CLAIMS

1. An apparatus for shaping an edge of an aerofoil, the apparatus comprising a first brush and a second brush, each brush comprising a plurality of bristles extending substantially parallel to each other, a first device arranged to rotate the first brush about a first axis, the first axis being arranged substantially parallel to the bristles of the first brush, a second device arranged to rotate the second brush about a second axis, the second axis being arranged substantially parallel to the bristles of the second brush, a support structure arranged to hold the first brush such that the first axis intersects a first surface of an edge of an aerofoil and arranged to hold the second brush such that the second axis intersects a second surface of the edge of the aerofoil, means to move the first brush such that the first brush contacts the first surface of the edge and means to move the second brush such that the second brush contacts the second surface of the edge, means to produce relative movement between the first brush and the second brush and the aerofoil such that the first brush and the second brush move longitudinally along the edge of the aerofoil to shape the edge of the aerofoil.

2. An apparatus as claimed in claims 1 comprising a plurality of first brushes and a plurality of second brushes, each brush comprising a plurality of bristles extending substantially parallel to each other, a first device arranged to rotate each first brush about a respective first axis, each first axis being arranged substantially parallel to the bristles of the respective first brush, a second device arranged to rotate each second brush about a respective second axis, each second axis being arranged substantially parallel to the bristles of the respective second brush, a support structure arranged to hold the plurality of first brushes such that each first axis intersects a first surface of an edge of an aerofoil and arranged to hold the plurality of second brushes such that each second axis intersects a second surface of the edge of the aerofoil, means to move the plurality of first brushes such that the first brushes contact the first surface of the edge and means to move the plurality of second brushes such that the second brushes contact the second surface of the edge, means to produce relative movement between the plurality of first brushes and the plurality of second

brushes and the aerofoil such that the plurality of first brushes and the plurality of second brushes move longitudinally along the edge of the aerofoil to shape the edge of the aerofoil.

3. An apparatus as claimed in claim 1 or claim 2 wherein the support structure is arranged to hold each of the first and second brushes such that each first axis and each second axis intersect the first and second surfaces respectively at angle in the range of 30° to 75°.

4. An apparatus as claimed in claim 3 wherein the support structure is arranged to hold each of the first and second brushes such that each first axis and each second axis intersect the first and second surfaces respectively at angle of 55° to 75°.

5. An apparatus as claimed in claim 4 wherein the support structure is arranged to hold each of the first and second brushes such that each first axis and each second axis intersect the first and second surfaces respectively at angle of 60°.

6. An apparatus as claimed in any of claims 1 to 5 wherein the support structure comprises an adjuster to vary the angle at which the first axis and the second axis of each of the first and each second brushes intersect the first and second surfaces respectively.

7. An apparatus as claimed in any of claims 1 to 6 wherein each first brush and/or each second brush comprises alumina bristles or silicon carbide bristles.

8. An apparatus as claimed in any of claims 1 to 7 wherein the first device comprises an electric motor, a hydraulic motor or a pneumatic motor and the second device comprises an electric motor, a hydraulic motor or a pneumatic motor or the first device and the second device comprise a single electric motor, a single hydraulic motor or a single pneumatic motor.

9. An apparatus as claimed in claim 1 wherein the first axis and the second axis are arranged in a plane.

10. An apparatus as claimed in claim 1 wherein the first axis and the second axis are arranged in two parallel planes.

11. A method of shaping an edge of an aerofoil, the method comprising:-

a) providing a first brush and a second brush, each brush comprising a plurality of bristles extending substantially parallel to each other,

b) rotating the first brush about a first axis and rotating the second brush about a second axis, the first axis being arranged substantially parallel to the bristles of the first brush and the second axis being arranged substantially parallel to the bristles of the second brush,

c) arranging the first axis to intersect a first surface of an edge of an aerofoil and arranging the second axis to intersect a second surface of the edge of the aerofoil,

d) moving the first brush such that the first brush contacts the first surface of the edge and moving the second brush such that the second brush contacts the second surface of the edge,

e) producing relative movement between the first brush and the second brush and the aerofoil such that the first brush and the second brush move longitudinally along the edge of the aerofoil to shape the edge of the aerofoil.

12. A method as claimed in claim 11 comprising:-

a) providing a plurality of first brushes and a plurality of second brushes, each brush comprising a plurality of bristles extending substantially parallel to each other,

b) rotating each first brush about a respective first axis and rotating each second brush about a respective second axis, each first axis being arranged substantially parallel to the bristles of the respective first brush and each second axis being arranged substantially parallel to the bristles of the respective second brush,

c) arranging each first axis to intersect a first surface of an edge of an aerofoil and arranging each second axis to intersect a second surface of the edge of the aerofoil,

d) moving the first brushes such that the first brushes contact the first surface of the edge and moving the second brushes such that the second brushes contact the second surface of the edge,

e) producing relative movement between the first brushes and the second brushes and the aerofoil such that the first brushes and the second brushes move longitudinally along the edge of the aerofoil to shape the edge of the aerofoil.

13. A method as claimed in claim 11 or claim 12 comprising arranging each first axis and each second axis to intersect the first and second surfaces respectively at angle in the range of 30° to 75°.

14. A method as claimed in claim 13 comprising arranging each first axis and each second axis to intersect the first and second surfaces respectively at angle in the range of 55° to 75°.

15. A method as claimed in claim 14 comprising arranging each first axis and each second axis to intersect the first and second surfaces respectively at angle of 60°.

16. A method as claimed in any of claims 11 to 15 comprising varying the angle at which each first axis and each second axis intersect the first and second surfaces respectively.

17. A method as claimed in any of claims 11 to 16 wherein each first brush and/or each second brush comprises alumina bristles or silicon carbide bristles.

18. A method as claimed in claim 11 comprising arranging the first axis and the second axis in a plane.

19. A method as claimed in claim 11 comprising arranging the first axis and the second axis in two parallel planes.

20. A method as claimed in any of claims 11 to 19 comprising shaping the leading edge of an aerofoil.

21. A method as claimed in any of claims 11 to 20 comprising reshaping an edge of a worn aerofoil.

22. A method as claimed in any of claims 11 to 21 comprising shaping the edge of a gas turbine engine aerofoil.

23. A method as claimed in claim 22 comprising shaping the edge of a fan blade, a fan outlet guide vane, a compressor blade or a compressor vane.

24. A method as claimed in claim 22 comprising shaping the edge of a blade on an integrally bladed disc, shaping the edge of a blade mounted in a slot in the periphery of rotor disc or shaping the edge of a blade mounted in a slot in the periphery of a rotor drum.

25. A method as claimed in claim 22, claim 23 or claim 24 comprising shaping the edge of the aerofoil while the aerofoil is in the gas turbine engine.

CLAIMS

1. An apparatus for shaping an edge of an aerofoil, the apparatus comprising a first brush and a second brush, each brush comprising a plurality of bristles extending substantially parallel to each other, a first device arranged to rotate the first brush about a first axis, the first axis being arranged substantially parallel to the bristles of the first brush, a second device arranged to rotate the second brush about a second axis, the second axis being arranged substantially parallel to the bristles of the second brush, a support structure arranged to hold the first brush such that the first axis intersects a first surface of an edge of an aerofoil and arranged to hold the second brush such that the second axis intersects a second surface of the edge of the aerofoil, means to move the first brush such that the first brush contacts the first surface of the edge and means to move the second brush such that the second brush contacts the second surface of the edge, means to produce relative movement between the first brush and the second brush and the aerofoil such that the first brush and the second brush move longitudinally along the edge of the aerofoil to shape the edge of the aerofoil.

2. An apparatus as claimed in claims 1 comprising a plurality of first brushes and a plurality of second brushes, each brush comprising a plurality of bristles extending substantially parallel to each other, a first device arranged to rotate each first brush about a respective first axis, each first axis being arranged substantially parallel to the bristles of the respective first brush, a second device arranged to rotate each second brush about a respective second axis, each second axis being arranged substantially parallel to the bristles of the respective second brush, a support structure arranged to hold the plurality of first brushes such that each first axis intersects a first surface of an edge of an aerofoil and arranged to hold the plurality of second brushes such that each second axis intersects a second surface of the edge of the aerofoil, means to move the plurality of first brushes such that the first brushes contact the first surface of the edge and means to move the plurality of second brushes such that the second brushes contact the second surface of the edge, means to produce relative movement between the plurality of first brushes and the plurality of second brushes and the aerofoil such that the plurality of first brushes and the plurality of second brushes move longitudinally along the edge of the aerofoil to shape the edge of the aerofoil.

3. An apparatus as claimed in claim 1 or claim 2 wherein the support structure is arranged to hold each of the first and second brushes such that each first axis and each second axis intersect the first and second surfaces respectively at angle in the range of 30° to 75°.

4. An apparatus as claimed in claim 3 wherein the support structure is arranged to hold each of the first and second brushes such that each first axis and each second axis intersect the first and second surfaces respectively at angle of 55° to 75°.

5. An apparatus as claimed in claim 4 wherein the support structure is arranged to hold each of the first and second brushes such that each first axis and each second axis intersect the first and second surfaces respectively at angle of 60°.

6. An apparatus as claimed in any of claims 1 to 5 wherein the support structure comprises an adjuster to vary the angle at which the first axis and the second axis of each of the first and each second brushes intersect the first and second surfaces respectively.

7. An apparatus as claimed in any of claims 1 to 6 wherein each first brush and/or each second brush comprises alumina bristles or silicon carbide bristles.

8. An apparatus as claimed in any of claims 1 to 7 wherein the first device comprises an electric motor, a hydraulic motor or a pneumatic motor and the second device comprises an electric motor, a hydraulic motor or a pneumatic motor or the first device and the second device comprise a single electric motor, a single hydraulic motor or a single pneumatic motor.

9. An apparatus as claimed in claim 1 wherein the first axis and the second axis are arranged in a plane.

10. An apparatus as claimed in claim 1 wherein the first axis and the second axis are arranged in two parallel planes.

11. A method of shaping an edge of an aerofoil, the method comprising a) providing a first brush and a second brush, each brush comprising a plurality of bristles extending substantially parallel to each other, b) rotating the first brush about a first axis and rotating the second brush about a second axis, the first axis being arranged substantially parallel to the bristles of the first brush and the second axis being arranged substantially parallel to the bristles of the second brush, c) arranging the first axis to intersect a first surface of an edge of an aerofoil and arranging the second axis to intersect a second surface of the edge of the aerofoil, d) moving the first brush such that the first brush contacts the first surface of the edge and moving the second brush such that the second brush contacts the second surface of the edge e) producing relative movement between the first brush and the second brush and the aerofoil such that the first brush and the second brush move longitudinally along the edge of the aerofoil to shape the edge of the aerofoil.

12. A method as claimed in claim 11 comprising a) providing a plurality of first brushes and a plurality of second brushes, each brush comprising a plurality of bristles extending substantially parallel to each other, b) rotating each first brush about a respective first axis and rotating each second brush about a respective second axis, each first axis being arranged substantially parallel to the bristles of the respective first brush and each second

axis being arranged substantially parallel to the bristles of the respective second brush, c) arranging each first axis to intersect a first surface of an edge of an aerofoil and arranging each second axis to intersect a second surface of the edge of the aerofoil, d) moving the first brushes such that the first brushes contact the first surface of the edge and moving the second brushes such that the second brushes contact the second surface of the edge e) producing relative movement between the first brushes and the second brushes and the aerofoil such that the first brushes and the second brushes move longitudinally along the edge of the aerofoil to shape the edge of the aerofoil.

13. A method as claimed in claim 11 or claim 12 comprising arranging each first axis and each second axis to intersect the first and second surfaces respectively at angle in the range of 30° to 75°.

14. A method as claimed in claim 13 comprising arranging each first axis and each second axis to intersect the first and second surfaces respectively at angle in the range of 30° to 75°.

15. A method as claimed in claim 14 comprising arranging each first axis and each second axis to intersect the first and second surfaces respectively at angle of 60°.

16. A method as claimed in any of claims 11 to 15 comprising varying the angle at which each first axis and each second axis intersect the first and second surfaces respectively.

17. A method as claimed in any of claims 11 to 16 wherein each first brush and/or each second brush comprises alumina bristles or silicon carbide bristles.

18. A method as claimed in claim 11 comprising arranging the first axis and the second axis in a plane.

19. A method as claimed in claim 11 comprising arranging the first axis and the second axis in two parallel planes.

20. A method as claimed in any of claims 11 to 19 comprising shaping the leading edge of an aerofoil.

21. A method as claimed in any of claims 11 to 20 comprising reshaping an edge of a worn aerofoil.

22. A method as claimed in any of claims 11 to 21 comprising shaping the edge of a gas turbine engine aerofoil.

23. A method as claimed in claim 22 comprising shaping the edge of a fan blade, a fan outlet guide vane, a compressor blade or a compressor vane.

24. A method as claimed in claim 22 comprising shaping the edge of a blade on an integrally bladed disc, shaping the edge of a blade mounted in a slot in the periphery of rotor disc or shaping the edge of a blade mounted in a slot in the periphery of a rotor drum.

25. A method as claimed in claim 22, claim 23 or claim 24 comprising shaping the edge of the aerofoil while the aerofoil is in the gas turbine engine.