include, in an annular direction inclined with respect to the circumferential direction, a pair of second struts and one second strut arranged with a clearance from the pair of second struts.

[0012]

Adjacent ones of the plurality of first cells may be connected to each other at a substantially S-shaped first intersection in the annular direction inclined with respect to the circumferential direction, and adjacent ones of the plurality of second cells may be connected to each other at a substantially S-shaped second intersection in the annular direction inclined with respect to the circumferential direction.

[0013]

The annular direction in which the plurality of first cells is connected at the first intersections and the annular direction in which the plurality of second cells is connected at the second intersections may be symmetrical with respect to a line along the radial direction.

[0014]

A proximal side end portion of the first stent body and a proximal side end portion of the second stent body may be connected at different positions in the axial direction of a push wire.

[0015]

The stent may further include a coating film between the first stent body and the second stent body.

[0016]

A strand having a high radiopacity may be wound around at least one of the first stent body or the second stent body in a spiral shape.

Effects of the Invention

[0017]

According to embodiments of the present invention, a stent can be

CLAIMS

1. A stent that is inserted into a catheter and pushed out of the catheter in a blood vessel to expand the blood vessel, comprising:

a first stent body configured such that a plurality of first cells including struts arranged in a frame shape spreads in a circumferential direction and is continuously arranged in a center axis direction; and

a second stent body configured such that a plurality of second cells including struts arranged in a frame shape spreads in a circumferential direction and is continuously arranged in a center axis direction and inserted into the first stent body,

wherein in a state in which the second stent body is inserted into the first stent body, an intersection between the second cells is arranged in a hole of each first cell, ~~and~~ wherein in a diameter-expanded state, the first stent body and the second stent body closely contact each other and are not coupled to each other in a radial direction and, wherein a proximal side end portion of the first stent body and a proximal side end portion of the second stent body are connected to a push wire undetachably.

2. A stent that is inserted into a catheter and pushed out of the catheter in a blood vessel to expand the blood vessel, comprising:

a first stent body configured such that a plurality of first cells including struts arranged in a frame shape spreads in a circumferential direction and is continuously arranged in a center axis direction; and

a second stent body configured such that a plurality of second cells including struts arranged in a frame shape spreads in a circumferential direction and is continuously arranged in a center axis direction and inserted into the first stent body,

wherein in a state in which the second stent body is inserted into the first stent body, an intersection between the second cells is arranged in a hole of each first cell,

wherein in a diameter-expanded state, the first stent body and the second stent body closely contact each other and are not coupled to each other in a radial direction and,

wherein a proximal side end portion of the first stent body and a proximal side end portion of the second stent body are connected at different positions in an axial direction of a push wire.

3. A recovery stent that is inserted into a catheter and pushed out of the catheter in a narrowed or occluded blood vessel to expand the blood vessel, the recovery stent including a proximal side end portion to which a push wire is connected, an operation of moving the push wire back and forth allowing for temporary implantation and recovery of the recovery stent in the blood vessel, the recovery stent

comprising:

a first stent body configured such that a plurality of first cells including struts arranged in a frame shape spreads in a circumferential direction and is continuously arranged in a center axis direction;

a second stent body configured such that a plurality of second cells including struts arranged in a frame shape spreads in a circumferential direction and is continuously arranged in a center axis direction and inserted into the first stent body,

wherein in a state in which the second stent body is inserted into the first stent body, an intersection between the second cells is arranged in a hole of each first cell,

wherein the first stent body and the second stent body are not coupled to each other in a radial direction, and

wherein a proximal side end portion of the first stent body and a proximal side end portion of the second stent body are connected to the push wire.

~~2~~4. The stent according to ~~claim 1~~ any one of claims 1 to 3, wherein

in the state in which the second stent body is inserted into the first stent body, the second stent body presses the first stent body outward in the radial direction.

~~3~~5. The stent according to ~~claim 1 or 2~~ any one of claims 1 to 3, wherein

in a configuration in which the intersection between the second cells is arranged in the hole of each first cell, one intersection between the second cells is arranged in one hole of each first cell.

~~4~~6. The stent according to any one of claims 1 to 3, wherein

in the state in which the second stent body is inserted into the first stent body, a percentage of a non-hole portion per unit surface area in a portion where the first stent body and the second stent body overlap with each other is 5 to 50%.

~~5~~7. The stent according to any one of claims 1 to~~4~~ 3, wherein

each first cell includes, in an annular direction inclined with respect to the circumferential direction, a pair of first struts and one first strut arranged with a clearance from the pair of first struts, and

each second cell includes, in an annular direction inclined with respect to the circumferential direction, a pair of second struts and one second strut arranged with a clearance from the pair of second struts.

~~6~~8. The stent according to claim~~5~~ 7, wherein

adjacent ones of the plurality of first cells are connected to each other at a substantially S-shaped first intersection in the annular direction inclined with respect to the circumferential direction, and

adjacent ones of the plurality of second cells are connected to each other at a substantially S-shaped second intersection in the annular direction inclined with respect to the circumferential direction.

~~7~~9. The stent according to claim ~~6~~ 8, wherein

the annular direction in which the plurality of first cells is connected at the first intersections and the annular direction in which the plurality of second cells is connected at the second intersections are symmetrical with respect to a line along the radial direction.

~~8. The stent according to any one of claims 1 to 7, wherein~~

~~a proximal side end portion of the first stent body and a proximal side end portion of the second stent body are connected at different positions in an axial direction of a push wire.~~

~~9. The stent according to any one of claims 1 to 8, further comprising:~~

~~a coating film between the first stent body and the second stent body.~~

~~10. The stent according to any one of claims 1 to 9, wherein~~

~~a strand having a high radiopacity is wound around at least one of the first stent body or the second stent body in a spiral shape.~~

10. A stent that is pushed out of a catheter at a location where restenosis or reocclusion in a blood vessel occurs to expand the blood vessel, the stent being temporarily implanted at the location and resheathed in the catheter to be recovered from the blood vessel, the stent including a proximal side end portion to which a push wire is connected, the stent comprising:

a first stent body including a plurality of first cells, and

a second stent body including a plurality of second cells and inserted into the first stent body,

wherein a proximal side end portion of the first stent body and a proximal side end portion of the second stent body are connected to a push wire undetachably.

11. The stent according to claim 10, wherein

in the state in which the second stent body is inserted into the first stent body, the second stent body presses the first stent body outward in the radial direction.

12. The stent according to claim 10, wherein

in a configuration in which the intersection between the second cells is arranged in the hole of each first cell, one intersection between the second cells is arranged in one hole of each first cell.

13. The stent according to claim 10, wherein

in the state in which the second stent body is inserted into the first stent body, a percentage of a non-hole portion per unit surface area in a portion where the first stent body and the second stent body overlap with each other is 5 to 50%.

14. The stent according to claim 10, wherein

each first cell includes, in an annular direction inclined with respect to the circumferential direction, a pair of first struts and one first strut arranged with a clearance from the pair of first struts, and

each second cell includes, in an annular direction inclined with respect to the circumferential direction, a pair of second struts and one second strut arranged with a clearance from the pair of second struts.

15. The stent according to claim 14, wherein

adjacent ones of the plurality of first cells are connected to each other at a substantially S-shaped first intersection in the annular direction inclined with respect to the circumferential direction, and

adjacent ones of the plurality of second cells are connected to each other at a substantially S-shaped second intersection in the annular direction inclined with respect to the circumferential direction.

16. The stent according to claim 15, wherein

the annular direction in which the plurality of first

cells is connected at the first intersections and the annular direction in which the plurality of second cells is connected at the second intersections are symmetrical with respect to a line along the radial direction.