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(54) **Rotor assembly and corresponding gas turbine engine**

(57) A rotor assembly (100) is disclosed. The rotor assembly (100) may include a first rotor disk (102) defining a first axially extending slot (114) and a second rotor disk (104) defining a second axially extending slot (116). Additionally, the rotor assembly (100) may include a pin (108) extending lengthwise between the first and second rotor disks (102, 104). The pin (108) may include a first end (110) terminating within the first axially extending slot (114) and a second end (112) terminating within the second axially extending slot (116). A corresponding gas turbine engine (10) is also disclosed.

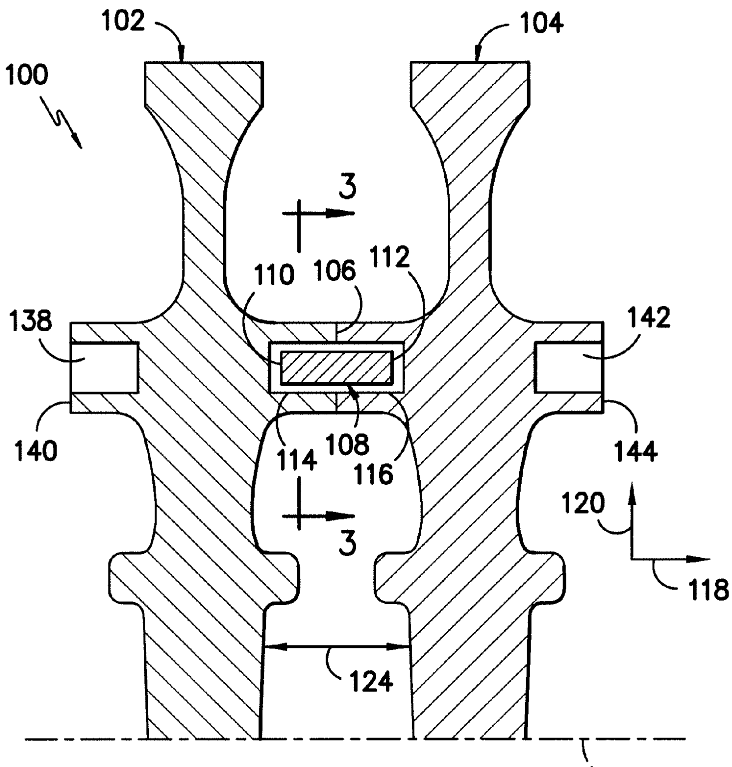

FIG. -2-

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Description

FIELD OF THE INVENTION

[0001] The present subject matter relates generally to a rotor assembly for a gas turbine and, more particularly, to one or more axial torque pins extending between adjacent rotor disks of a rotor assembly for transmitting torque between the rotor disks.

BACKGROUND OF THE INVENTION

[0002] Gas turbines typically include a compressor section, a combustion section, and a turbine section. The compressor section pressurizes air flowing into the turbine. The pressurized air discharged from the compressor section flows into the combustion section, which may be characterized by a plurality of combustors disposed in an annular array about the axis of the engine. The pressurized air entering each combustor is mixed with fuel and combusted. Hot gases of combustion flow from the combustion section through a transition piece to the turbine section of the gas turbine to drive the turbine and generate power.

[0003] The rotating structure of a gas turbine is commonly referred to as a rotor and generally includes a plurality of rotor disks. For example, the compressor rotor may include a plurality of compressor rotor disks stacked axially together, with each compressor rotor disk having a plurality of circumferentially spaced rotor blades mounted around its outer perimeter. Similarly, the turbine rotor may include a plurality of turbine rotor disks stacked axially together, with each turbine rotor disk having a plurality of circumferentially spaced turbine buckets mounted around its perimeter. The turbine buckets may generally be configured to extract energy from the hot gases of combustion flowing through the turbine section and convert such energy into work manifested by rotation of the turbine rotor disks. The torque applied through the turbine rotor disks may then be transmitted to the compressor rotor disks to facilitate rotation of such rotor disks and to allow compression of the air flowing through the compressor section.

[0004] To transmit torque between adjacent rotor disks, many conventional rotors use complicated meshing features formed into each rotor disk. However, such features are very difficult and expensive to manufacture. Other known rotors rely on face friction and/or radially oriented pins to transmit torque between adjacent disks. For example, U.S. Pat. No. 6,435,831 (Ichiryu) and U.S. Pat. Pub. No. 2010/0054943 (Ichiryu) disclose radially oriented pins configured to be disposed between radially extending grooves formed in each rotor disk so the that torque may be transmitted between adjoining rotor disks. However, due to the configuration of such radial pins, the torque that can be transmitted through the pins is quite limited.

[0005] Accordingly, a configuration for a rotor assembly that is relatively easy to manufacture and that has a relatively high torque transmission capability would be welcomed in the art.

BRIEF DESCRIPTION OF THE INVENTION

[0006] Aspects and advantages of the invention will be set forth in part in the following description, or may be obvious from the description, or may be learned through practice of the invention.

[0007] In one aspect, the present invention is directed to a rotor assembly. The rotor assembly includes a first rotor disk defining a first axially extending slot and a second rotor disk defining a second axially extending slot. Additionally, the rotor assembly includes a pin extending lengthwise between the first and second rotor disks. The pin includes a first end terminating within the first axially extending slot and a second end terminating within the second axially extending slot.

[0008] In another aspect, the present invention is directed to a gas turbine. The gas turbine includes a compressor section, a combustor section disposed downstream of the compressor section and a turbine section disposed downstream of the combustion section. The gas turbine also includes the rotor assembly as described above.

[0009] These and other features, aspects and advantages of the present invention will become better understood with reference to the following description and appended claims. The accompanying drawings, which are incorporated in and constitute a part of this specification, illustrate embodiments of the invention and, together with the description, serve to explain the principles of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] Embodiments of the present invention will now be described, by way of example only, with reference to the accompanying drawings in which:

FIG. 1 illustrates a partial, cross-sectional view of one embodiment of a gas turbine cut-off at the turbine's centerline;

FIG. 2 illustrates a partial, cross-sectional view of one embodiment of a rotor assembly in accordance with aspects of the present subject matter, particularly illustrating adjacent rotor disks of the rotor assembly having an axial torque pin extending therebetween;

FIG. 3 illustrates a cross-sectional view of the one of the rotor disks shown in FIG. 2 taken along line 3-3;

FIG. 4 illustrates a partial, perspective view of one of the rotor disks shown in FIGS. 2 and 3;

FIG. 5 illustrates a partial, cross-sectional view of another embodiment of a rotor assembly in accordance with aspects of the present subject matter, particularly illustrating adjacent rotor disks of the rotor assembly having an axial torque pin extending therebetween; and

FIG. 6 illustrates a cross-sectional view of one of the rotor disks shown in FIG. 5 taken along line 6-6.

DETAILED DESCRIPTION OF THE INVENTION

[0011] Reference now will be made in detail to embodiments of the invention, one or more examples of which are illustrated in the drawings. Each example is provided by way of explanation of the invention, not limitation of the invention. In fact, it will be apparent to those skilled in the art that various modifications and variations can be made in the present invention without departing from the scope or spirit of the invention. For instance, features illustrated or described as part of one embodiment can be used with another embodiment to yield a still further embodiment. Thus, it is intended that the present invention covers such modifications and variations as come within the scope of the appended claims and their equivalents.

[0012] In general, the present subject matter is directed to a rotor assembly including one or more axial torque pins extending between adjacent rotor disks of the rotor assembly. The torque pins may generally be configured to transmit torque between the adjacent rotor disks. For example, in several embodiments, the torque pins may be oriented parallel to the axis of rotation of the adjacent rotor disks (e.g., the centerline of a gas turbine) so as to provide enhanced torque transmission between the rotor disks. Additionally, due to the simple cross-sectional shape of each torque pin, the torque pins may be relatively easy and inexpensive to manufacture. Moreover, the simple design may also allow existing rotors to be easily retrofit to include the disclosed torque pins.

[0013] Referring now to the drawings, FIG. 1 illustrates a partial, cross-sectional view of one embodiment of a gas turbine 10 cut-off at the turbine's centerline 12. As shown, the gas turbine 10 includes a compressor section 14, a combustion section 16 disposed downstream of the compressor section 14 and a turbine section 18 disposed downstream of the combustion section 16. The compressor section 14 may generally be configured to pressurize air flowing into the turbine 10. The pressurized air then flows into the combustion section 16, wherein the air is mixed with fuel and combusted. Hot gases of combustion then flow through a transition piece 20 along an annular hot gas path to the turbine section 18 to drive the gas turbine 10 and generate power.

[0014] In several embodiments, the compressor section 14 may include an axial flow compressor 22 having a plurality of compressor stages characterized by alternating rows of rotor blades 24 and stator vanes 26. Specifically, each compressor stage may include a row of circumferentially spaced rotor blades 24 mounted to a compressor rotor disk 28 and a row of circumferentially spaced stator vanes 26 attached to a static compressor casing 30. The alternating rows of rotor blades 24 and stator vanes 26 may generally be configured to incrementally increase the pressure of the air flowing through the compressor 22 such that a desired increase in pressure is reached. The compressor rotor disks 28, along with the rotor blades 24, generally comprise the rotating components of the compressor 22 and, thus, may form a compressor rotor assembly 32. For example, in several embodiments, the compressor rotor disks 28 may be stacked axially against one another about the turbine centerline 12 such that torque may be transmitted between the rotor disks 28.

[0015] The combustion section 16 of the gas turbine 10 may generally be characterized by a plurality of combustors 34 (one of which is shown) disposed in an annular array about the turbine centerline 12. Each combustor 34 may generally be configured to receive pressurized air from the compressor 22, mix the air with fuel to form an air/fuel mixture and combust the mixture to produce hot gases of combustion. As indicated above, the hot gases of combustion may then flow from each combustor 34 through a transition piece 20 to the turbine section 18 of the gas turbine 10.

[0016] The turbine section 18 may generally include a plurality of turbine stages characterized by alternating rows of turbine nozzles 36 and turbine buckets 38. In particular, each turbine stage may include a row of circumferentially spaced turbine nozzles 36 attached to a static turbine casing 40 and a row of circumferentially spaced turbine buckets 38 mounted to a turbine rotor disk 42. The alternating rows of turbine nozzles 36 and buckets 38 may generally be configured to incrementally convert the energy of the hot gases of combustion into work manifested by rotation of the turbine rotor disks 42. The turbine rotor disks 42, along with the turbine buckets 38, may generally comprise the rotating components of the turbine section 18 and, thus, may form a turbine rotor assembly 44. Similar to the compressor rotor disks 28, the turbine rotor disks 42 may generally be stacked together axially along the turbine centerline 12. For example, as shown in FIG. 1, the turbine rotor disks 42 may be spaced apart from one another by spacer disks 46, with the rotor disks 42 and spacer disks 46 being stacked axially against one another such that torque may be transmitted between the rotor disks 42. As such, the torque transmitted through the turbine rotor assembly 44 may be used to drive a generator (not shown) located adjacent to the compressor 22 or the turbine section 18 for the production of electrical energy. Additionally, the torque transmitted through the turbine rotor assembly 44 may also be used to drive the compressor 22. For example, the turbine rotor assembly 44 may be coupled to the compressor rotor assembly 32 through a marriage joint or drive shaft 48 such that the torque applied through the turbine rotor disks 42 may be transmitted to the compressor rotor disks 28.

[0017] Referring now to FIGS. 2 and 3, one embodiment of a rotor assembly 100 suitable for use within the gas turbine 10 shown in FIG. 1 is illustrated in accordance with aspects of the present subject matter. Specifically, FIG. 2 illustrates a partial, cross-sectional view of two adjacent rotor disks 102, 104 of the rotor assembly 100. Additionally, FIG. 3 illustrates a cross-sectional view of one of the rotor disks 102 shown in FIG. 2 taken along line 3-3.

[0018] As shown, the rotor assembly 100 generally includes a first rotor disk 102 and a second rotor disk 104. In general, the first and second rotor disks 102, 104 may be configured the same as or similar to any compressor rotor disk 28 (FIG. 1), turbine rotor disk 42 (FIG. 1) and/or any other suitable rotor disk known in the art. Thus, in several embodiments, each rotor disk 102, 104 may include suitable attachment features for attaching a plurality of compressor rotor blades 24 (FIG. 1) and/or turbine buckets 38 (FIG. 1) around its outer perimeter. For example, each rotor disk 102, 104 may include a plurality of root slots (not shown), such as a plurality of dovetail slots, defined around its outer perimeter, with each root slot being configured to receive a correspondingly shaped root (not shown) of each rotor blade 24 and/or turbine bucket 38. Additionally, the rotor disks 102, 104 may be configured to be stacked axially together about the turbine centerline 12. For instance, as shown in FIG. 2, the first and second rotor disks 102, 104 may be stacked together such that a frictional interface 106 is defined between the rotor disks 102, 104 at one or more radial locations.

[0019] The rotor assembly 100 may also include at least one axial torque pin 108 extending lengthwise between the first and second rotor disks 102, 104 so as to transmit torque between the rotor disks 102, 104. For example, in several embodiments, the torque pin 108 may be configured to extend between the rotor disks 102, 104 such that a first end 110 of the torque pin 108 terminates within the first rotor disk 102 and a second end 112 of the torque pin 108 terminates within the second rotor disk 104. Thus, as shown in FIG. 2, the first rotor disk 102 may define a first axially extending slot 114 for receiving the first end 110 of the torque pin 108 and the second rotor disk 104 may define a second axially extending slot 116 for receiving the second end 112 of the torque pin 108. As such, any torque applied through the first rotor disk 102 may be transmitted through the torque pin 108 to the second rotor disk 104 and vice versa.

[0020] As used herein, the axial direction refers to a direction extending generally parallel to the turbine centerline 12 as shown by arrow 118 in FIG. 2. The radial direction refers to a direction that is perpendicular to the turbine centerline 12 and that extends towards or away from the centerline 12 as shown by arrow 120 in FIGS. 2 and 3. The tangential direction at a given point is a direction that is both normal to the local radial direction and normal to the axial direction as shown by arrow 122 in FIG. 3.

[0021] To permit the torque pin 108 to extend axially between the rotor disks 102, 104, the slots 114, 116 defined in the rotor disks 102, 104 may generally be configured to be radially and tangentially aligned relative to one another. Thus, in several embodiments, the first and second slots 114, 116 may be defmed in the first and second rotor disks 102, 104, respectively, at the same or similar radial and circumferential locations. For example, as shown in FIG. 2, the slots 114, 116 may be defined in the rotor disks 102, 104 at the frictional interface 106 formed when the rotor disks 102, 104 are stacked together axially. As such, the torque pin 108 may extend directly from the first axially extending slot 114 into the second axially extending slot 116. Alternatively, the first and second slots 114, 116 may be defined in the rotor disks 102, 104 at any other suitable location. For example, in one embodiment, the slots 114, 116 may be defined in the rotor disks 102, 104 at a radial location at which an axial gap 124 is defined between the first and second rotor disks 102, 104. In such an embodiment, the torque pin 108 may be configured to span the axial gap 124 between first and second slots 114, 116.

[0022] Additionally, the slots 114, 116 and the torque pin 108 may generally be configured to have any suitable cross-sectional shape that permits the torque pin 108 to facilitate the transmission of torque between the rotor disks 102, 104. For example, as particularly shown in FIG. 3, in one embodiment, each slot 114, 116 and the torque pin 108 may have a rectangular cross-sectional shape. However, as will be described below with reference to FIG. 6, in another embodiment, at least a portion of each slot 114, 116 and the torque pin 108 may define a wedged cross-sectional shape. In further embodiments, each slot 114, 116 and the torque pin 108 may have various other suitable cross-sectional shapes, such as an elliptical, circular or triangular cross-sectional shape. Additionally, as shown in the illustrated embodiment, the slots 114, 116 and the torque pin 108 may have the same cross-sectional shape. However, it should be appreciated that, in alternative embodiments, the first and second slots 114, 116 may have a cross-sectional shape that differs from the cross-sectional shape of the torque pin 108.

[0023] Moreover, the first and second slots 114, 116 and the torque pin 108 may generally have any suitable dimensions that permit the slots 114, 116 and torque pin 108 to function as described herein. For example, in several embodiments, the slots 114, 116 may be configured to have a tangential width 126 that is slightly larger than a tangential width 128 of the torque pin 108 so that a relatively tight fit exists between each slot 114, 116 and the torque pin 108 in the tangential direction. As such, the torque pin 108 may effectively transmit torque between the rotor disks 102, 104 as each rotor disk 102, 104 rotates about the turbine centerline 12. For example, in a particular embodiment, the difference between the tangential widths 126 of the slots 114, 116 and the tangential width 128 of the torque pin 108 may be designed such that a friction or press fit exists between the torque pin 108 and the slots 114, 116 in the tangential direction when the torque pin 108 is installed within the slots 114, 116.

[0024] Further, in several embodiments, a radial height 130 of each slot 114, 116 may be chosen so as to accommodate any differences in the thermal growth of the first rotor disk 102 relative to the second rotor disk 104 during operation. For example, due to temperature variations between the rotor disks 102, 104, the first and second rotor disks 102, 104 may expand/contract at differing rates. Thus, as shown in FIG. 3, the radial height 130 of the slots 114, 116 may be configured such that a radial gap 132 is defined between each slot 114, 116 and a top surface 134 and/or bottom surface 136 of the torque pin 108. As such, the rotor disks 102, 104 may radially expand/contract relative to one another without affecting the ability of the torque pin 108 to transmit torque between the rotor disks 102, 104.

[0025] Additionally, it should be appreciated that, although the disclosed rotor assembly 100 is shown as only including first and second rotor disks 102, 104, the rotor assembly may generally include any suitable number of rotor disks stacked together axially. Thus, the first and second rotor disks 102, 104 may also be configured such that the torque applied through the first and/or second rotor disks 102, 104 may be transmitted to other adjacent rotor disks (not shown). For example, as shown in FIG. 2, an axially extending slot 138 may be defined in the first rotor disk 102 through a disk surface 140 opposite the frictional interface 106 defined between the first and second rotor disks 102, 104. As such, a torque pin 108 may be positioned within the slot 138 and may extend axially into a corresponding slot (not shown) of an adjacent rotor disk. Similarly, an axially extending slot 142 may be defined in the second rotor disk 104 through a disk surface 144 opposite the frictional interface 106 surface such that a torque pin 108 may be positioned within the slot 142 and may extend axially into a corresponding slot (not shown) of a rotor disk disposed adjacent to the second rotor disk 104.

[0026] In alternative embodiments, the opposed pairs of slots (e.g., the slots 114, 138 defined in the first rotor disk 102 and the slots 116, 142 defined in the second rotor disk 104) need not be formed separately in the rotor disks 102, 104. For example, the first and second axially extending slots 114, 116 may be configured as through-slots and may extend axially within each rotor disk 102, 104 between the interface 106 and the opposed disk surfaces 140, 144.

[0027] It should also be appreciated that each rotor disk 102, 104 may generally include any suitable number of axially extending slots 114, 116, 138, 142 such that a corresponding number of torque pins 108 may be positioned between the rotor disks 102, 104. For example, FIG. 4 illustrates a partial, perspective view of the first rotor disk 102 shown in FIGS. 2 and 3. As shown, a plurality of equally spaced slots 114, 138 may be defined on each side 146, 148 of the rotor disk 102. For instance, in the illustrated embodiment, the slots 114, 138 may be spaced 45 degrees apart around the first rotor disk 102 so that a total of eight slots 114, 138 may be defined on each side 146, 148. In such an embodiment, the second rotor disk 104 may similarly include eight axially extending slots 116 spaced 45 degrees apart on the side of the rotor disk 104 configured to abut the first rotor disk 102 such that a like number of torque pins 108 may be installed between the rotor disks 102, 104. Alternatively, the rotor disks 102, 104 may include any other suitable number of slots 114, 116, 138, 142. Moreover, it should be appreciated that the axially extending slots 114, 116, 138, 142 defined in each rotor disk 102, 104 need not be spaced apart equally. For instance, in one embodiment, the slots 114, 116, 138, 142 may be randomly formed in each rotor disk 102, 104.

[0028] Referring now to FIGS. 5 and 6, another embodiment of a rotor assembly 200 suitable for use within the gas turbine 10 shown in FIG. 1 is illustrated in accordance with aspects of the present subject matter. Specifically, FIG. 5 illustrates a partial, cross-sectional view of two adjacent rotor disks 202, 204 of the rotor assembly 200. Additionally, FIG. 6 illustrates a cross-sectional view of one of the rotor disks 202 shown in FIG. 5 taken along line 6-6.

[0029] In general, the illustrated rotor assembly 200 may be configured similarly to the rotor assembly 100 shown in FIGS. 2 and 3 and, thus, may include many or all of the same components. For example, the rotor assembly 200 may include a first rotor disk 202, a second rotor disk 204 and at least one axial torque pin 208 extending axially between the first and second rotor disks 202, 204. The torque pin 208 may generally include a first end 210 terminating within a first axially extending slot 214 defined in the first rotor disk 202 and a second end 212 terminating within a second axially extending slot 216 defined in the second rotor disk 204. However, unlike the embodiments described, the rotor disks 202, 204 may be separated axially by a spacer disk 250. Thus, the torque pin 208 may generally be configured to extend axially through the entire width of the spacer disk 250 For example, as shown in FIG. 5, the spacer disk 250 may define an axially extending through-slot 252 configured the same as or similar to the slots 214, 216 defined in the rotor disks 202, 204. As such, any torque applied to the first rotor disk 202 may be transmitted through the torque pin 208 and spacer disk 250 to the second rotor disk 204 and vice versa.

[0030] Additionally, as particularly shown in FIG. 6, in several embodiments, each slot 212, 214, 252 and the torque pin 208 may partially define a wedged cross-sectional shape. In particular, each slot 212, 214, 252 may include a rectangular portion 254 defining a generally rectangular cross-sectional shape and a wedged portion 256 diverging outwardly from the rectangular portion 254 so as to define a generally wedged cross-sectional shape. Similarly, the torque pin 208 may include a rectangular portion 258 defining a generally rectangular cross-sectional shape and a wedged portion 260 defining a generally wedged cross-sectional shape.

[0031] The rectangular portions 254, 258 may generally be dimensioned such that torque may be transmitted from the first rotor disk 202 through the torque pin 208 to the second rotor disk 204 and vice versa. For example, similar to the slots 114, 116 described above with reference to FIGS. 2 and 3, a tangential width 226 of the rectangular portion 254 of each slot 212, 214, 252 may be slightly larger than a tangential width 228 of the rectangular portion 258 of the torque pin 208 so that a relatively tight fit exists between each slot 212, 214, 252 and the torque pin 208 in the tangential direction. As such, the torque pin 208 may effectively transmit torque between the rotor disks 202, 204 as each disk 202, 204 rotates about the turbine centerline 12.

[0032] Additionally, the wedged portions 256, 260 may generally be configured to control any misalignments between the first and second rotor disks 202, 204. For example, the wedged portion 256 of each slot 212, 214, 252 may include a pair of angled surfaces 262 extending radially and tangentially outwardly from its rectangular portion 254. Similarly, the wedged portion 260 of the torque pin 208 may include a pair of angled surfaces 264 generally extending parallel to the angled surfaces 262 of each slot 212, 214, 252. As such, the angled surfaces 262 of the slots 212, 214, 252 may generally serve as points of contact for the angled surfaces 264 of the torque pin 208 in instances when the rotor disks 202, 204 become radially misaligned (e.g., due to differing thermal expansion rates). In particular, the contact occurring between wedged portions 256, 260 may act as a pinned joint in the radial direction. Thus, any loads resulting from radial misalignments may be carried through the torque pin 208 and transmitted between the rotor disks 202, 204, thereby tending to re-align the rotor disks 202, 204 relative to one another.

[0033] It should be appreciated that, although the wedged portions 256, 260 may be designed to control radial misalignments between the rotor disks 202, 204, the slots 212, 214, 252 and the torque pin 208 may also be configured to accommodate relative, radial movement between the rotor disks 202, 204. For example, similar to the embodiments described above, a radial height 230 of each slot 212, 214, 252 may be chosen such that a radial gap 232 is defined between each slot 212, 214, 252 and a top surface 234 and/or bottom surface 236 of the torque pin 208. As such, the slots 212, 214, 252 may allow from some radial expansion/contraction between the rotor disks 202, 204 without resulting in contact between the angled surfaces 262, 264.

[0034] This written description uses examples to disclose the invention, including the best mode, and also to enable any person skilled in the art to practice the invention, including making and using any devices or systems and performing any incorporated methods. The patentable scope of the invention is defined by the claims, and may include other examples that occur to those skilled in the art. Such other examples are intended to be within the scope of the claims if they include structural elements that do not differ from the literal language of the claims, or if they include equivalent structural elements with insubstantial differences from the literal languages of the claims.

Claims

1. A rotor assembly (100) comprising:

   a first rotor disk (102), the first rotor disk (102) defining a first axially extending slot (114);
   a second rotor disk (104) adjacent to the first rotor disk (102), the second rotor disk (104) defining a second axially extending slot (116); and
   a pin (108) extending lengthwise between the first and second rotor disks (102, 104), the pin (108) including a first end (110) terminating within the first axially extending slot (114) and a second end (112) terminating within the second axially extending slot (116).

2. The rotor assembly (100) of claim 1, wherein each of the first and second axially extending slots (114, 116) and the pin (108) defines a generally rectangular cross-sectional shape.

3. The rotor assembly (100) of claim 1, wherein at least a portion of the first and second axially extending slots (114, 116) and at least a portion of the pin (108) defines a generally wedged cross-sectional shape.

4. The rotor assembly (100) of claim 3, wherein each of the first and second axially extending slots (114, 116) and the pin includes a rectangular portion defining a generally rectangular cross-sectional shape and a wedged portion defining a generally wedged cross-sectional shape.

5. The rotor assembly (100) of any of claims 1 to 4, wherein a radial height (130) of the first and second axially extending slots (114, 116) is chosen such that a radial gap (132) is defined between the first and second axially extending slots (114, 116) and at least one of a top surface (134) of the pin (108) and a bottom surface 9136) of the pin (108).

6. The rotor assembly (100) of any of claims 1 to 5, further comprising a spacer disk (250) disposed between the first and second rotor disks (102, 104).

7. The rotor assembly (100) of claim 6, wherein the spacer disk (250) defines an axially extending

through-slot (252), the pin (108) being configured to extend through the axially extending through-slot (252) and into the first and second axially extending slots (114, 116).

8. The rotor assembly (100) of any preceding claim, wherein the first and second rotor disks (102, 104) each define a plurality of axially extending slots (114, 116), the rotor assembly (100) further comprising a plurality of pins (108) extending between the first and second rotor disks (102, 104).

9. The rotor assembly (100) of any preceding claim, wherein the first and second rotor disks (102, 104) comprise compressor rotor disks (28).

10. The rotor assembly (100) of any preceding claim, wherein the first and second rotor disks (102, 104) comprise turbine rotor disks (42).

11. A gas turbine (10) comprising:

a compressor section (14);
a combustion section (16) downstream of the compressor section (14);
a turbine section (18) downstream of the combustion section (16); and
a rotor assembly (100) of any preceding claim.

12. The gas turbine (10) of claim 11, wherein the rotor assembly (100) comprises a compressor rotor assembly (32).

13. The gas turbine (10) of claim 11, wherein the rotor assembly (100) comprises a turbine rotor assembly (44).

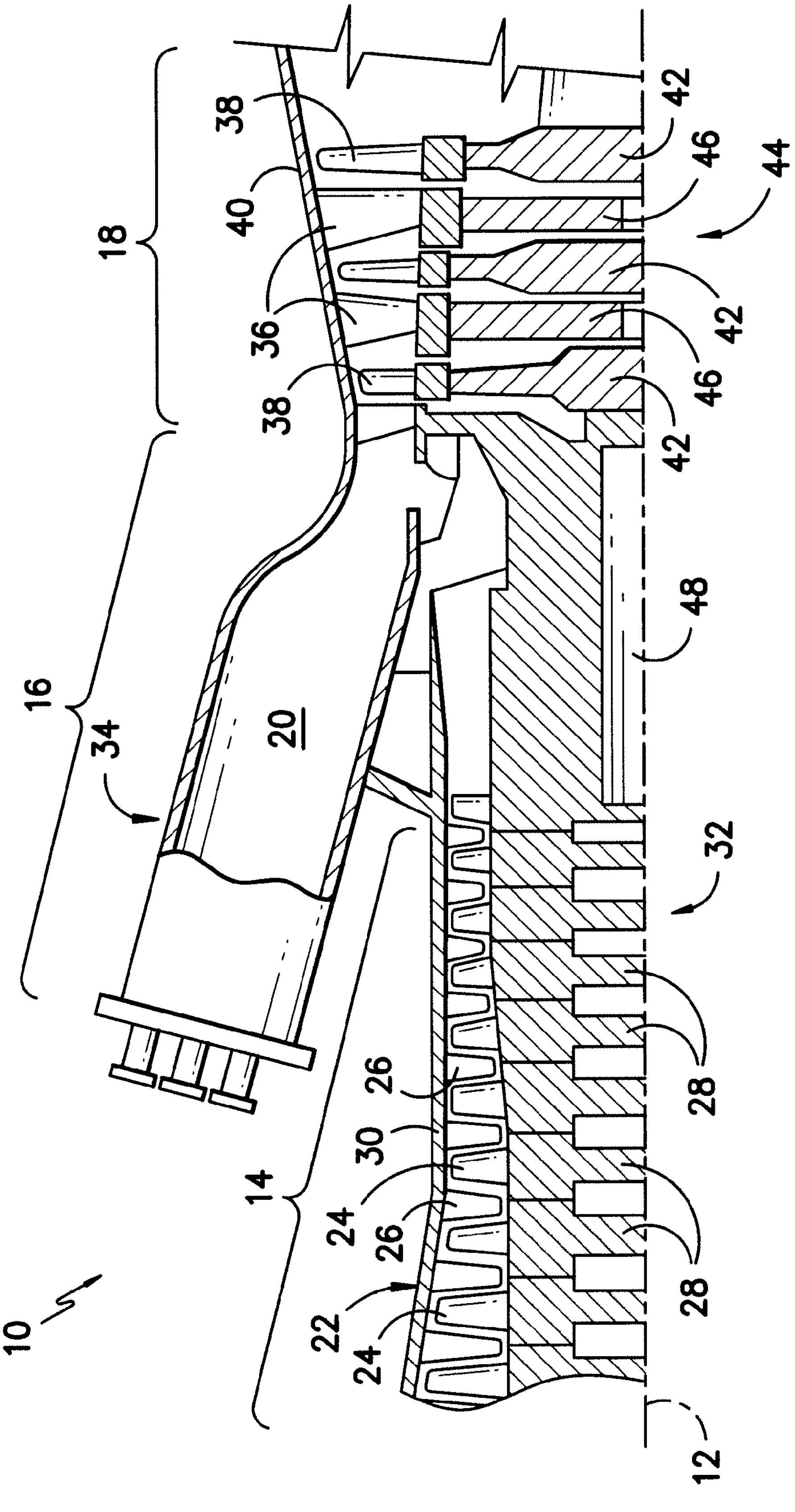

FIG. -1-

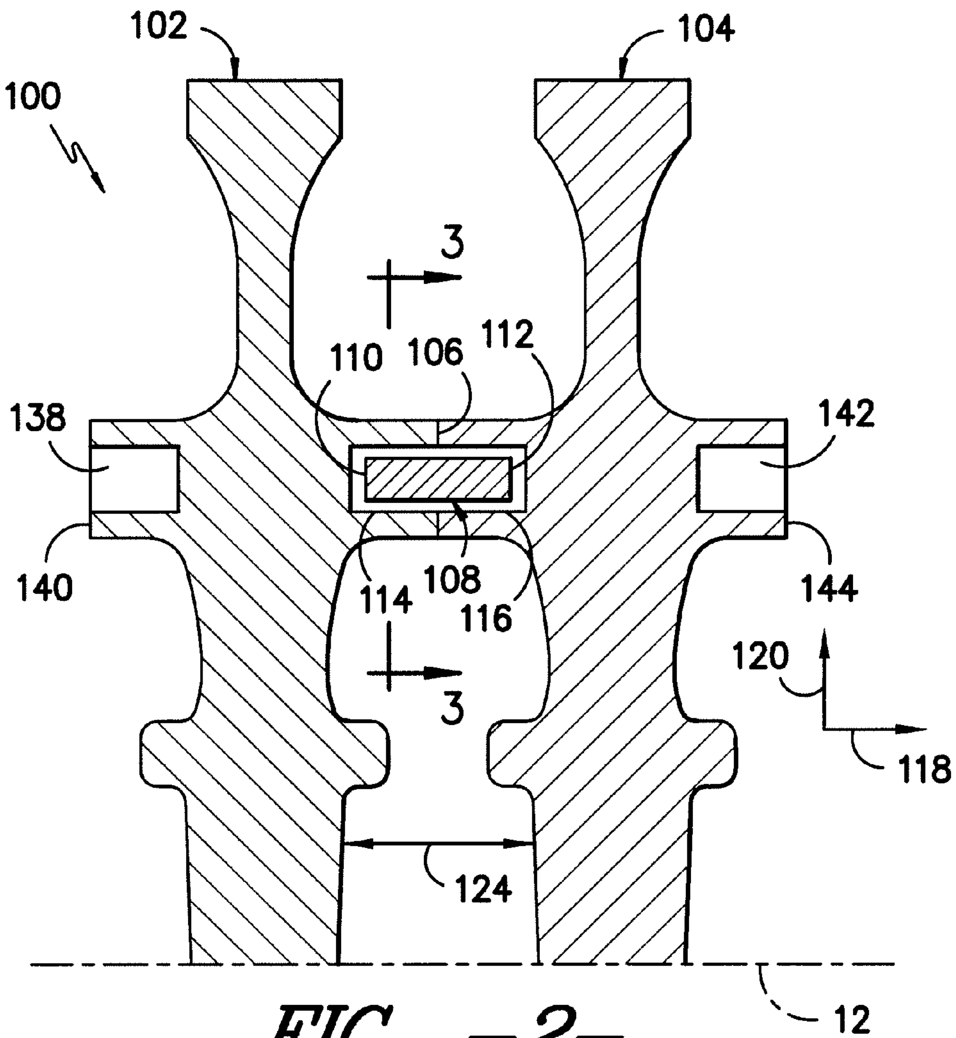
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FIG. -2-

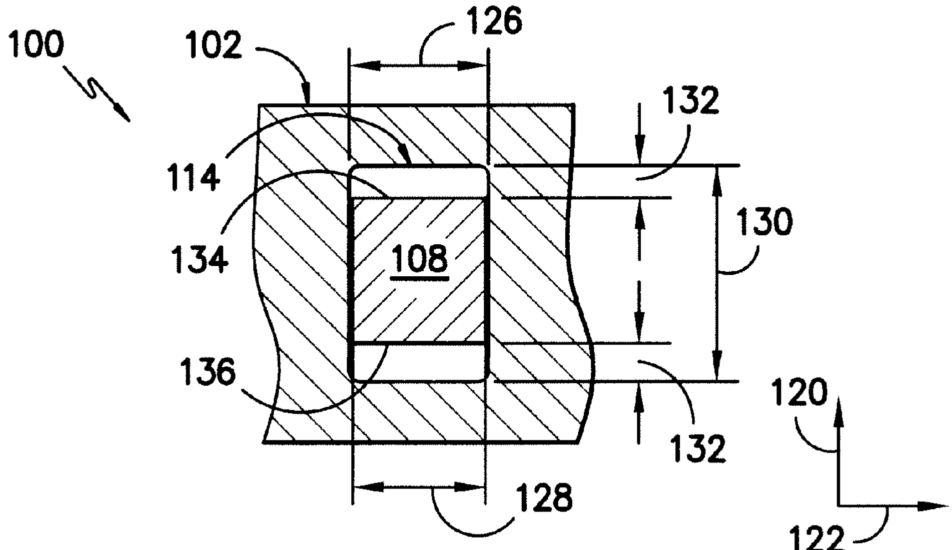
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FIG. -3-

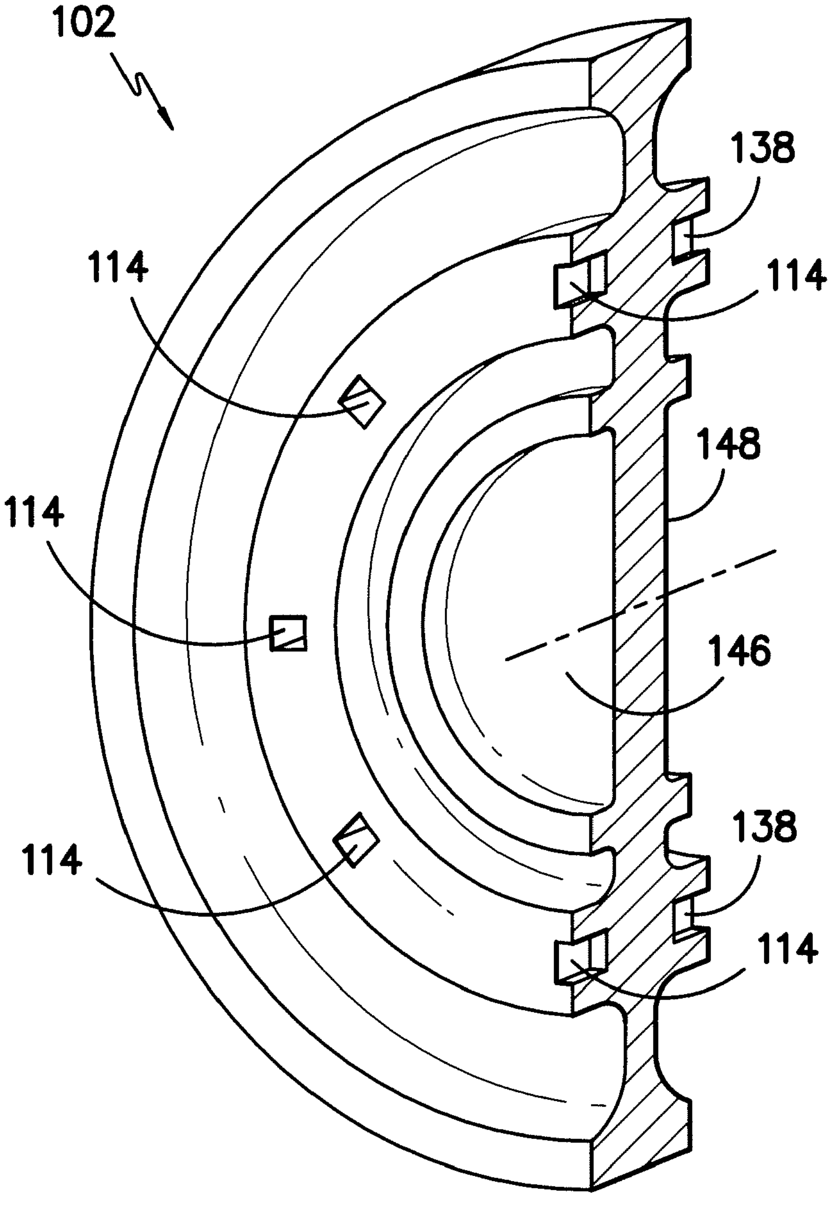

FIG. –4–

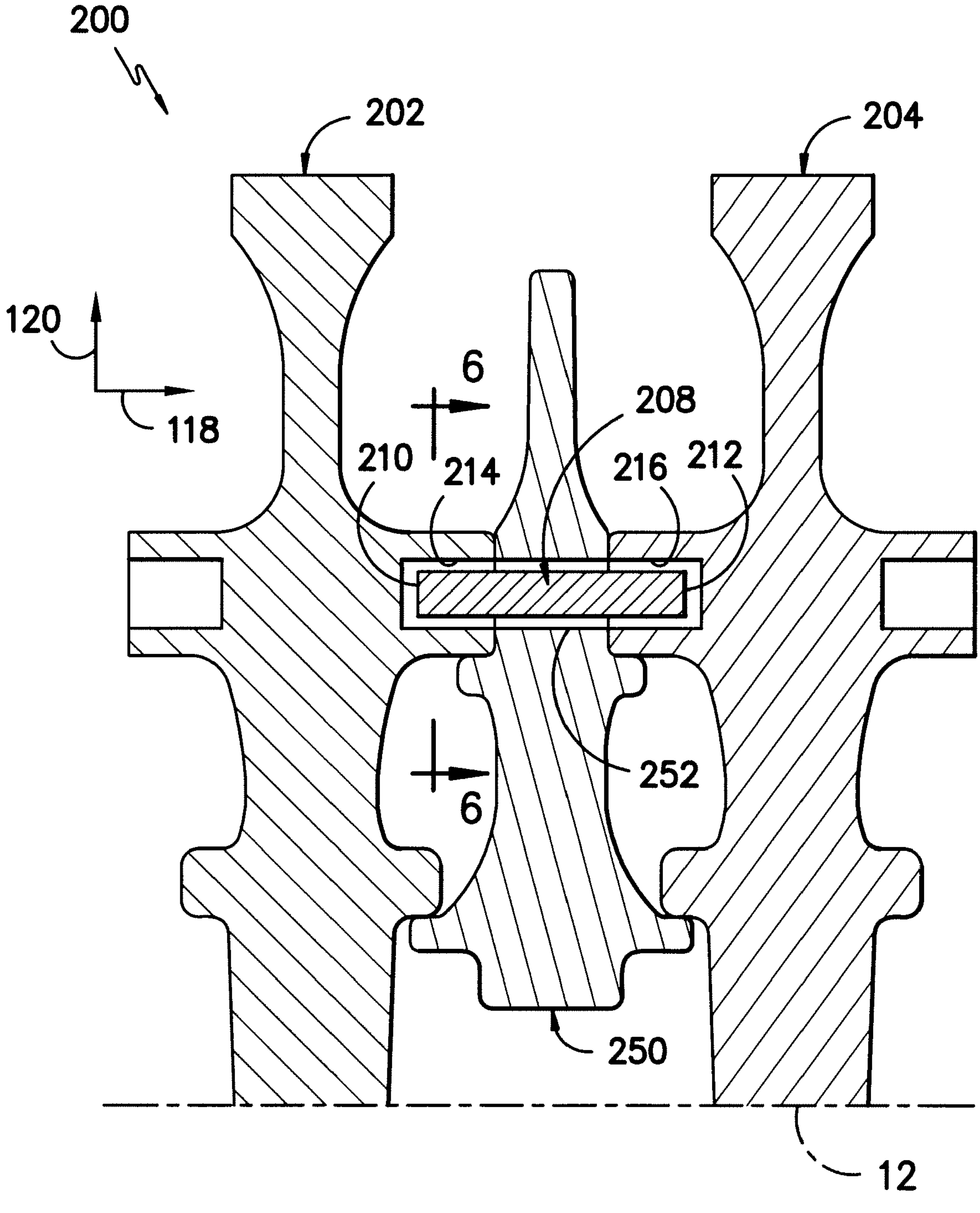

FIG. –5–

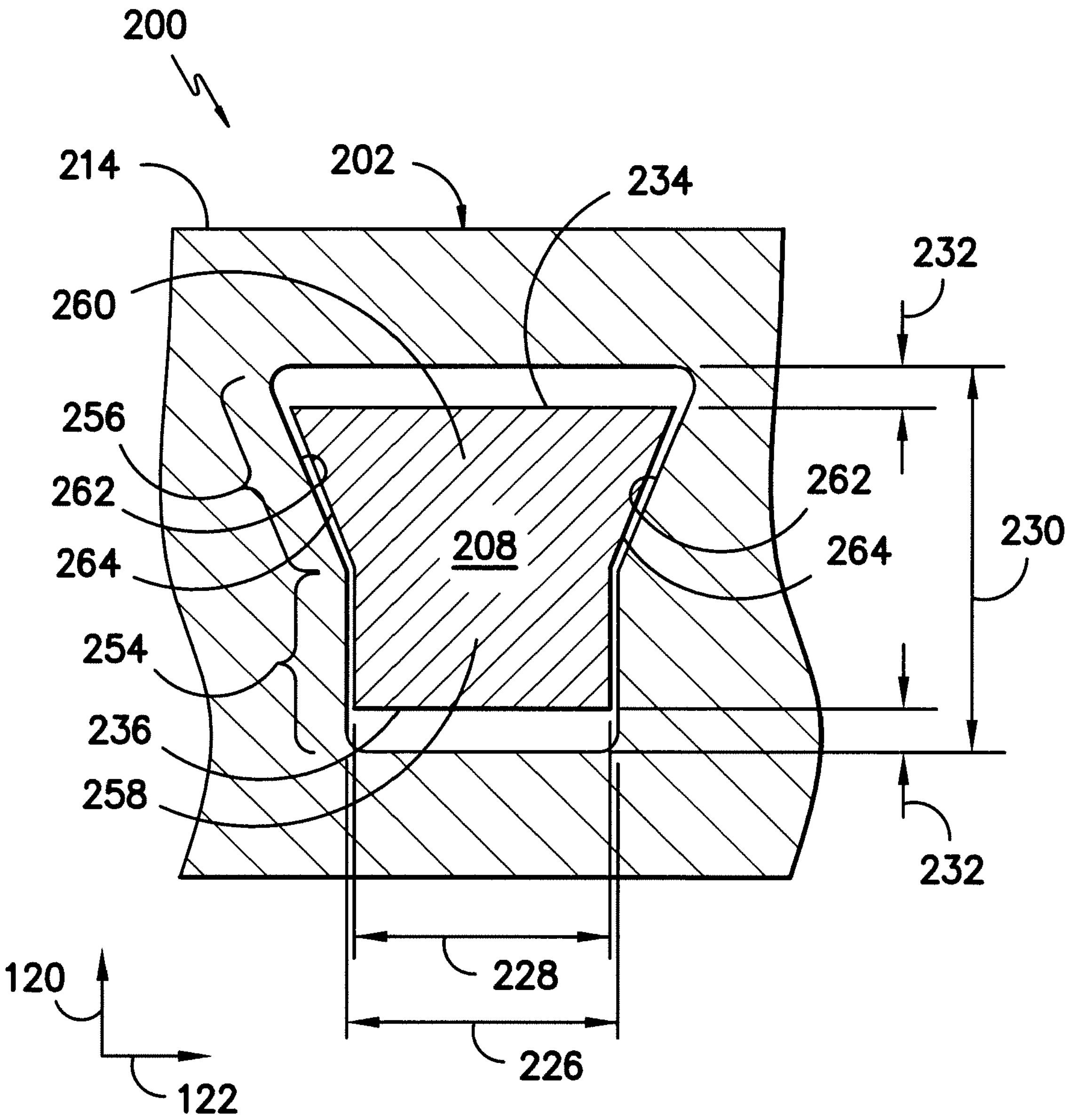
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FIG. -6-

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 12 17 5621

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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2

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