[0061] Referring to FIGS. **4** and **5**, another example disclosed speed change device is an epicyclical gearbox referred to as a star type gearbox, where the input is to the center "sun" gear **62**. Star gears **65** (only one shown) around the sun gear **62** rotate in a fixed position around the sun gear and are spaced apart by a carrier **68** that is fixed to a static casing **36** (best shown in FIG. **1**). A ring gear **66** that is free to rotate contains the entire gear assembly. The fan **42** is attached to and driven by the ring gear **66** such that the direction of rotation of the fan **42** is opposite the direction of rotation of the input sun gear **62**. Accordingly, the low pressure compressor **44** and the low pressure turbine **46** rotate in a direction opposite rotation of the fan **42**.

[0062] In one disclosed example embodiment shown in FIG. **4**, the fan drive turbine is the low pressure turbine **46** and therefore the fan **42** rotates in a direction opposite that of the low pressure turbine **46** and the low pressure compressor **44**. Moreover in this example the high spool **32** including the high pressure turbine **54** and the high pressure compressor **52** rotate in a direction counter to the fan **42** and common with the low spool **30** including the low pressure compressor **44** and the fan drive turbine **46**.

[0063] In another example gas turbine engine shown in FIG. **5**, the high pressure or second turbine **54** rotates in a direction common with the fan **42** and counter to the low spool **30** including the low pressure compressor **44** and the fan drive turbine **46**.

[0064] Referring to FIG. **6**, the bearing assemblies near the forward end of the shafts in the engine at locations **70** and **72**, which bearings support rotation of the inner shaft **40** and the outer shaft **50**, counter net thrust forces in a direction parallel to the axis A that are generated by the rearward load of low pressure turbine **46** and the high pressure turbine **54**, minus the high pressure compressor **52** and the low pressure compressor **44**, which also contribute to the thrust forces acting on the corresponding low spool **30** and the high spool **32**.

[0065] In this example embodiment, a first forward bearing assembly **70** is supported on a portion of the static structure schematically shown at **36** and supports a forward end of the inner shaft **40**. The example first forward bearing assembly **70** is a thrust bearing and controls movement of the inner shaft **40** and thereby the low spool **30** in an axial direction. A second forward bearing assembly **72** is supported by the static structure **36** to support rotation of the high spool **32** and substantially prevent movement along in an axial direction of the outer shaft **50**. The first forward bearing assembly **70** is mounted to support the inner shaft **40** at a point forward of a connection **88** of a low pressure compressor rotor **90**. The second forward bearing assembly **72** is mounted forward of a connection referred to as a hub **92** between a high pressure compressor rotor **94** and the outer shaft **50**. A first aft bearing assembly **74** supports the aft portion of the inner shaft **40**. The first aft bearing assembly **74** is a roller bearing and supports rotation, but does not provide resistance to movement of the shaft **40** in the axial direction. Instead, the aft bearing **74** allows the shaft **40** to expand thermally between its location and the bearing **72**. The example first aft bearing assembly **74** is disposed aft of a connection hub **80** between a low pressure turbine rotor **78** and the inner shaft **40**. A second aft bearing assembly **76** supports the aft portion of the outer shaft **50**. The example second aft bearing assembly **76** is a roller bearing and is supported by a corresponding static structure **36** through the mid turbine frame **58** which transfers the radial load of the shaft across the turbine flow path to ground **36**. The second aft bearing assembly **76** supports the outer shaft **50** and thereby the high spool **32** at a point aft of a connection hub **84** between a high pressure turbine rotor **82** and the outer shaft **50**.

[0066] In this disclosed example, the first and second forward bearing assemblies **70**, **72** and the first and second aft bearing assemblies **74**, **76** are supported to the outside of either the corresponding compressor or turbine connection hubs **80**, **88** to provide a straddle support configuration of the corresponding inner shaft **40** and outer shaft **50**. The straddle support of the inner shaft **40** and the outer shaft **50** provide a support and stiffness desired for operation of the gas turbine engine **20**.

[0067] Referring to FIG. **7**, another example shaft support configuration includes the first and second forward bearing assemblies **70**, **72** disposed to support the forward portion of the corresponding inner shaft **40** and outer shaft **50**. The first aft bearing **74** is disposed aft of the connection **80** between the rotor **78** and the inner shaft **40**. The first aft bearing **74** is a roller bearing and supports the inner shaft **40** in a straddle configuration. The straddle configuration can require additional length of the inner shaft **40** and therefore an alternate configuration referred to as an overhung configuration can be utilized. In this example the outer shaft **50** is supported by the second aft bearing assembly **76** that is disposed forward of the connection **84** between the high pressure turbine rotor **82** and the outer shaft **50**. Accordingly, the connection hub **84** of the high pressure turbine rotor **82** to the outer shaft **50** is overhung aft of the bearing assembly **76**. This positioning of the second aft bearing **76** in an overhung orientation potentially provides for a reduced length of the outer shaft **50**.

[0068] Moreover the positioning of the aft bearing **76** may also eliminate the need for other support structures such as the mid turbine frame **58** as both the high pressure turbine **54** is supported at the bearing assembly **76** and the low pressure turbine **46** is supported by the bearing assembly **74**. Optionally the mid turbine frame strut **58** can provide an optional roller bearing **74**A which can be added to reduce vibratory modes of the inner shaft **40**.

[0069] Referring to FIGS. **8**A and **8**B, another example shaft support configuration includes the first and second forward bearing assemblies **70**, **72** disposed to support corresponding forward portions of each of the inner shaft **40** and the outer shaft **50**. The first aft bearing **74** provides support of the outer shaft **40** at a location aft of the connection **80** in a straddle mount configuration. In this example, the aft portion of the outer shaft **50** is supported by a roller bearing assembly **86** supported within a space **96** defined between an outer surface of the inner shaft **40** and an inner surface of the outer shaft **50**.

[0070] The roller bearing assembly **86** supports the aft portion of the outer shaft **50** on the inner shaft **40**. The use of the roller bearing assembly **86** to support the outer shaft **50** eliminates the requirements for support structures that lead back to the static structure **36** through the mid turbine frame **58**. Moreover, the example bearing assembly **86** can provide both a reduced shaft length, and support of the outer shaft **50** at a position substantially in axial alignment with the connection hub **84** for the high pressure turbine rotor **82** and the outer shaft **50**. As appreciated, the bearing assembly **86** is positioned aft of the hub **82** and is supported through the rearmost section of shaft **50**. Referring to FIG. **9**, another example shaft support configuration includes the first and second forward bearing assemblies **70**, **72** disposed to support corresponding