CLAIMS

1. An airfoil comprising:

an airfoil body defining a longitudinal axis, the airfoil body including a leading edge and a trailing edge and a first side wall and a second side wall that is spaced apart from the first side wall, the first side wall and the second side wall joining the leading edge and the trailing edge and at least partially defining at least one longitudinally elongated cavity in the airfoil body, at least one longitudinally elongated cavity is adjacent a cooling passage; and

a plurality of loose particles enclosed in the at least one longitudinally elongated cavity.

2. The airfoil as recited in claim 1, wherein the at least one longitudinally elongated cavity is adjacent the leading edge.

3. The airfoil as recited in claim 1, wherein the at least one longitudinally elongated cavity is adjacent the trailing end.

4. The airfoil as recited in claim 1, wherein the airfoil body extends over a span from a base at a platform to a tip end, and the at least one longitudinally elongated cavity is contained within 50% of the span.

5. The airfoil as recited in claim 1, wherein the airfoil body extends over a span from a base at a platform to a tip end, with the base being at 0% of the span and the tip end being at 100% of the span, the at least one longitudinally elongated cavity is contained between 0% span and 50% span.

6. The airfoil as recited in claim 1, wherein the at least one longitudinally elongated cavity includes a plurality of longitudinally elongated cavities that are laterally spaced apart from each other with regard to the longitudinal axis.

7. The airfoil as recited in claim 1, wherein the airfoil body defines a chord dimension extending between the leading edge and the trailing edge, and the at least one longitudinally elongated cavity is contained within a middle 50% of the chord dimension.

8. The airfoil as recited in claim 1, wherein the at least one longitudinally elongated cavity is located between cooling passages.

9. The airfoil as recited in claim 1, wherein the plurality of loose particles include at least a bi-modal size distribution.

10. The airfoil as recited in claim 1, wherein the plurality of loose particles include a uni-modal size distribution.

11. The airfoil as recited in claim 1, wherein the airfoil body, exclusive of the at least one longitudinally elongated cavity, is solid.

12. The airfoil as recited in claim 1, wherein the plurality of loose particles occupy from 99.9 volume percent to 80 volume percent of the at least one longitudinally elongated cavity.

13. A turbine engine comprising:

optionally, a fan;

a compressor section;

a combustor in fluid communication with the compressor section; and

a turbine section in fluid communication with the combustor, the turbine section being coupled to drive the compressor section and the fan, and

at least one of the fan, the compressor section and the turbine section including an airfoil having an airfoil body defining a longitudinal axis, the airfoil body including a leading edge and a trailing edge and a first side wall and a second side wall that is spaced apart from the first side wall, the first side wall and the second side wall joining the leading edge and the trailing edge and at least partially defining at least one longitudinally elongated cavity in the airfoil body, at least one longitudinally elongated cavity is adjacent a cooling passage, and a plurality of loose particles are enclosed in the at least one longitudinally elongated cavity.

14. The turbine engine as recited in claim 13, wherein the airfoil body extends over a span from a base at a platform to a tip end, and the at least one longitudinally elongated cavity is contained with 50 percent of the span.

15. The turbine engine as recited in claim 13, wherein the airfoil body extends over a span from a base at a platform to a tip end, with the base being at 0% of the span and the tip end being at 100% of the span, the at least one longitudinally elongated cavity is contained between 0% span and 50% span.

16. The turbine engine as recited in claim 13, wherein the at least one longitudinally elongated cavity includes a plurality of longitudinally elongated cavities that are laterally spaced apart from each other with regard to the longitudinal axis.

17. The turbine engine as recited in claim 13, wherein the airfoil body defines a chord dimension extending between the leading edge and the trailing edge, and the at least one longitudinally elongated cavity is contained within a middle 50% of the chord dimension.

18. The turbine engine as recited in claim 13, wherein the plurality of loose particles include at least a bi-modal size distribution.

19. The turbine engine as recited in claim 13, wherein the airfoil body, exclusive of the at least one longitudinally elongated cavity, is solid.

20. A method for processing an airfoil, the method comprising:

depositing multiple layers of a powdered metal onto one another;

joining the layers to one another with reference to data relating to a particular cross-section of an airfoil; and

producing the airfoil with an airfoil body defining a longitudinal axis, the airfoil body including a leading edge and a trailing edge and a first side wall and a second side wall that is spaced apart from the first side wall, the first side wall and the second side wall joining the leading edge and the trailing edge and at least partially defining at least one longitudinally elongated cavity in the airfoil body, at least one longitudinally elongated cavity is adjacent a cooling passage and a plurality of loose particles enclosed in the at least one longitudinally elongated cavity.

CLAIMS

1. An airfoil 60 comprising:

an airfoil body 68 defining a longitudinal axis 'L', the airfoil body including a leading edge 'LE' and a trailing edge 'TE' and a first side wall 74 and a second side wall 76 that is spaced apart from the first side wall, the first side wall and the second side wall joining the leading edge and the trailing edge and at least partially defining at least one longitudinally elongated cavity 78 in the airfoil body, the at least one longitudinally elongated cavity is adjacent a cooling passage 87; and

a plurality of loose particles 88 enclosed in the at least one longitudinally elongated cavity.

2. The airfoil as recited in claim 1, wherein the at least one longitudinally elongated cavity is adjacent the leading edge.

3. The airfoil as recited in claim 1, wherein the at least one longitudinally elongated cavity is adjacent the trailing end.

4. The airfoil as recited in claim 1, wherein the airfoil body extends over a span 168a from a base 70 at a platform 64 to a tip end 72, and the at least one longitudinally elongated cavity is contained within 50% of the span.

5. The airfoil as recited in claim 1, wherein the airfoil body extends over a span from a base at a platform to a tip end, with the base being at 0% of the span and the tip end being at 100% of the span, the at least one longitudinally elongated cavity is contained between 0% span and 50% span.

6. The airfoil as recited in claim 1, wherein the at least one longitudinally elongated cavity includes a plurality of longitudinally elongated cavities that are laterally spaced apart from each other with regard to the longitudinal axis.

7. The airfoil as recited in claim 1, wherein the airfoil body defines a chord dimension 'CD' extending between the leading edge and the trailing edge, and the at least one longitudinally elongated cavity is contained within a middle 50% of the chord dimension.

8. The airfoil as recited in claim 1, wherein the at least one longitudinally elongated cavity is located between cooling passages.

9. The airfoil as recited in claim 1, wherein the plurality of loose particles include at least a bi-modal size distribution 92.

10. The airfoil as recited in claim 1, wherein the plurality of loose particles include a uni-modal size distribution 90.

11. The airfoil as recited in claim 1, wherein the airfoil body, exclusive of the at least one longitudinally elongated cavity, is solid.

12. The airfoil as recited in claim 1, wherein the plurality of loose particles occupy from 99.9 volume percent to 80 volume percent of the at least one longitudinally elongated cavity.

13. A turbine engine 20 comprising:

optionally, a fan 22;

a compressor section 24;

a combustor 26 in fluid communication with the compressor section; and

a turbine section 28 in fluid communication with the combustor, the turbine section being coupled to drive the compressor section and the fan, and

at least one of the fan, the compressor section and the turbine section including an airfoil having an airfoil body 60 defining a longitudinal axis 'L', the airfoil body including a leading edge 'LE' and a trailing edge 'TE' and a first side wall 74 and a second side wall 76 that is spaced apart from the first side wall, the first side wall and the second side wall joining the leading edge and the trailing edge and at least partially defining at least one longitudinally elongated cavity 78 in the airfoil body, the at least one longitudinally elongated cavity is adjacent a cooling passage 87, and a

plurality of loose particles 88 are enclosed in the at least one longitudinally elongated cavity.

14. The turbine engine as recited in claim 13, wherein the airfoil body extends over a span from a base at a platform to a tip end, and the at least one longitudinally elongated cavity is contained with 50 percent of the span.

15. The turbine engine as recited in claim 13, wherein the airfoil body extends over a span from a base at a platform to a tip end, with the base being at 0% of the span and the tip end being at 100% of the span, the at least one longitudinally elongated cavity is contained between 0% span and 50% span.

16. The turbine engine as recited in claim 13, wherein the at least one longitudinally elongated cavity includes a plurality of longitudinally elongated cavities that are laterally spaced apart from each other with regard to the longitudinal axis.

17. The turbine engine as recited in claim 13, wherein the airfoil body defines a chord dimension extending between the leading edge and the trailing edge, and the at least one longitudinally elongated cavity is contained within a middle 50% of the chord dimension.

18. The turbine engine as recited in claim 13, wherein the plurality of loose particles include at least a bi-modal size distribution.

19. The turbine engine as recited in claim 13, wherein the airfoil body, exclusive of the at least one longitudinally elongated cavity, is solid.

20. A method for processing an airfoil, the method comprising:

depositing multiple layers of a powdered metal onto one another;

joining the layers to one another with reference to data relating to a particular cross-section of an airfoil; and

producing the airfoil with an airfoil body defining a longitudinal axis, the airfoil body including a leading edge and a trailing edge and a first side wall and a second side wall that is spaced apart from the first side wall, the first side wall and the second side wall joining the leading edge and the trailing edge and at least partially defining at least one longitudinally elongated cavity in the airfoil body, at least one longitudinally elongated cavity is adjacent a cooling passage and a plurality of loose particles enclosed in the at least one longitudinally elongated cavity.