~~I claims~~CLAIMS:

1. A system comprising:

a cap housing comprising a reservoir for storing a disinfecting solution and an open end with an opening into said reservoir, said open end comprising a contoured opening portion;

a connector comprising a contoured actuation surface on a tip of said connector and a barrier on a side of said connector, said barrier comprising a contoured external surface; and

an attachment mechanism pivotally connecting said cap housing to said connector such that said cap housing selectively interfaces with said tip of said connector and said barrier, respectively

wherein:

when said cap housing closes said connector, said contoured opening portion of said cap housing interfaces with said contoured actuation surface of said connector, and

when said cap housing opens said connector, said contoured opening portion of said cap housing interfaces with said contoured external surface of said barrier.

2. The system of claim 1 wherein said housing comprises:

a continuous sidewall,

a top wall, and

a closed end formed by said top wall,

wherein:

said reservoir comprises a cavity within said housing formed by interior surfaces of said top wall and said sidewall, said open end is formed by a rim of said sidewall, and a surface of said rim forms said contoured opening portion of said cap housing.

3. The system of ~~any one of~~ claim 1 or 2, wherein said connector is an IV needleless connector.

4. The system of any one of claim<u>s</u> 1, 2 or 3, wherein said cap housing pivots in one or more axes in reference to said connector.

5. The system of any one of claims 1, 2, 3, or 4, wherein said attachment mechanism comprises one or more arms extending from said cap housing and fixed with respect to said housing, and pivotally connected to an exterior surface of said connector.

6. The system of any one of claims 1, 2, 3, 4, or 5, further comprising at least one disinfection sponge configured within said reservoir.

7. The system of any one of claims 1, 2, 3, 4, 5, or 6, further comprising a removable cover configured on said contoured opening portion sealing said opening into said reservoir.

8. The system of any one of claims 1, 2, 3, 4, 5, 6, or 7, wherein said cap housing comprises a clear portion enabling view of a fill level of said disinfecting solution within said reservoir.

9. The system of any one of claims 1, 2, 3, 4, 5, 6, 7, or 8, wherein said connector comprises a hub having said tip, and said contoured actuation surface forming said tip of said hub.

10. The system ~~of any one~~ of claim~~s~~ 9, wherein said barrier comprising said contoured external surface is essentially axially perpendicular to said hub comprising said contoured actuation surface.

11. The system of claim 2, wherein a removable cover is configured on said contoured opening portion by attachment to a surface of said rim of said sidewall of said cap housing.

12. The system of any one of claims 1, 2, 3, 4, 5, 6, 7, 9, 10, or 11, wherein said contoured opening portion of said cap housing interfaces with said contoured actuation surface of said connector such that a first open area between said contoured opening portion and said contoured actuation surface is minimized.

13. The system of any one of claims 1, 2, 3, 4, 5, 6, 7, 9, 10, 11 or 12, wherein said contoured opening portion of said cap housing interfaces with said contoured external surface of said

barrier such that a second open area between said contoured opening portion and said contoured external surface is minimized.

14. The system of ~~any one of~~ claim~~s~~ 12 or 13, wherein at least one of said first and second open areas are minimized by an optimized configuration of said attaching mechanism with respect to said cap housing and said connector.

15. The system of claim 14, wherein said optimized configuration of said attaching mechanism comprises optimized configuration of said pivot connection of said cap housing to said connector for reducing at least one of a leakage of said disinfecting solution leakage and an evaporation of said disinfecting solution out of said reservoir.