CLAIMS

What is claimed is:

1. A turbomachine part (28), comprising:

a body (60) having a first side (62), a second side (64) and a longitudinal axis (75); and

an overhung section (78) extending in an overhung manner, such that the overhung section (78) lacks structural support in a portion thereof, from at least one of the first side (62) and the second side (64) of the body (60),

wherein at least a portion of the overhung section (78) includes a plurality of material layers (80),

wherein each material layer (82) extends at an acute angle δ relative to the longitudinal axis (75) of the body (60) and lacks structural support in a portion thereof.

2. The turbomachine part of claim 1, wherein the body (60) includes a first metal, and the plurality of material layers (80) includes a second, different metal than the first metal.

3. The turbomachine part of claim 1 or 2, wherein the plurality of material layers (80) includes at least one first material layer (82) including a first metal, and at least one second material layer (82) including a second, different metal than the first metal.

4. The turbomachine part of claim 1, 2 or 3, wherein each material layer (82) of the plurality of material layers (80) includes a series of weld beads (84).

5. The turbomachine part of claim 4, wherein the series of weld beads (84) for at least one first material layer (82) of the plurality of material layers (80) are at a non-parallel angle to the series of weld beads (84) for at least one second material layer (82) of the plurality of material layers (80).

6. The turbomachine part of claim 1, wherein the overhung section (78) extends from a floor surface (136) of the body (60), wherein the plurality of material layers (80) are positioned in at most half of the overhung section (78) extending from the floor surface (136) to an outer surface (138) of the overhung section (78).

7. The turbomachine part of claim 1, wherein the body (60) includes an airfoil (40) of a turbomachine blade (25), and wherein the overhung section (78) includes a flared tip rail (70) extending from at least one of the first side (62) and the second side (64) of the airfoil (40) relative to a radial axis (75) of the airfoil (40).

8. The turbomachine part of claim 7, further comprising a radially extending tip rail extending (134) from the airfoil (40), and wherein a radially-facing outer surface (138) of the overhung section (78) is parallel to an axis (18) of the turbomachine.

9. A gas turbine (10) including the turbomachine part (28) of claim 1.

10. A method of repairing a turbomachine part according to claim 1, comprising:

removing a portion (72) of a part (28) to form a surface (94) of the part (28) at an acute angle δ to a longitudinal axis (75) of a body (60) of the part (28);

adding a section to the part (28), the section including an overhung section (78), the adding

including:

rotating the part (28), and

sequentially layering a plurality of material layers (80) on the surface (94) of the part (28), the plurality of material layers (80) approximating dimensions of the section including the overhung section (78),

wherein each material layer (82) of the plurality of material layers (80) are at the acute angle δ to the longitudinal axis (75) of the body (60) of the part (28), and each material layer (82) progressively extends to larger extents relative to previous material layers (82); and

machining the plurality of material layers (80) to form the section including the overhung section (78).

11. The method of claim 10, wherein rotating the part (28) includes positioning the surface (94) substantially horizontal prior to the sequential layering of the plurality of material layers (80) on the surface (94).

12. The method of claim 10, wherein rotating the part (28) includes positioning the surface (94) at an angle other than horizontal and vertical prior to the sequential layering of the plurality of material layers (80) on the surface (94).

13. The method of claim 11 or 12, wherein the sequential layering of the plurality of material layers (80) includes forming a first end (98) of the plurality of material layers (80) in a stair-stepped manner from a first side of the surface (94), and a second end (100) of the plurality of material

layers (80) in a stair-stepped manner from a second side of the surface (94), one of the first end (98) and the second end (100) approximating dimensions of the section including the overhung section (78).

14. The method of claim 10, wherein the part (28) includes a first metal, and the plurality of material layers (80) includes a second, different metal than the first metal.

15. The method of claim 10 or 14, wherein the plurality of material layers (80) include at least one first material layer (82) including a first metal, and at least one second material layer (82) including a second, different metal than the first metal.

16. The method of claim 10, 14 or 15, wherein the sequential layering of the plurality of material layers (80) on the part (28) includes forming a series of weld beads (84) to form each material layer (82).

17. The method of claim 16, wherein the series of weld beads (84) for at least one first material layer (82) of the plurality of material layers (80) are at a non-parallel angle to the series of weld beads (84) for at least one second material layer (82) of the plurality of material layers (80).

18. The method of claim 10, wherein one of a first end (98) and a second end (100) of the plurality of material layers (80) are stair-stepped to approximate dimensions of the overhung section (78).

19. The method of claim 10, wherein the part (28) includes a turbomachine blade (25) of a

turbomachine (10), and the portion (72) including an overhung flared tip (70) lacking structural support.