~~I claim~~CLAIMS:

1. A cap comprising:

a~~n~~ housing comprising

a sidewall,

an open first end formed by said sidewall with a first opening to a first cavity within said housing for receiving a hub of a male needleless connector,

an open second end formed opposite said first end by said sidewall with a second opening to a second cavity within said housing for receiving a hub of a female needleless connector, and

a separation wall disposed within said sidewall, said separation wall comprising

a first surface essentially perpendicular to a first portion of said sidewall extending from said separation wall to said first open end of said housing, said first surface forming a closed first end of said first cavity, and

a second surface opposite said first surface and essentially perpendicular to a second portion of said sidewall extending from said separation wall to said second open end of said housing, said second surface forming a closed second end of said second cavity; and

a protrusion within said first cavity, said protrusion comprising

an inner surface defining an inner portion of said first cavity said inner portion comprising an opening for receiving the hub of the male needleless connector in the inner portion,

an outer surface ~~defining an outer~~ of said inner portion of said first cavity, and

an outer thread on said outer surface, said outer thread being sufficient to interlock with a mating feature of said male needleless connector forming a leak proof seal; and

an outer portion of said first cavity, between said outer surface of said inner portion and said first portion of said sidewall, being sufficient to receive a collar of said male needleless connector when said outer thread of said protrusion interlocks with said mating feature of said male needleless connector.

2. The cap of claim 1 further comprising:

an inner thread on an inner surface of said sidewall between said separation wall and said open second end,

wherein:

when said hub of said female needleless connector is received within said second cavity, said hub of said female needleless connector is secured within said second cavity by interlocking at least a portion of said inner thread with a mating feature on said hub of said female needleless connector.

3. The cap of claim 1 or 2 wherein:

when said hub of said male needleless connector is received within said first cavity, said hub of said male needleless connector is secured within said inner portion of said first cavity by interlocking at least a portion of said outer thread of said protrusion with said mating feature disposed on a collar of

said male needleless connector when said collar is received within said ~~outer portion of said~~ first cavity.

4. The cap of any one of claims 1, 2, or 3 wherein:

said mating feature of said male needleless connector comprised a thread, and said protrusion comprises a full thread corresponding to said thread of said mating feature of said male needleless connector.

5. The cap of any one of claims 1, 2, 3 or 4 wherein:

said protrusion extends essentially from said first surface of said separation wall toward said open first end of said housing.

6. The cap of any one of claims 1, 2, 3, 4 or 5 wherein:

said protrusion extends essentially parallel to said cylindrical sidewall.

7. The cap of any one of claims 1, 2, 3, 5 or 6 further comprising:

a second protrusion within said second cavity,

wherein:

when said hub of said female needleless connector is received within said second cavity, said second protrusion interfaces with an open end of said hub of said female needleless connector.

8. The cap of any one of claims 1, 2, 3, 5, 6 or 7 wherein:

said second protrusion extends essentially from said second surface of said separation wall toward said open second end of said housing.

9. The cap of any one of claims 1, 2, 3, 5, 6, 7 or 8 wherein:

said housing comprises an essentially cylindrical outer surface formed by an exterior of said cylindrical sidewall.

10. The cap of any one of claims 1, 2, 3, 4, 5, 6, 7, 8, or 9 further comprising:

at least one disinfection sponge configured within ~~at least one of~~ said inner portion of said first cavity, ~~said outer portion~~ between said inner protrusion and said first portion of said sidewall of said first cavity, and said second cavity; and

at least one removable cover sealing at least one of an opening to said inner portion of said first cavity, said open first end of said housing, and said open second end of said housing.

11. The cap of any one of claims 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10 wherein:

said sidewall is essentially cylindrical.

12. A capping method including interfacing with one or more connectors, wherein a cap includes

a housing comprising

a sidewall,

an open first end formed by said sidewall with a first opening to a first cavity within said housing for receiving a hub of a male needleless connector,

an open second end formed opposite said first end by said sidewall with a second opening to a second cavity within said housing for receiving a hub of a female needleless connector, ~~and~~

a separation wall disposed within said sidewall, said separation wall comprising

a first surface essentially perpendicular to a first portion of said sidewall extending from said separation wall to said first open end of said housing, said first surface forming a closed first end of said first cavity, and

a second surface opposite said first surface and essentially perpendicular to a second portion of said sidewall extending from said separation wall to said second open end of said housing, said second surface forming a closed second end of said second cavity, ~~and~~

a protrusion within said first cavity comprising

an inner surface defining an inner portion of said first cavity, said inner portion comprising an opening for receiving a tip or hub of the male needleless connector in the inner portion,

an outer surface ~~defining an outer portion~~ of said inner portion of said first cavity, and

an outer thread on said outer surface, said outer thread being sufficient to interlock with a mating feature of said male needleless connector forming a leak proof seal,

an outer portion of said first cavity, between said outer surface of said inner portion and said first portion of said sidewall, being sufficient to receive a collar of said male needleless connector when said outer thread of said protrusion interlocks with said mating feature of said male needleless connector, and

an inner protrusion on an inner surface of said second portion of said sidewall for engaging a mating feature on said hub of said female needleless connector,

said method comprising at least one of:

receiving a male needleless connector within said first cavity, and securing said hub of said male needleless connector within said inner portion of said first cavity by interlocking at least a portion of said outer thread of said protrusion with said mating feature disposed on a collar of said male needleless connector when said collar is received within said ~~outer portion of said~~ first cavity; and

receiving a hub of a female needleless connector within said second cavity, and securing said hub of said female needleless connector within said second cavity by interlocking at least a portion of said inner ~~thread~~ protrusion with ~~a~~ said mating feature on said hub of said female needleless connector.

13. The method of claim 12 wherein:

said mating feature of said male needleless connector comprised a thread, and said protrusion comprises a full thread corresponding to said thread of said mating feature of said male needleless connector.

14. The method of ~~any one of~~ claim~~s~~ 12 or 13 wherein:

said protrusion extends essentially from said first surface of said separation wall toward said open first end of said housing.

15. The method of any one of claims 12, 13, or 14 wherein:

said protrusion extends essentially parallel to said cylindrical sidewall.

16. The method of any one of claims 12, 13, or 15 further comprising:

a second protrusion within said second cavity,

wherein:

when said hub of said female needleless connector is received within said second cavity, said second protrusion interfaces with an open end of said hub of said female needleless connector.

17. The method of any one of claims 12, 13, 15, or 16 wherein:

said second protrusion extends essentially from said second surface of said separation wall toward said open second end of said housing.

18. The method of any one of claims 12, 13, 15, 16, or 17 wherein:

said housing comprises an essentially cylindrical outer surface formed by an exterior of said cylindrical sidewall.

19. The method of any one of claims 12, 13, 14, 15, 16, 17, or 18 further comprising:

at least one disinfection sponge configured within ~~at least one of~~ said inner portion of said first cavity, ~~said outer portion~~ between said inner protrusion and said first portion of said sidewall of said first cavity, and said second cavity; and

at least one removable cover sealing at least one of an opening to said inner portion of said first cavity, said open first end of said housing, and said open second end of said housing.

20. The method of any one of claims 12, 13, 14, 15, 16, 17, 18, or 19 wherein:

said sidewall is essentially cylindrical.