from microorganisms), and to consistently maintain that isolation even while the coupling is connected and disconnected multiple times.

In one implementation, an aseptic fluid coupling system includes a first coupling portion and a second coupling portion configured to releasably couple with the first coupling portion. The first coupling portion includes a first valve body defining a first longitudinal axis and a first end port, a first valve member disposed within the first valve body, and a cap that is releasably coupleable to the first valve body. The cap encloses at least a portion of the first valve body while the cap is coupled to the first valve body. The second coupling portion includes a housing, a second valve body coupled with the housing (the second valve body defining a second longitudinal axis and a second end port), a second valve member disposed within the second valve body, and a connection member configured to releasably couple with the first coupling portion. The connection member is movably coupled with the housing between a first position and a second position.

In a first aspect, there is provided an aseptic fluid coupling system comprising:

a first coupling portion comprising:

a first valve body defining a first longitudinal axis and a first end port;

a first valve member disposed within the first valve body; and

a cap that is releasably coupleable to the first valve body, the cap enclosing at least a portion of the first valve body while the cap is coupled to the first valve body; and

a second coupling portion configured to releasably couple with the first coupling portion, comprising:

a housing;

a second valve body coupled with the housing, the second valve body defining a second longitudinal axis and a second end port;

a second valve member disposed within the second valve body;

a connection member configured to releasably couple with the first coupling portion, the connection member movably coupled with the housing between a first position and a second position; and a flexible member coupled to the housing and to the connection member, wherein the flexible member acts as a seal to provide a sterility barrier between an interior region of the second coupling portion and all regions external to the second coupling portion.

Such an aseptic fluid coupling system may optionally include one or more of the following features. The second valve body may be slidably coupled with the housing. The second valve body may be slidable along the second longitudinal axis. The connection member may be slidably coupled with the housing. The connection member may be slidable between the first position and the second position along a path that is transverse to the second longitudinal axis. In some embodiments, while the connection member is in the second position, the connection member may be coaxial with the second longitudinal axis. In some embodiments, while the first coupling portion is coupled to the connection member, the first longitudinal axis is coincident with the second longitudinal axis. In particular embodiments, while the connection member is in the first position and the first coupling portion is coupled to the connection member, the first longitudinal axis may be spaced apart from the second longitudinal axis. The first longitudinal axis may be parallel to the second longitudinal axis. The cap may be releasably coupleable to the first valve body using a bayonet connection. In some embodiments, while the cap is coupled to the first valve body, a first seal exists between the cap and the first valve body, and the first seal may be configured to maintain sterility of a first sterile space enclosed within the cap and adjacent to the first valve member. In various embodiments, while the cap is uncoupled from the first valve body after the first coupling portion is coupled with the connection member, the sterility of the first sterile space is maintained. The second

defining a first longitudinal axis and a first end port, a first valve member disposed within the first valve body, and a cap that is releasably coupleable to the first valve body. The second coupling portion includes a housing, a second valve body coupled with the housing (the second valve body defining a second longitudinal axis and a second end port), a second valve member disposed within the second valve body, and a connection member configured to releasably couple with the first coupling portion. The connection member is slidably coupled with the housing and slidable in relation to the housing between a first position and a second position. While the first coupling portion is coupled with the connection member, the first coupling portion is positionable in a first position where the first longitudinal axis is spaced apart from the second longitudinal axis and a second position where the first longitudinal axis is coincident with the second longitudinal axis.

In a second aspect, there is provided an aseptic fluid coupling system comprising:

a first coupling portion comprising:

a first valve body defining a first longitudinal axis and a first end port;

a first valve member disposed within the first valve body; and

a cap that is releasably coupleable to the first valve body; and

a second coupling portion configured to releasably couple with the first coupling portion, comprising:

a housing;

a second valve body coupled with the housing, the second valve body defining a second longitudinal axis and a second end port;

a second valve member disposed within the second valve body; and

a connection member configured to releasably couple with the first coupling portion, the connection member slidably coupled with the housing and slidable in relation to the housing between a first position and a second position; and

a flexible member coupled to the housing and to the connection member, wherein the flexible member acts as a seal to provide a sterility barrier between an interior region of the second coupling portion and all regions external to the second coupling portion,

wherein, while the first coupling portion is coupled with the connection member, the first coupling portion is positionable in a first position where the first longitudinal axis is spaced apart from the second longitudinal axis and a second position where the first longitudinal axis is coincident with the second longitudinal axis.

Such an aseptic fluid coupling system may optionally include one or more of the following features. The second valve body may be slidably coupled with the housing. The second valve body may be slidable along the second longitudinal axis. The connection member may be slidable between the first position and the second position along a path that is transverse to the second longitudinal axis. The first longitudinal axis may be parallel to the second longitudinal axis. The cap may be releasably coupleable to the first valve body by a bayonet connection. In some embodiments, while the cap is coupled to the first valve body, a first seal exists between the cap and the first valve body. The first seal may be configured to maintain sterility of a first sterile space enclosed within the cap and adjacent to the first valve member. In various embodiments, while the cap is uncoupled from the first valve body after the first coupling portion is coupled with the connection member, the sterility of the first sterile space is maintained. The second coupling portion may be sealed so as to maintain sterility of a second sterile space adjacent to the second valve member. In some embodiments, while the connection member is in the second position, the first sterile space is in fluid communication with the second sterile space. In particular embodiments, while the connection member is in the second position, the second valve body is slidable along the second longitudinal axis such that the first valve member can become engaged with the second valve member to thereby open a fluid pathway between the first and second end ports. The fluid pathway may be a sterile fluid pathway. The aseptic fluid coupling system may further comprise a flexible member coupled to the housing and to the connection

member. The flexible member may be configured to flex while the connection member is moved between the first position and the second position. The flexible member may be configured to maintain a sterile seal of the second coupling portion while the connection member is moved between the first position and the second position. In some embodiments, while: (i) the first coupling portion is coupled with the connection member, (ii) the connection member is in the first position, and (iii) the cap is coupled with the first valve body, the connection member may be prevented from moving toward the second position. In various embodiments, while: (i) the first coupling portion is coupled with the connection member and (ii) the cap is uncoupled from the first valve body, the connection member may be slidable orthogonally in relation to the second longitudinal axis between the first position and the second position. In particular embodiments, while: (i) the first coupling portion is coupled with the connection member and (ii) the connection member is in the first position, the cap may be uncoupleable from the first valve body by a cap movement comprising a translation of the cap along the first longitudinal axis. The cap movement may further comprise a rotation of the cap about the first longitudinal axis prior to the translation of the cap along the first longitudinal axis.

In another implementation, an aseptic fluid coupling system comprises a first coupling portion and a second coupling portion to releasably couple with the first coupling portion. The first coupling portion includes a first valve body defining a first longitudinal axis and a first end port, a first valve member disposed within the first valve body, and a cap that is releasably coupleable to the first valve body. The cap encloses at least a portion of the first valve body while the cap is coupled to the first valve body. The second coupling portion includes a housing, a second valve body coupled with the housing, the second valve body defining a second longitudinal axis and a second end port, a second valve member disposed within the second valve body, and a connection member configured to releasably couple with the first coupling portion. While the first coupling portion is coupled with the connection member, the cap can by uncoupled from the first valve body by a cap movement comprising a translation of the cap along the first longitudinal axis.

In a third aspect, there is provided an aseptic fluid coupling system comprising:

a first coupling portion comprising:

- a first valve body defining a first longitudinal axis and a first end port;
- a first valve member disposed within the first valve body; and
- a cap that is releasably coupleable to the first valve body, the cap enclosing at least a portion of the first valve body while the cap is coupled to the first valve body; and

a second coupling portion to releasably couple with the first coupling portion, comprising:

- a housing;
- a second valve body coupled with the housing, the second valve body defining a second longitudinal axis and a second end port;
- a second valve member disposed within the second valve body;
- a connection member configured to releasably couple with the first coupling portion; and
- a flexible member coupled to the housing and to the connection member, wherein the flexible member acts as a seal to provide a sterility barrier between an interior region of the second coupling portion and all regions external to the second coupling portion,

wherein, while the first coupling portion is coupled with the connection member, the cap can be uncoupled from the first valve body by a cap movement comprising a translation of the cap along the first longitudinal axis.

Such an aseptic fluid coupling system may optionally include one or more of the following features. The cap movement may further comprise a rotation of the cap about the first longitudinal axis prior to the translation of the cap along the first longitudinal axis. The first valve member may be movable between (i) an open

to the connection member. The flexible member may reconfigure while the connection member is moved between the first position and the second position. The flexible member may be configured to maintain a sterile seal of the second coupling portion while the connection member is moved between the first position and the second position. In some embodiments, while: (i) the first coupling portion is coupled with the connection member, (ii) the connection member is in the first position, and (iii) the cap is coupled with the first valve body, the connection member is prevented from moving toward the second position. In various embodiments, while: (i) the first coupling portion is coupled with the connection member, (ii) the connection member is in the first position, and (iii) the cap is uncoupled with the first valve body, the connection member may be free to move toward the second position. In particular embodiments, while: (i) the first coupling portion is coupled with the connection member and (ii) the connection member is in the second position, the first longitudinal axis may be coincident with the second longitudinal axis, and a fluid flow path from the first end port to the second end port can be opened by a displacement of the second valve body in relation to the housing and toward the first valve body.

In another implementation, a method of using a reusable, aseptic fluid coupling system includes connecting a first coupling portion of the aseptic fluid coupling system to a second coupling portion of the aseptic fluid coupling system, moving the connection member (with the first coupling portion coupled thereto) to a second position in relation to the housing, and engaging the first valve member with the second valve member to open a fluid pathway between the first and second end ports. The first coupling portion can include: (i) a first valve body defining a first longitudinal axis and a first end port; (ii) a first valve member disposed within the first valve body; and (iii) a cap that is releasably coupled to the first valve body. The second coupling portion can include: (a) a housing; (b) a second valve body coupled with the housing, the second valve body defining a second longitudinal axis and a second end port; (c) a second valve member disposed within the second valve body; and (d) a connection member releasably coupled with the first coupling portion and disposed at a first position in relation to the housing.

In a fourth aspect, there is provided a method of using a reusable, aseptic fluid coupling system, the method comprising:

connecting a first coupling portion of the aseptic fluid coupling system to a second coupling portion of the aseptic fluid coupling system, wherein the first coupling portion comprises: (i) a first valve body defining a first longitudinal axis and a first end port; (ii) a first valve member disposed within the first valve body; and (iii) a cap that is releasably coupled to the first valve body, wherein the second coupling portion comprises: (a) a housing; (b) a second valve body coupled with the housing, the second valve body defining a second longitudinal axis and a second end port; (c) a second valve member disposed within the second valve body; (d) a connection member releasably coupled with the first coupling portion and disposed at a first position in relation to the housing; and (e) a flexible member coupled to the housing and to the connection member, wherein the flexible member acts as a seal to provide a sterility barrier between an interior region of the second coupling portion and all regions external to the second coupling portion;

moving the connection member, with the first coupling portion coupled thereto, to a second position in relation to the housing; and

engaging the first valve member with the second valve member to open a fluid pathway between the first and second end ports.

Such a method of using a reusable, aseptic fluid coupling system may optionally include one or more of the following features. The first valve member and the second valve member may be each sterile, and the fluid pathway may be a sterile fluid pathway. The method may also include, after opening the sterile fluid pathway,

disengaging the first valve member from the second valve member to close the fluid pathway between the first and second end ports. The method may also include, after disengaging the first valve member from the second valve member, disconnecting the first coupling portion from the second coupling portion, wherein the first valve member and the second valve member each remain sterile. The method may also include, after disconnecting the first coupling portion from the second coupling portion, reconnecting the first coupling portion to the second coupling portion and re-opening the sterile fluid pathway, wherein the first valve member and the second valve member each remain sterile.

In another implementation, a fluid coupling device includes a first coupling portion and a second coupling portion. The first coupling portion includes a first valve body defining a first longitudinal axis and a first end port, and a cap that is releasably coupleable to the first valve body. The second coupling portion includes a housing, a second valve body coupled with the housing (the second valve body defining a second longitudinal axis and a second end port), and a connection member configured to releasably couple with the first coupling portion. The connection member is movably coupled with the housing between a first position in which the first and second longitudinal axes are dissimilar from each other and a second position in which the first and second longitudinal axes are coincident.

In a fifth aspect, there is provided a fluid coupling device comprising:

a first coupling portion comprising:

a first valve body defining a first longitudinal axis and a first end port; and

a cap that is releasably coupleable to the first valve body; and

a second coupling portion comprising:

a housing;

a second valve body coupled with the housing, the second valve body defining a second longitudinal axis and a second end port; and

a connection member configured to releasably couple with the first coupling portion, the connection member movably coupled with the housing between a first position in which the first and second longitudinal axes are dissimilar from each other and a second position in which the first and second longitudinal axes are coincident; and a flexible member coupled to the housing and to the connection member, wherein the flexible member acts as a seal to provide a sterility barrier between an interior region of the second coupling portion and all regions external to the second coupling portion.

In another implementation, an aseptic fluid coupling system includes a first coupling portion, a second coupling portion that is releasably coupleable with the first coupling portion, and a middle coupling portion configured to releasably connect with the first coupling portion and with the second coupling portion. The first coupling portion includes a first valve body defining a first end port, a first valve member disposed within the first valve body, and a first cap that is releasably coupleable to the first valve body. The first cap encloses at least a portion of the first valve body while the first cap is coupled to the first valve body. The second coupling portion includes a second valve body defining a second end port, a second valve member disposed within the second valve body (the second valve member being engageable with the first valve member such that, while the first valve member and the second valve member are engaged, a fluid flow path is open between the first end port and the second end port), and a second cap that is releasably coupleable to the second valve body. The second cap encloses at least a portion of the second valve body while the second cap is coupled to the second valve body. The middle coupling portion defines

an enclosure. The middle coupling portion is configured such that, while the first coupling portion and the second coupling portion are connected to the middle coupling portion, the first coupling portion and the second coupling portion can be coupled to each other within the enclosure.

In a sixth aspect, there is provided an aseptic fluid coupling system comprising:

a first coupling portion comprising:

a first valve body defining a first end port;

a first valve member disposed within the first valve body; and

a first cap that is releasably coupleable to the first valve body, the first cap enclosing at least a portion of the first valve body while the first cap is coupled to the first valve body;

a second coupling portion that is releasably coupleable with the first coupling portion, the second coupling portion comprising:

a second valve body defining a second end port;

a second valve member disposed within the second valve body, the second valve member being engageable with the first valve member such that, while the first valve member and the second valve member are engaged, a fluid flow path is open between the first end port and the second end port;

a second cap that is releasably coupleable to the second valve body, the second cap enclosing at least a portion of the second valve body while the second cap is coupled to the second valve body; and

a flexible member coupled to the housing and to the connection member, wherein the flexible member acts as a seal to provide a sterility barrier between an interior region of the second coupling portion and all regions external to the second coupling portion; and

a middle coupling portion configured to releasably connect with the first coupling portion and with the second coupling portion, the middle coupling portion defining an enclosure, the middle coupling portion configured such that, while the first coupling portion and the second coupling portion are connected to the middle coupling portion, the first coupling portion and the second coupling portion can be coupled to each other within the enclosure.

Such an aseptic fluid coupling system may optionally include one or more of the following features. The middle coupling portion may further comprise a first cap trap and a second cap trap. The first cap trap may be releasably coupleable with the first cap and the second cap trap is releasably coupleable with the second cap. The first cap trap and the second cap trap may be disposed within the enclosure. In some embodiments, while the first coupling portion and the second coupling portion are coupled to each other within the enclosure, the first cap trap is coupled to the first cap and the second cap trap is coupled to the second cap. The first cap trap coupled to the

first cap and the second cap trap coupled to the second cap may be each loosely contained within the enclosure.

In another implementation, an aseptic fluid coupling system includes a first coupling portion and a second coupling portion that is configured to releasably couple with the first coupling portion. The first coupling portion includes a first valve body defining a first end port and a first longitudinal axis, a first valve member disposed within the first valve body, and a first cap that is releasably coupleable to the first valve body. The first cap encloses at least a portion of the first valve body while the first cap is coupled to the first valve body. The second coupling portion includes an inner housing defining a second end port (the inner housing configured to releasably couple with the first cap), a second valve member coupled to the inner housing and defining a second longitudinal axis (the second valve member configured to releasably engage with the first valve member), and an outer housing that is rotatable and translatable in relation to the inner housing. The outer housing includes a connection structure that is configured to releasably couple with the first valve body. The connection structure defines a third longitudinal axis.

In a seventh aspect, there is provided an aseptic fluid coupling system comprising:

a first coupling portion comprising:

a first valve body defining a first end port and a first longitudinal axis;

a first valve member disposed within the first valve body; and

a first cap that is releasably coupleable to the first valve body, the first cap enclosing at least a portion of the first valve body while the first cap is coupled to the first valve body; and

a second coupling portion that is configured to releasably couple with the first coupling portion, the second coupling portion comprising:

an inner housing defining a second end port, the inner housing configured to releasably couple with the first cap;

a second valve member coupled to the inner housing and defining a second longitudinal axis, the second valve member configured to releasably engage with the first valve member;

an outer housing that is rotatable and translatable in relation to the inner housing, the outer housing including a connection structure that is configured to releasably couple with the first valve body, the connection structure defining a third longitudinal axis; and a flexible member coupled to the housing and to the connection member, wherein the flexible member acts as a seal to provide a sterility barrier between an interior region of the second coupling portion and all regions external to the second coupling portion.

Such an aseptic fluid coupling system may optionally include one or more of the following features. The first coupling portion may be coupleable with the second coupling portion such that the first longitudinal axis and the third longitudinal axis are coincident and spaced apart from the second longitudinal axis. In some embodiments, while the first coupling portion is coupled with the second coupling portion, the inner housing is longitudinally translatable in relation to the outer housing. Longitudinal

translation of the inner housing in relation to the outer housing may cause the cap to uncouple from the first valve body. In various embodiments, while the cap is uncoupled from the first valve body, the inner housing may be rotatable in relation to the outer housing such that the first longitudinal axis can be aligned coincident with the second longitudinal axis. In some embodiments, while the first longitudinal axis is aligned coincident with the second longitudinal axis, the first valve member can be engaged with the second valve member to establish a fluid pathway between the first end port and the second end port. The fluid pathway may be a sterile fluid pathway.

In another implementation, an aseptic fluid coupling system includes a first means for coupling to a first portion of a fluid line and a second means for coupling to a second portion of the fluid line and for repeatably connecting and disconnecting with the first means in a sterile, aseptic manner.

Provided is an aseptic fluid coupling system comprising:

a first means for coupling to a first portion of a fluid line;

a second means for coupling to a second portion of the fluid line and for repeatably connecting and disconnecting with the first means in a sterile, aseptic manner.

Particular embodiments of the subject matter described in this document can be implemented to realize one or more of the following advantages. First, in some embodiments the fluid coupling systems provided herein are configured to allow fluid flow therethrough in a sterile/isolated manner. Moreover, in some embodiments the fluid coupling systems provided herein are configured to allow multiple connection and disconnection cycles while maintaining the sterility/isolation of the fluid pathway through the coupling system, even while the fluid coupling systems are used in a non-sterile environment and/or in an environment containing materials considered as contaminants in relation to the fluid flowing through the coupling.

Second, in some embodiments the fluid coupling systems are configured to prevent undesired or improper movements during the coupling and/or decoupling processes of the fluid coupling portions. For example, in some embodiments the fluid coupling systems include physical features that preclude a user from implementing actions that are inconsistent with the proper process for coupling the portions of the fluid coupling systems to establish a sterile fluid pathway therethrough.

Third, in some embodiments, the fluid coupling systems may advantageously provide a user with audible and/or tactile feedback in reference to the motions performed for physically connecting and disconnecting the two portions of the fluid coupling systems from each other. Such audible and/or tactile feedback can provide the user with an efficient and conclusive indication or confirmation of the proper function and desired configuration of the fluid coupling systems.

Fourth, some embodiments of the fluid coupling systems provide an improved

WHAT IS CLAIMED IS:

1. An aseptic fluid coupling system comprising:

a first coupling portion comprising:

a first valve body defining a first longitudinal axis and a first end port;

a first valve member disposed within the first valve body; and

a cap that is releasably coupleable to the first valve body, the cap enclosing at least a portion of the first valve body while the cap is coupled to the first valve body; and

a second coupling portion configured to releasably couple with the first coupling portion, comprising:

a housing;

a second valve body coupled with the housing, the second valve body defining a second longitudinal axis and a second end port;

a second valve member disposed within the second valve body;

a connection member configured to releasably couple with the first coupling portion, the connection member movably coupled with the housing between a first position and a second position; and

a flexible member coupled to the housing and to the connection member, wherein the flexible member acts as a seal to provide a sterility barrier between an interior region of the second coupling portion and all regions external to the second coupling portion.

2. The aseptic fluid coupling system of claim 1, wherein the second valve body is slidably coupled with the housing.

3. The aseptic fluid coupling system of claim 2, wherein the second valve body is slidable along the second longitudinal axis.

4. The aseptic fluid coupling system of claim 1, wherein the connection member is slidably coupled with the housing.

5. The aseptic fluid coupling system of claim 4, wherein the connection member is slidable between the first position and the second position along a path that is transverse to the second longitudinal axis.

6. The aseptic fluid coupling system of claim 1, wherein, while the connection

15. The aseptic fluid coupling system of claim 13, wherein, while the connection member is in the second position, the second valve body is slidable along the second longitudinal axis such that the first valve member can become engaged with the second valve member to thereby open a fluid pathway between the first and second end ports.

16. The aseptic fluid coupling system of claim 15, wherein the fluid pathway is a sterile fluid pathway.

17. The aseptic fluid coupling system of claim 1, wherein the flexible member reconfigures while the connection member is moved between the first position and the second position.

18. The aseptic fluid coupling system of claim 17, wherein the flexible member is configured to maintain a sterile seal of the second coupling portion while the connection member is moved between the first position and the second position.

19. The aseptic fluid coupling system of claim 1, wherein while: (i) the first coupling portion is coupled with the connection member, (ii) the connection member is in the first position, and (iii) the cap is coupled with the first valve body, the connection member is prevented from moving toward the second position.

20. The aseptic fluid coupling system of claim 1, wherein while: (i) the first coupling portion is coupled with the connection member and (ii) the connection member is in the first position, the cap can be uncoupled from the first valve body by a cap movement comprising a translation of the cap along the first longitudinal axis.

21. The aseptic fluid coupling system of claim 20, wherein the cap movement further comprises a rotation of the cap about the first longitudinal axis prior to the translation of the cap along the first longitudinal axis.

22. The aseptic fluid coupling system of claim 1, wherein while: (i) the first coupling

portion is coupled with the connection member, (ii) the connection member is in the first position, and (iii) the cap is uncoupled with the first valve body, the connection member is free to move toward the second position.

23. The aseptic fluid coupling system of claim 1, wherein while: (i) the first coupling portion is coupled with the connection member and (ii) the connection member is in the second position, the first longitudinal axis is coincident with the second longitudinal axis, and a fluid flow path from the first end port to the second end port can be opened by a displacement of the second valve body in relation to the housing and toward the first valve body.

24. An aseptic fluid coupling system comprising:

a first coupling portion comprising:

a first valve body defining a first longitudinal axis and a first end port;

a first valve member disposed within the first valve body; and

a cap that is releasably coupleable to the first valve body; and

a second coupling portion configured to releasably couple with the first coupling portion, comprising:

a housing;

a second valve body coupled with the housing, the second valve body defining a second longitudinal axis and a second end port;

a second valve member disposed within the second valve body;

a connection member configured to releasably couple with the first coupling portion, the connection member slidably coupled with the housing and slidable in relation to the housing between a first position and a second position; and

a flexible member coupled to the housing and to the connection member, wherein the flexible member acts as a seal to provide a sterility barrier between an interior region of the second coupling portion and all regions external to the second coupling portion,

wherein, while the first coupling portion is coupled with the connection member, the first coupling portion is positionable in a first position where the first longitudinal axis is spaced apart from the second longitudinal axis and a second position where the first longitudinal axis is coincident with the second longitudinal axis.

25. The aseptic fluid coupling system of claim 24, wherein the second valve body is slidably coupled with the housing.

second valve member to thereby open a fluid pathway between the first and second end ports.

35. The aseptic fluid coupling system of claim 34, wherein the fluid pathway is a sterile fluid pathway.

36. The aseptic fluid coupling system of claim 24, wherein the flexible member is configured to flex while the connection member is moved between the first position and the second position.

37. The aseptic fluid coupling system of claim 36, wherein the flexible member is configured to maintain a sterile seal of the second coupling portion while the connection member is moved between the first position and the second position.

38. The aseptic fluid coupling system of claim 24, wherein while: (i) the first coupling portion is coupled with the connection member, (ii) the connection member is in the first position, and (iii) the cap is coupled with the first valve body, the connection member is prevented from moving toward the second position.

39. The aseptic fluid coupling system of claim 24, wherein while: (i) the first coupling portion is coupled with the connection member and (ii) the cap is uncoupled from the first valve body, the connection member is slidable orthogonally in relation to the second longitudinal axis between the first position and the second position.

40. The aseptic fluid coupling system of claim 24, wherein while: (i) the first coupling portion is coupled with the connection member and (ii) the connection member is in the first position, the cap is uncoupleable from the first valve body by a cap movement comprising a translation of the cap along the first longitudinal axis.

41. The aseptic fluid coupling system of claim 40, wherein the cap movement further comprises a rotation of the cap about the first longitudinal axis prior to the translation of the cap along the first longitudinal axis.

42. An aseptic fluid coupling system comprising:

a first coupling portion comprising:

a first valve body defining a first longitudinal axis and a first end port;

a first valve member disposed within the first valve body; and

a cap that is releasably coupleable to the first valve body, the cap enclosing at least a portion of the first valve body while the cap is coupled to the first valve body; and

a second coupling portion to releasably couple with the first coupling portion, comprising:

a housing;

a second valve body coupled with the housing, the second valve body defining a second longitudinal axis and a second end port;

a second valve member disposed within the second valve body;

a connection member configured to releasably couple with the first coupling portion; and

a flexible member coupled to the housing and to the connection member, wherein the flexible member acts as a seal to provide a sterility barrier between an interior region of the second coupling portion and all regions external to the second coupling portion,

wherein, while the first coupling portion is coupled with the connection member, the cap can be uncoupled from the first valve body by a cap movement comprising a translation of the cap along the first longitudinal axis.

43. The aseptic fluid coupling system of claim 42, wherein the cap movement further comprises a rotation of the cap about the first longitudinal axis prior to the translation of the cap along the first longitudinal axis.

44. The aseptic fluid coupling system of claim 42, wherein the first valve member is movable between (i) an open position that allows fluid flow through the first valve body and (ii) a closed position that blocks fluid flow through the first valve body, and wherein the first valve member is spring-biased to be located in the closed position.

45. The aseptic fluid coupling system of claim 42, wherein the second valve member is movable between (i) an open position that allows fluid flow through the second valve body and (ii) a closed position that blocks fluid flow through the second valve body, and wherein the second valve member is spring-biased to be located in the closed position.

wherein the first seal is configured to maintain sterility of a first sterile space enclosed within the cap and adjacent to the first valve member.

56. The aseptic fluid coupling system of claim 55, wherein while the cap is uncoupled from the first valve body after the first coupling portion is coupled with the connection member, the sterility of the first sterile space is maintained.

57. The aseptic fluid coupling system of claim 56, wherein the second coupling portion is sealed so as to maintain sterility of a second sterile space adjacent to the second valve member.

58. The aseptic fluid coupling system of claim 57, wherein, while the connection member is in the second position, the first sterile space is in fluid communication with the second sterile space.

59. The aseptic fluid coupling system of claim 57, wherein, while the connection member is in the second position, the second valve body is slidable along the second longitudinal axis such that the first valve member can become engaged with the second valve member to thereby open a fluid pathway between the first and second end ports.

60. The aseptic fluid coupling system of claim 59, wherein the fluid pathway is a sterile fluid pathway.

61. The aseptic fluid coupling system of claim 42, wherein the flexible member reconfigures while the connection member is moved between the first position and the second position.

62. The aseptic fluid coupling system of claim 61, wherein the flexible member is configured to maintain a sterile seal of the second coupling portion while the connection member is moved between the first position and the second position.

63. The aseptic fluid coupling system of claim 42, wherein while: (i) the first coupling

portion is coupled with the connection member, (ii) the connection member is in the first position, and (iii) the cap is coupled with the first valve body, the connection member is prevented from moving toward the second position.

64. The aseptic fluid coupling system of claim 42, wherein while: (i) the first coupling portion is coupled with the connection member, (ii) the connection member is in the first position, and (iii) the cap is uncoupled with the first valve body, the connection member is free to move toward the second position.

65. The aseptic fluid coupling system of claim 42, wherein while: (i) the first coupling portion is coupled with the connection member and (ii) the connection member is in the second position, the first longitudinal axis is coincident with the second longitudinal axis, and a fluid flow path from the first end port to the second end port can be opened by a displacement of the second valve body in relation to the housing and toward the first valve body.

66. A method of using a reusable, aseptic fluid coupling system, the method comprising:

connecting a first coupling portion of the aseptic fluid coupling system to a second coupling portion of the aseptic fluid coupling system, wherein the first coupling portion comprises: (i) a first valve body defining a first longitudinal axis and a first end port; (ii) a first valve member disposed within the first valve body; and (iii) a cap that is releasably coupled to the first valve body, wherein the second coupling portion comprises: (a) a housing; (b) a second valve body coupled with the housing, the second valve body defining a second longitudinal axis and a second end port; (c) a second valve member disposed within the second valve body; (d) a connection member releasably coupled with the first coupling portion and disposed at a first position in relation to the housing; and (e) a flexible member coupled to the housing and to the connection member, wherein the flexible member acts as a seal to provide a sterility barrier between an interior region of the second coupling portion and all regions external to the second coupling portion;

moving the connection member, with the first coupling portion coupled thereto, to a second position in relation to the housing; and

engaging the first valve member with the second valve member to open a fluid pathway between the first and second end ports.

67. The method of claim 66, wherein the first valve member and the second valve

member are each sterile, and wherein the fluid pathway is a sterile fluid pathway.

68. The method of claim 67, further comprising, after opening the sterile fluid pathway, disengaging the first valve member from the second valve member to close the fluid pathway between the first and second end ports.

69. The method of claim 68, further comprising, after disengaging the first valve member from the second valve member, disconnecting the first coupling portion from the second coupling portion, wherein the first valve member and the second valve member each remain sterile.

70. The method of claim 69, further comprising, after disconnecting the first coupling portion from the second coupling portion, reconnecting the first coupling portion to the second coupling portion and re-opening the sterile fluid pathway, wherein the first valve member and the second valve member each remain sterile.

71. A fluid coupling device comprising:

a first coupling portion comprising:

a first valve body defining a first longitudinal axis and a first end port; and

a cap that is releasably coupleable to the first valve body; and

a second coupling portion comprising:

a housing;

a second valve body coupled with the housing, the second valve body defining a second longitudinal axis and a second end port;

a connection member configured to releasably couple with the first coupling portion, the connection member movably coupled with the housing between a first position in which the first and second longitudinal axes are dissimilar from each other and a second position in which the first and second longitudinal axes are coincident; and

a flexible member coupled to the housing and to the connection member, wherein the flexible member acts as a seal to provide a sterility barrier between an interior region of the second coupling portion and all regions external to the second coupling portion.

72. An aseptic fluid coupling system comprising:

a first coupling portion comprising:

a first valve body defining a first end port;

a first valve member disposed within the first valve body; and

a first cap that is releasably coupleable to the first valve body, the first cap enclosing at least a portion of the first valve body while the first cap is coupled to the first valve body;

a second coupling portion that is releasably coupleable with the first coupling portion, the second coupling portion comprising:

a second valve body defining a second end port;

a second valve member disposed within the second valve body, the second valve member being engageable with the first valve member such that, while the first valve member and the second valve member are engaged, a fluid flow path is open between the first end port and the second end port;

a second cap that is releasably coupleable to the second valve body, the second cap enclosing at least a portion of the second valve body while the second cap is coupled to the second valve body; and

a flexible member coupled to the housing and to the connection member, wherein the flexible member acts as a seal to provide a sterility barrier between an interior region of the second coupling portion and all regions external to the second coupling portion; and

a middle coupling portion configured to releasably connect with the first coupling portion and with the second coupling portion, the middle coupling portion defining an enclosure, the middle coupling portion configured such that, while the first coupling portion and the second coupling portion are connected to the middle coupling portion, the first coupling portion and the second coupling portion can be coupled to each other within the enclosure.

73. The aseptic fluid coupling system of claim 72, wherein the middle coupling portion further comprises a first cap trap and a second cap trap, wherein the first cap trap is releasably coupleable with the first cap and the second cap trap is releasably coupleable with the second cap.

74. The aseptic fluid coupling system of claim 73, wherein the first cap trap and the second cap trap are disposed within the enclosure.

75. The aseptic fluid coupling system of claim 73, wherein while the first coupling portion and the second coupling portion are coupled to each other within the enclosure, the first cap trap is coupled to the first cap and the second cap trap is

coupled to the second cap, and wherein the first cap trap coupled to the first cap and the second cap trap coupled to the second cap are each loosely contained within the enclosure.

76. An aseptic fluid coupling system comprising:

a first coupling portion comprising:

a first valve body defining a first end port and a first longitudinal axis;

a first valve member disposed within the first valve body; and

a first cap that is releasably coupleable to the first valve body, the first cap enclosing at least a portion of the first valve body while the first cap is coupled to the first valve body; and

a second coupling portion that is configured to releasably couple with the first coupling portion, the second coupling portion comprising:

an inner housing defining a second end port, the inner housing configured to releasably couple with the first cap;

a second valve member coupled to the inner housing and defining a second longitudinal axis, the second valve member configured to releasably engage with the first valve member;

an outer housing that is rotatable and translatable in relation to the inner housing, the outer housing including a connection structure that is configured to releasably couple with the first valve body, the connection structure defining a third longitudinal axis; and

a flexible member coupled to the housing and to the connection member, wherein the flexible member acts as a seal to provide a sterility barrier between an interior region of the second coupling portion and all regions external to the second coupling portion.

77. The aseptic fluid coupling system of claim 76, wherein the first coupling portion is coupleable with the second coupling portion such that the first longitudinal axis and the third longitudinal axis are coincident and spaced apart from the second longitudinal axis.

78. The aseptic fluid coupling system of claim 76, wherein, while the first coupling portion is coupled with the second coupling portion, the inner housing is longitudinally translatable in relation to the outer housing.

79. The aseptic fluid coupling system of claim 78, wherein longitudinal translation of the inner housing in relation to the outer housing can cause the cap to uncouple from

the first valve body.

80. The aseptic fluid coupling system of claim 79, wherein, while the cap is uncoupled from the first valve body, the inner housing is rotatable in relation to the outer housing such that the first longitudinal axis can be aligned coincident with the second longitudinal axis.

81. The aseptic fluid coupling system of claim 80, wherein, while the first longitudinal axis is aligned coincident with the second longitudinal axis, the first valve member can be engaged with the second valve member to establish a fluid pathway between the first end port and the second end port.

82. The aseptic fluid coupling system of claim 81, wherein the fluid pathway is a sterile fluid pathway.