CLAIMS

We claim:

1. A cantilevered airfoil, comprising:

an airfoil having a body section and a tip, the body section extending in a first direction that is angled relative to a radial direction, the tip of the airfoil angled radially in a second direction relative to the body section.

2. The cantilevered airfoil of claim 1, wherein the tip is configured to seal against a seal land that rotates relative to the airfoil in a rotational direction.

3. The cantilevered airfoil of claim 1, wherein the airfoil has a lean that is from -9 to +10 degrees.

4. The cantilevered airfoil of claim 1, wherein the first direction includes a circumferential component that is opposite the rotational direction, and the second direction includes a circumferential component that is the same as the rotational direction.

5. The cantilevered airfoil of claim 4, wherein the body section is secured to a casing, and an angle between the first direction and the casing is from 0 to 52 degrees.

6. The cantilevered airfoil of claim 4, wherein the tip extends from the body section in a second direction, and an angle between the second direction and a seal land is from 32 to 58 degrees.

7. The cantilevered airfoil of claim 1, wherein the first direction extends through a centroid of a radially outermost section of the airfoil, and the second direction extends through a centroid of a radially innermost section of the airfoil.

8. The cantilevered airfoil of claim 1, wherein the cantilevered airfoil has a tip dihedral angle.

9. The cantilevered airfoil of claim 8, wherein the tip dihedral angle is from 0 to 45 degrees.

10. The cantilevered airfoil of claim 1, wherein the tip is coated with an insulative coating, an abradable coating, or both.

11. A gas turbine engine, comprising:

an array of cantilevered airfoils, each of the cantilevered airfoils having a body section and a tip, the body sections extending in a first direction that is angled relative to a radial direction, the tip of the airfoil angled radially in a second direction relative to the body section,

a seal land, wherein the cantilevered airfoils are configured to rotate relative to the seal land.

12. The gas turbine engine of claim 11, a geared architecture rotatably coupling a fan drive turbine and a fan to rotate the fan at a different speed than the fan drive turbine.

13. The gas turbine engine of claim 11, wherein the cantilevered airfoils each have a lean that is from -9 to +10 degrees.

14. The gas turbine engine of claim 11, wherein the first direction includes a circumferential component that is opposite the rotational direction, and the second direction includes a circumferential component that is the same as the rotational direction.

15. The gas turbine engine of claim 11, wherein the first direction extends through a centroid of a radially outermost section of the airfoil, and the second direction extends through a centroid of a radially innermost section of the airfoil.

16. The gas turbine engine of claim 11, wherein the cantilevered airfoil has a tip dihedral angle.

17. The gas turbine engine of claim 11, wherein the tip is coated with an insulative coating, an abradable coating, or both.

18. A method of tuning a cantilevered airfoil, comprising:

providing a cantilevered airfoil having a body section and a tip, the body sections extending in a first direction that is angled relative to a radial direction, the tip of the airfoil angled radially in a second direction relative to the body section.

19. The method of claim 18, including rotating a seal land relative to the cantilevered airfoil.

20. The method of claim 18, wherein the first direction includes a circumferential component that is opposite the rotational direction, and the second direction includes a circumferential component that is the same as the rotational direction.

CLAIMS

We claim:

1. A cantilevered airfoil, comprising:

an airfoil having a body section and a tip, the body section extending in a first direction that is angled relative to a radial direction, the tip of the airfoil angled radially in a second direction relative to the body section;

wherein the airfoil extends from a casing; and

wherein the cross-sectional thickness of the airfoil gradually decreases moving away from the casing.

2. The cantilevered airfoil of claim 1, wherein the tip is configured to seal against a seal land that rotates relative to the airfoil in a rotational direction.

3. The cantilevered airfoil of claim 1, wherein the airfoil has a lean that is from -9 to +10 degrees.

4. The cantilevered airfoil of claim 1, wherein the first direction includes a circumferential component that is opposite a rotational direction, and the second direction includes a circumferential component that is the same as the rotational direction.

5. The cantilevered airfoil of claim 4, wherein the body section is secured to a casing, and an angle between the first direction and the casing is from 0 to 52 degrees.

6. The cantilevered airfoil of claim 4, wherein the tip extends from the body section in a second direction, and an angle between the second direction and a seal land is from 32 to 58 degrees.

7. The cantilevered airfoil of claim 1, wherein the first direction extends through a centroid of a radially outermost section of the airfoil, and the second direction extends through a centroid of a radially innermost section of the airfoil.

8. The cantilevered airfoil of claim 1, wherein the cantilevered airfoil has a tip dihedral angle.

9. The cantilevered airfoil of claim 8, wherein the tip dihedral angle is from 0 to 45 degrees.

10. The cantilevered airfoil of claim 1, wherein the tip is coated with an insulative coating, an abradable coating, or both.

11. A gas turbine engine, comprising:

an array of cantilevered airfoils, each of the cantilevered airfoils having a body section and a tip, the body sections extending in a first direction that is angled relative to a radial direction, the tip of the airfoil angled radially in a second direction relative to the body section,

a seal land, wherein the cantilevered airfoils are configured to rotate relative to the seal land;

wherein the airfoil extends from a casing; and

wherein the cross-sectional thickness of the airfoil gradually decreases moving away from the casing.

12. The gas turbine engine of claim 11, a geared architecture rotatably coupling a fan drive turbine and a fan to rotate the fan at a different speed than the fan drive turbine.

13. The gas turbine engine of claim 11, wherein the cantilevered airfoils each have a lean that is from -9 to +10 degrees.

14. The gas turbine engine of claim 11, wherein the first direction includes a circumferential component that is opposite the rotational direction, and the second direction includes a circumferential component that is the same as the rotational direction.

15. The gas turbine engine of claim 11, wherein the first direction extends through a centroid of a radially outermost section of the airfoil, and the second direction extends through a centroid of a radially innermost section of the airfoil.

16. The gas turbine engine of claim 11, wherein the cantilevered airfoil has a tip dihedral angle.

17. The gas turbine engine of claim 11, wherein the tip is coated with an insulative coating, an abradable coating, or both.

18. A method of tuning a cantilevered airfoil, comprising:

providing a cantilevered airfoil having a body section and a tip, the body sections extending in a first direction that is angled relative to a radial direction, the tip of the airfoil angled radially in a second direction relative to the body section;

wherein the airfoil extends from a casing; and

wherein the cross-sectional thickness of the airfoil gradually decreases moving away from the casing.

19. The method of claim 18, including rotating a seal land relative to the cantilevered airfoil.

20. The method of claim 18, wherein the first direction includes a circumferential component that is opposite a rotational direction, and the second direction includes a circumferential component that is the same as the rotational direction.