CLAIMS

What is claimed is:

~~1.~~ 1. A packer assembly comprising:

a mandrel;

a retainer movably disposed adjacent to the mandrel, the retainer comprising a ramp;

a packer element disposed adjacent to the mandrel and the ramp;

a ring movably disposed on the ramp, the ring comprising a spiral cut~~,~~ and a tapered portion;

a sleeve disposed around the retainer and the ring, wherein the sleeve ~~is deformable~~comprises an outer layer of metal petals that is in contact with an inner layer of metal petals, wherein the inner and outer layer of metal petals are configured to deform to retain at least the packer element or the ring~~.~~;

a slot adjacent to each metal petal of the inner layer, wherein each slot includes a lateral portion that is perpendicular to a longitudinal portion, wherein the longitudinal portion is covered by a metal petal of the outer layer; and

an empty space bound by the retainer, the sleeve, and the ring, the empty space configured to receive the tapered portion of the ring upon expansion of the packer element, wherein the ring and the sleeve are in direct physical contact with the packer element, the packer element configured to expand underneath a portion of the sleeve.

2. The packer assembly of claim 1, wherein the sleeve ~~comprises petals~~is configured to deform without breakage, to retain at least the packer element or the ring.

3. The packer assembly of claim 2, wherein the sleeve ~~further comprises overlapping petals~~is made of steel, aluminum, brass, nickel, titanium, or combinations thereof.

4. The packer assembly of claim 1, wherein the ~~sleeve comprises a continuous wall~~lateral portion is shorter than the longitudinal portion.

5. The packer assembly of claim 1, wherein the ~~ring comprises a tapered portion~~sleeve is made of aluminum.

6. The packer assembly of claim 1, wherein the sleeve comprises a base extending laterally from the mandrel.

7. The packer assembly of claim 6, wherein the base comprises an opening.

8. The packer assembly of claim 7, wherein the sleeve further comprises an elongated portion extending longitudinally from the base to cover the ring and the retainer.

9. A packer assembly comprising:

a mandrel;

first and second retainers movably disposed adjacent to the mandrel, ~~each~~the first retainer comprising a first ramp~~;~~, the second retainer comprising a second ramp;

a packer element disposed adjacent to the mandrel and between the ~~ramps of~~first ramp and the ~~retainers~~second ramp;

a first ring movably disposed on ~~each~~ the first ramp;

a second ring movably disposed on the second ramp, each ring comprising a spiral cut~~;~~ and a tapered portion;

a first sleeves disposed around the first retainers and the ~~rings~~first ring;

a second sleeve disposed around the second retainer and the second ring, wherein each of the sleeves comprises an outer layer of metal petals that is in contact with an inner layer of metal petals, wherein the inner and outer layer of metal petals are ~~deformable~~configured to deform to retain at least the packer element or the ~~rings.~~respective first or second ring;

a slot adjacent to each metal petal of the inner layer, wherein each slot includes a lateral portion that is perpendicular to a longitudinal portion, wherein the longitudinal portion is covered by a metal petal of the outer layer; and

empty spaces, wherein a first empty space is bound by the first retainer, the first sleeve, and the first ring, wherein a second empty space is bound by the second retainer, the second sleeve, and the second ring, each empty space configured to receive the tapered portion of the respective first or second ring upon expansion of the packer element, wherein the first ring and the first sleeve are in direct physical contact with the packer element, the packer element configured to expand underneath a portion of the first sleeve, wherein the

second ring and the second sleeve are in direct physical contact with the packer element, the packer element further configured to expand underneath a portion of the second sleeve.

10. The packer assembly of claim 9, wherein each ~~sleeve comprises petals~~of the sleeves are configured to deform without breakage, to retain at least the packer element or the ring.

11. The packer assembly of claim 10, ~~wherein each sleeve further comprises overlapping petals~~the first and second sleeves are made of steel, aluminum, brass, nickel, titanium, or combinations thereof.

12. The packer assembly of claim 9, wherein ~~each sleeve comprises a continuous wall~~the lateral portion is shorter than the longitudinal portion.

13. The packer assembly of claim 9, wherein ~~each ring comprises a tapered portion~~the first and second sleeves are made of aluminum.

14. The packer assembly of claim 9, wherein each sleeve comprises a base extending laterally from the mandrel.

15. The packer assembly of claim 14, wherein each base comprises an opening.

16. The packer assembly of claim 9, wherein each sleeve further comprises an elongated portion extending longitudinally from the base to cover the ring and the retainer.

17. A method for containing a packer element, the method comprising:

———setting a packer assembly in a wellbore, the packer assembly comprising:

a mandrel;

a retainer movably disposed adjacent to the mandrel, the retainer comprising a ramp;

———the packer element disposed adjacent to the mandrel and the ramp;

a ring movably disposed on the ramp, the ring comprising a spiral cut~~;~~ and a tapered portion;

a sleeve disposed around the retainer and the ring~~;~~, the sleeve comprising an outer layer of metal petals that is in contact with an inner layer of metal petals;

an empty space bound by the retainer, the sleeve, and the ring, the empty space configured to receive the tapered portion of the ring upon expansion of the packer element, wherein the ring and the sleeve are in direct physical contact with the packer element, the packer element configured to expand underneath a portion of the sleeve; and

a slot adjacent to each metal petal of the inner layer, wherein each slot includes a lateral portion that is perpendicular to a longitudinal portion, wherein the longitudinal portion is covered by a metal petal of the outer layer; deforming the sleeve with the ring; and retaining at least the packer element or the ring with the sleeve.

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18. The method of claim 17, further comprising deforming ~~petals of~~ the sleeve without breakage.

19. The method of claim 18, ~~further comprising deforming overlapping petals of~~wherein the sleeve is made of steel, aluminum, brass, nickel, titanium, or combinations thereof.

20. The method of claim 17, ~~further comprising deforming a continuous wall of~~wherein the ~~sleeve~~lateral portion is shorter than the longitudinal portion.