CLAIMS

We claim:

Claim 1. A coupler system for use in a tool string comprising:

a first mandrel having a first interlocking interface at a first end, a first threaded interface about an external surface of the first mandrel, a radial groove comprising a reduced outer-diameter portion of the mandrel and a plurality of external slots extending from the groove toward the first end of the first mandrel;

a second mandrel having a second interlocking interface at a second end;

a coupling comprising a first coupling threaded interface having threads that complement the threaded interface of the first mandrel, and a plurality of internal slots extending from a first end of the coupling; and

a keyed latch ring having a plurality of internal keys and a plurality of external keys, the external keys corresponding to the plurality of internal slots of the coupling and the internal keys corresponding to the plurality of external slots of the first mandrel.

Claim 2. The coupler system of claim 1, wherein the second mandrel comprises a second threaded interface about an external surface of the second mandrel, the second threaded interface having a thread direction that opposes the thread direction of the threaded interface of the first mandrel, and wherein the coupling comprises a second coupling threaded interface having threads that complement the second threaded interface.

Claim 3. The coupler system of claim 1, wherein the second mandrel comprises a second threaded interface about an external surface of the second mandrel, the second threaded interface having a thread pitch that is less than the thread pitch of the threaded interface of the first mandrel, and wherein the coupling comprises a second coupling threaded interface having threads that complement the second threaded interface.

Claim 4. The coupler system of claim 1, further comprising a retaining ring disposed adjacent the keyed latch ring within the groove of the first mandrel.

Claim 5. The coupler system of claim 1, further comprising a plurality of set screws, wherein the coupling further comprises a plurality of holes about the about the circumference of the coupling for receiving such plurality of set screws, and wherein the

plurality of set screws generate a compressive retaining force about the first mandrel when threaded into the plurality of holes.

Claim 6. The coupler system of claim 1, wherein the coupling further comprises a shoulder, wherein a portion of the shoulder overlies a portion of the keyed latch ring.

Claim 7. The coupler system of claim 1, wherein the keyed latch ring comprises *n* external keys and less than *n* internal keys.

Claim 8. The coupler system of claim 1, wherein the keyed latch ring comprises *n* external keys and *n-1* internal keys.

Claim 9. The coupler system of claim 1, wherein the first mandrel comprises a first visual marker at a predetermined distance from the first end.

Claim 10. The coupler system of claim 9, wherein the first mandrel comprises a second visual marker at a second predetermined distance from the first end.

Claim 11. The coupler system of claim 1, wherein the first interlocking interface and the second interlocking interface comprise interlocking teeth.

Claim 12. A method for coupling a first tubing segment to a second tubing segment, the method comprising:

threading a coupling onto a first mandrel and a second mandrel until a first interlocking interface of the first mandrel engages a second interlocking interface of the second mandrel;

aligning an external key of a keyed latch ring with an internal slot of a first end of the coupling;

aligning an internal key of the keyed latch ring with an external slot of the first mandrel; and

axially displacing the keyed latch ring toward the coupling to an engaged position wherein the external key engages the internal slot and the internal key engages the external slot.

Claim 13. The method of claim 12, wherein the first end of the coupling comprises an internal shoulder having an inner diameter that is substantially identical to an external diameter of the keyed latch ring when the keyed latch ring is in the engaged position,

wherein axially displacing the keyed latch ring toward the coupling to an engaged position comprises sliding the keyed latch ring under the shoulder.

Claim 14. The method of claim 12, further comprising axially displacing a split ring toward the keyed latch ring into a groove adjacent the keyed latch ring to restrict axial movement of the keyed latch ring away from the coupling.

Claim 15. The method of claim 12, wherein threading the coupling onto the first mandrel and the second mandrel comprises aligning a first end of the coupling with a visual indicator on the first mandrel.