PIVOTING LINER HANGER

BACKGROUND

This invention relates to a pivotable link for securing a liner within a gas turbine engine.

As known, an exhaust section of a typical gas turbine engine includes a removable liner secured relative to an exhaust duct. The liner positioned within the exhaust duct isolates the exhaust duct from the thermal energy of flow through the exhaust. Securing the liner within the exhaust duct is often difficult due to the engine's complex manufacturing tolerances and complicated flow paths. Liner securing strategies must further accommodate thermal energy induced fluctuations of the liner due to heated flow through the exhaust. Liners in other sections of the engine face similar issues.

Some liner securing strategies include liner hanger assemblies including links. The exhaust liner is connected to one end of the hangers; the other end of the hangers is connected to the exhaust duct. Current hangers typically include features for accommodating movement of the exhaust liner relative to the exhaust duct. These features are often complex, expensive to manufacture, and difficult to install within the engine.

SUMMARY

An example turbine engine assembly includes a first attachment structure secured to an engine casing or an engine liner. A second attachment structure is secured to the other of the engine casing or the engine liner. The assembly further includes a link having a rod portion extending longitudinally from a hemispherical end portion and terminating at a rod end portion. The hemispherical end portion is received within a recess defined by the first attachment structure. The rod end portion is secured relative to the second attachment structure to limit relative movement between the engine casing and the engine liner.

An example link for securing an engine liner within a turbine engine includes a link having a rod portion extending longitudinally between a partially spherical end portion and a rod end portion. The partially spherical end portion is received within the recess defined by the first attachment structure, which is secured to an engine casing or an engine liner. The rod end portion is held by a second attachment structure, which is secured to the other of the engine casing on the engine liner. The link limits relative movement between the engine casing and the engine liner.

An example arrangement for securing a turbine engine liner includes an engine housing secured to an engine casing, and a liner housing secured to an engine liner. A link extends longitudinally between a rod end portion and a spherical end portion. The hemispherical end portion contacts a recess defined within an interior of the engine housing or the liner housing to limit movement of the link. The rod end portion is secured adjacent an interior of the other of the engine housing and the liner housing. The link contacts the engine housing and the liner housing to limit relative movement between the engine casing and the engine liner.

An exemplary turbine engine link assembly includes a link extending longitudinally from a rod end and terminating at a hemispherical end. The rod end is secured to an engine liner or an engine casing. The hemispherical end is biased toward a corresponding hemispherical recess in the engine liner or in the other of the engine liner or the engine casing.

Another example turbine engine assembly includes a first attachment structure of an engine liner and a second attachment of an engine casing. The engine liner and the engine casing together establish a bypass flow path of a turbine engine. A link is radially bounded by the engine liner and the engine casing. The link has a rod portion extending longitudinally from a hemispherical end portion and terminating at a rod end portion. The hemispherical end portion is received within a hemispherical recess defined by the first attachment structure. The rod end portion is secured relative to the second attachment structure.

These and other features of the example disclosure can be best understood from the following specification and drawings, the following of which is a brief description.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** schematically shows a sectional view of an example gas turbine engine.

FIG. **2** schematically shows another example gas turbine engine.

FIG. **3** shows a side view of an example liner assembly.

FIG. **4** shows a sectional view through line **4-4** of FIG. **3**.

FIG. **5** shows a partial sectional view of another example liner hanger assembly having an alternative link.

FIG. **5**A shows another alternative link for the FIG. **5**A liner hanger assembly.

FIG. **5**B shows yet another alternative link for the FIG. **5** liner hanger assembly.

FIG. **6** shows a perspective view of the FIGS. **4** and **5**B hemispherical washer assembly.

FIG. **7** shows a side view of the FIGS. **4** and **5**B hemispherical washer assembly.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

FIG. **1** schematically illustrates an example gas turbine engine **10** including (in serial flow communication) a fan section **14**, a low pressure compressor **18**, a high pressure compressor **22**, a combustor **26**, a high pressure turbine **30**, and a low pressure turbine **34**. The gas turbine engine **10** is circumferentially disposed about an engine centerline X. During operation, the fan section **14** intakes air, and the compressors **18**, **22** pressurize the air. The combustor **26** burns fuel mixed with the pressurized air. The high and low pressure turbines **30**, **34** extract energy from the combustion gases flowing from the combustor **26**.

In a two-spool design, the high pressure turbine **30** utilizes the extracted energy from the hot combustion gases to power the high pressure compressor **22** through a high speed shaft **38**, and a low pressure turbine **34** utilizes the energy extracted from the hot combustion gases to power the low pressure compressor **18** and the fan section **14** through a low speed shaft **42**.

The example method is not applied only to components within the two-spool gas turbine architecture described above and may be used with other architectures such as a single spool axial design, a three spool axial design, and other architectures. That is, there are various types of gas turbine engine component and components within other systems, many of which could benefit from the examples disclosed herein.

Referring to the FIG. **2** schematic, an example turbo jet engine **50**, another type of engine architecture, includes a fan section **54**, a compressor section **58**, a combustor section **62**, a turbine section **66**, an augmenter section **70**, and a nozzle section **74**. The compressor section **58**, combustor section **62**, and turbine section **66** are often referred to as the core engine. An axis A of the engine **50** is generally disposed and extends