CLAIMS

1. An attrition liner machining tool (30), configured to machine the surface of an attrition liner (26) provided radially outward of a set of a plurality of fan blades in a gas turbine engine (10), the tool comprising:

at least one rotating machine tool (31, 32) having a connector (34) at a first end and a cutter (35) at a second end;

wherein the connector is configured to rigidly connect to a rotating fan blade mount (33) of the gas turbine engine that, in use of the gas turbine engine, supports the fan blades the connector being configured to fit a complementary connector in the rotating fan blade mount that, in use of the gas turbine engine, is configured to securely receive a connector of a fan blade;

the cutter is configured to machine the attrition liner; and

the at least one rotating machine tool is configured such that, when it is connected to said rotating fan blade mount of a gas turbine engine, the cutter is passed across the surface of the attrition liner when said rotating fan blade mount is rotated.

2. An attrition liner machining tool according to claim 1, further comprising a counter-weight (80) having a connector (81) configured to rigidly connect to the rotating fan blade mount of the gas turbine engine and having a mass selected to balance the mass of the at least one rotating machine tool when mounted to the rotating fan blade mount.

3. An attrition liner machining tool according to claim 1 or claim 2, further comprising a second rotating machine tool (31, 32) having the same configuration as the first rotating machine tool.

4. An attrition liner machining tool according to claim 2 or 3, further comprising a support frame (40), configured to be rigidly connected to the rotating fan blade mount of the gas turbine engine and to support a rotating machine tool and a counter-weight or a first and second rotating machine tool in respective locations on the rotating fan blade mount.

5. An attrition liner machining tool according to claim 4, further comprising:

a base frame (46), configured to be mounted to the gas turbine engine in a fixed position relative to the attrition liner; and

a motor system (45), configured to rotate the support frame relative to the base frame.

6. An attrition liner machining tool as claimed in claim 5, wherein the motor system comprises two opposing torque motors.

7. An attrition liner machining tool as claimed in any one of the preceding claims, wherein the at least one rotating machine tool comprises a radial adjustment mechanism (50) that is configured such that, when the rotating machine tool is rigidly connected to the rotating fan blade mount, it can adjust the distance of the cutter from the axis of rotation of the rotating fan blade mount.

8. An attrition liner machining tool as claimed in any one of the preceding claims, wherein the at least one rotating machine tool comprises an axial adjustment mechanism (60) that is configured such that, when the rotating machine tool is rigidly connected to the rotating fan blade mount, it can adjust the distance of the cutter from an edge of the attrition liner in a direction that has a component that is parallel to the axis of rotation of the rotating fan blade mount.

9. An attrition liner machining tool as claimed in any one of the preceding claims, wherein the at least one rotating machine tool further comprises an extractor (70), configured to remove debris material machined from the attrition liner by the cutter.

10. An attrition liner machining tool according to claim 9, wherein the extractor is configured such that an extraction opening (71) into which debris material is drawn is provided at a fixed position relative to the cutter when the cutter is moved in operation of the attrition liner machining tool.

11. An assembly comprising a gas turbine engine (10) and an attrition liner machining tool (30) according to any one of the preceding claims, wherein the at least one rotating machine tool of the attrition liner machining tool is connected to the rotating fan blade mount of the gas turbine engine in place of a fan blade.

12. A method of machining a surface of an attrition liner (26) in a gas turbine engine, comprising installing an attrition liner machining tool according to any one of claims 1 to 10 to the gas turbine engine;

wherein installing the attrition liner machining tool comprises connecting at least one rotating machine tool to a rotating fan blade mount of the gas turbine engine in place of a fan blade.

13. A method of machining a surface of an attrition liner in a gas turbine engine according to claim 12 when the features of claims 5 and 6 are not present in the attrition liner machining tool, wherein an operator manually rotates the at least one rotating machine tool together with the rotating fan blade mount to cause the cutter to be passed across the surface of the attrition liner.

14. A method of machining a surface of an attrition liner in a gas turbine engine according to claim 12 when the features of claims 5 or 6 are present in the attrition liner machining tool, wherein the motor system is operated to rotate the support frame relative to the base frame such that the at least one rotating machine tool rotates together with the rotating fan blade mount to cause the cutter to be passed across the surface of the attrition liner.

15. A method of installing an attrition liner section to a gas turbine engine, comprising:

securing an attrition liner section to the gas turbine engine; and

machining a surface of the attrition liner using the method of any one of claims 12 to 14 and/or the apparatus of any one of claim 1 to 10 to achieve a desired thickness of the attrition liner section.