CLAIMS

1. A method of processing a non-magnetic austenitic stainless steel alloy workpiece, comprising:

heating the workpiece to a warm working temperature, wherein the warm working temperature is in a range from 510°C to 621°C;

open die press forging the workpiece at a temperature in the warm working temperature range to impart a desired strain to a central region of the workpiece; and

radial forging the workpiece at a temperature in the warm working temperature range to impart a desired strain to a surface region of the workpiece;

wherein after the open die press forging and the radial forging, the strain imparted to the central region and the strain imparted to the surface region are each in a range of from 0.3 inch/inch to 1.0 inch/inch;

wherein a difference in strain from the central region to the surface region is not more than 0.5 inch/inch.

2. The method of claim 1, wherein after the open die press forging and the radial forging, the strain imparted to the central region and the strain imparted to the surface region are each in a range of from 0.3 inch/inch to 0.8 inch/inch.

3. The method of claim 1, wherein after the open die press forging and the radial forging, the strain imparted to the surface region is substantially equivalent to the strain imparted to the central region.

4. The method of claim 1, wherein the open die press forging precedes the radial forging.

5. The method of claim 1, wherein the radial forging precedes the open die press forging.

6. The method of claim 1, further comprising, prior to heating the workpiece to the warm working temperature, annealing the workpiece.

7. The method of claim 6, wherein annealing the workpiece comprises heating the workpiece at 1010°C to 1260°C for 1 minute to 10 hours.

8. The method of claim 6, wherein the heating the workpiece to the warm working temperature further comprises allowing the workpiece to cool from an annealing temperature to the warm working temperature.

9. The method of claim 1, wherein the workpiece comprises a circular cross-section.

10. The method of claim 9, wherein the circular cross-section of the workpiece has a diameter greater than 5.25 inches.

11. The method of claim 9, wherein the circular cross-section of the workpiece has a diameter greater than or equal to 7.25 inches.

12. The method of claim 9, wherein the circular cross-section of the workpiece has a diameter in a range of 7.25 inches to 12.0 inches.