CLAIMS

1. A cap comprising:

a housing comprising an open first end with a first opening to a first cavity within said housing for receiving a female connector, said open first end having an interior surface configured to engage said female connector;

a base axially fixed with respect to said housing and rotatable with respect to said housing; and

a slide configured within said housing and comprising a second opening into a second cavity configured to receive an hub of a male connector, and an exterior surface configured to engage said male connector,

wherein said slide is rotationally fixed with respect to said base, and interfaces with said base such that

a first rotation of said base in a first rotational direction with respect to said housing causes said slide to move axially with respect to said base in a first axial direction to project out of said housing through said first cavity and via said first opening to receive and engage said male connector, and

a second rotation of said base in a second rotational direction opposite to said first rotational direction with respect to said housing causes said slide to move axially with respect to said base in a second axial direction opposite to said first axial direction to retract into said housing to allow access to said first cavity to receive and engage said female connector.

2. The cap of claim 1 further comprising:

a rod configured to project out of or retract into said second cavity,

wherein said rod interfaces with said base such that after said second rotation said rod projects into said first cavity to interact with said received and engaged female connector.

3. The cap of claim 2, wherein:

said rod interfaces with said base such that a third rotation of said base further in said second direction causes said rod to retract into said housing and out of said first cavity avoiding interaction of said rod with said received and engaged female connector.

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

an essentially cylindrical interior sidewall defining said first opening at a top of said housing, and

an essentially cylindrical exterior sidewall defining a third opening at a bottom of said housing.

5. The cap of claim 4 wherein

said base comprises:

an essentially cylindrical sidewall,

a bottom wall connected to said cylindrical sidewall, and

a protrusion extending out of an interior surface of said bottom wall; and

said slide comprising:

an essentially cylindrical structure comprising an upper portion and a lower portion, and said second cavity extending axially through said cylindrical structure,

wherein said second cavity at said upper portion is configured to receive said hub of said male connector,

exterior surface of said upper portion is configured to engage said male connector,

interior surface of said lower portion is configured to interface with said protrusion of said base to allow said slide to translate axially and radially with respect to said housing, and

exterior surface of said lower portion is configured to interface with an interior of said essentially cylindrical exterior sidewall of said housing to allow said slide to translate axially with respect to said housing and to essentially fix said slide rotationally with respect to said base.

6. The cap of claim 5, wherein:

said cylindrical exterior sidewall, said cylindrical interior sidewall, said first opening, said second opening, said third opening, said cylindrical sidewall, and said protrusion are co-axial.

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

an inner thread on said interior surface configured to engage said female connector,

wherein:

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

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

an outer thread on said exterior surface configured to engage said male connector,

wherein:

when said hub of said male connector is received within said second cavity, said hub of said male connector is secured within said second cavity by interlocking at least a portion of said outer thread with a mating feature of said male connector.

9. The cap of claim 8 wherein:

said mating feature of said male connector comprises a thread, and said outer thread comprises a full thread corresponding to said thread of said mating feature of said male connector.

10. The cap of claim 5 wherein:

said protrusion of said base comprises a thread; and

said interior surface of said lower portion of said slide comprises a groove corresponding to said thread.

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

said housing and said base are engaged by a snap fit connection essentially fixing said housing and said base axially with respect to each other, and allowing essentially free rotation of said base and said housing with respect to each other.

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

at least one removable cover sealing said first cavity.