CLAIMS

1. A subsea well assembly, characterized by:

an outer wellhead housing (10) having a bore (14) with a cylindrical portion;

an inner wellhead housing (20) which lands in the bore (14) of the outer wellhead housing (10);

a pocket (42) formed along an outer circumference of the inner wellhead housing (20); and

an anti-rotation assembly (40) disposed in the pocket (42) and in close contact with an outer surface of the inner wellhead housing (20) and an inner surface (14) of the outer wellhead housing (10) and with relative rotation of one of the inner or outer wellhead housings (20, 10) moveable in the pocket (42) to the portion with a reduced thickness where the anti-rotation device is wedged between the inner and outer wellhead housings (20, 10) to couple the inner and outer wellhead housings (20, 10).

2. The subsea well assembly according to claim 1, further comprising a plurality of anti-rotation assemblies (40) spaced apart circumferentially.

3. The subsea well assembly according to claim 2, wherein the anti-rotation assembly (40) is a cam roller (41) retained within the pocket, the cam roller (41) being in rollable engagement with the pocket (42) on the inner wellhead housing (20) and the bore (14) of the outer wellhead housing (10), the cam roller (41) arrests the rotation of the inner wellhead housing (20) when it becomes wedged into an edge of the pocket (42).

4. The subsea well assembly according to claim 3, further comprising a shear pin (46) through the roller (41) to retain the roller (41) in the pocket (42), wherein the shear pin (46) fractures in response to initiation of rotation of the inner wellhead housing (20).

5. The subsea well assembly according to claim 1, further comprising a spring (72)installed along the pocket (74) and retaining the roller (70) in a middle portion of the spring (72).

6. The subsea well assembly according to claim 2, wherein the anti-rotation assembly (60) is a spring (61) retained within the pocket (63) by a fastener (68), the spring (61) having a pair of legs (62) extending outward to engage the bore (14) of the outer wellhead housing (10), each of the legs (62) of the spring (61) arrest the rotation of the inner wellhead housing (20) when one of the legs (62) exerts a force against the bore (14) that counteracts the rotation of the inner wellhead housing (20).

7. The subsea well assembly according to claim 6, wherein the legs (62) of the spring (61) taper to a point (64).

8. The subsea well assembly according to claim 7, wherein the interface between the fastener (68) and the pocket (63) provide a reaction point either of the legs (62) to exert the counteracting force.

9. The subsea well assembly according to claim 1, wherein the anti-rotation assembly (40) arrests rotation within a 3 degree rotation of the inner wellhead housing (20).

CLAIMS

What is claimed is:

1. A subsea well assembly comprising:

an outer wellhead housing having a bore with a cylindrical portion;

an inner wellhead housing which lands in the bore of the outer wellhead housing;

a pocket formed along an outer circumference of the inner wellhead housing; and

at least one anti-rotation assembly located in the pocket having a cylindrical body that is in rolling contact with both the outer circumference and the cylindrical portion of the bore of the outer wellhead housing, so that when one of the inner or outer wellhead housings rotates with respect to the other, the body rolls to a portion of the pocket having a smaller thickness and becomes wedged between the inner and outer wellhead housing as the body engages the cylindrical portion of the bore of the outer wellhead housing.

2. The subsea well assembly according to claim 1, further comprising a plurality of anti-rotation assemblies spaced apart circumferentially.

3. The subsea well assembly according to claim 2, wherein the anti-rotation assembly is a cam roller retained within the pocket, the cam roller being in rollable engagement with the pocket on the inner wellhead housing and the bore of the outer wellhead housing, the cam roller arrests the rotation of the inner wellhead housing when it becomes wedged into an edge of the pocket.

4. The subsea well assembly according to claim 3, further comprising a shear pin through the roller to retain the roller in the pocket, wherein the shear pin fractures in response to initiation of rotation of the inner wellhead housing.

5. The subsea well assembly according to claim 1, further comprising a spring installed along the pocket and retaining the roller in a middle portion of the spring.

6. The subsea well assembly according to claim 1, wherein the anti-rotation assembly arrests rotation within a 3 degree rotation of the inner wellhead housing.

7. A subsea well assembly comprising:

an outer wellhead housing having a bore;

an inner wellhead housing which lands in the bore of the outer wellhead housing;

a pocket formed circumferentially along an outer surface of the inner wellhead housing and having a portion with a reduced thickness; and

an anti-rotation device disposed in the pocket and in close contact with an outer surface of the inner wellhead housing and an inner surface of the outer wellhead housing and with relative rotation of one of the inner or outer wellhead housings moveable in the pocket to the portion with a reduced thickness where the anti-rotation device is wedged between the inner and outer wellhead housings to couple the inner and outer wellhead housings.

8. The subsea well assembly according to claim 7, further comprising a plurality of anti-rotation devices spaced apart circumferentially.

9. The subsea well assembly according to claim 8, wherein the anti-rotation device is a cam roller retained within the pocket, the cam roller being in rollable engagement with the pocket on the inner wellhead housing and the bore of the outer wellhead housing, the cam roller arrests the rotation of the inner wellhead housing when it becomes wedged into an edge of the pocket.

10. The subsea well assembly according to claim 9, further comprising a shear pin through the roller to retain the roller in the pocket, wherein the shear pin fractures in response to initiation of rotation of the inner wellhead housing.

11. The subsea well assembly according to claim 7, further comprising a spring installed along the pocket and retaining the anti-rotation device in a middle portion of the spring.

12. The subsea well assembly according to claim 7, wherein the anti-rotation device is a spring retained within the pocket by a fastener, the spring having a pair of legs extending outward to engage the bore of the outer wellhead housing, each of the legs of the spring arrest the rotation of the inner wellhead housing when one of the legs exerts a force against the bore that counteracts the rotation of the inner wellhead housing.

13. The subsea well assembly according to claim 12, wherein the legs of the spring taper to a point.

14. The subsea well assembly according to claim 13, wherein the interface between the fastener and the pocket provide a reaction point either of the legs to exert the counteracting force.

15. The subsea well assembly according to claim 7, wherein the anti-rotation device arrests rotation within a 3 degree rotation of the inner wellhead housing.