(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 3 410 014 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
20.01.2021 Bulletin 2021/03

(51) Int Cl.:
F23R 3/00 *(2006.01)* ***F23R 3/60*** *(2006.01)*

(21) Application number: **17425059.7**

(22) Date of filing: **31.05.2017**

(54) TILE HOLDER FOR A COMBUSTOR OF A GAS TURBINE

PLATTENHALTER FÜR EINE BRENNKAMMER EINER GASTURBINE

SUPPORT DE TUILE POUR CHAMBRE DE COMBUSTION D'UNE TURBINE À GAZ

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

(43) Date of publication of application:
05.12.2018 Bulletin 2018/49

(73) Proprietors:
- **Ansaldo Energia S.p.A.**
  16152 Genova (IT)
- **Ansaldo Energia Switzerland AG**
  5401 Baden (CH)

(72) Inventors:
- **Campa, Giovanni**
  16152 Genova (IT)
- **Di Liddo, Sergio**
  16142 Genova (IT)
- **Bothien, Mirko Ruben**
  8037 Zürich (CH)

(74) Representative: **Bergadano, Mirko et al**
Studio Torta S.p.A.
Via Viotti, 9
10121 Torino (IT)

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Description

[0001] The present invention relates to a tile holder for a combustor of a gas turbine.

[0002] As known, in gas turbine combustors acoustic dampers are used for the purpose of mitigating the acoustic pulsations that may occur during operation in specific frequency ranges. Acoustic dampers attenuate acoustic oscillations in respective frequency bands and, when appropriately tuned, may prevent noxious vibrations to the benefit of efficiency, performance and structural integrity. In order to maximize the beneficial effect, size and location of the acoustic dampers need to be accurately selected and meet several requirements, e.g. in relation to acoustic, thermal and mechanical performance, feasibility and gas turbine efficiency.

[0003] Coupling acoustic dampers to the combustion chambers of combustors, however, is not a simple task, because combustion chambers must be internally provided with a thermoinsulating coating or heat-shield, due to the high temperatures reached during the machine operation. The heat-shield generally comprises a plurality of tiles made of special metallic alloys or of refractory material and arranged in contiguous rows on the inner surface of the shell of the combustion chamber, so as to define a substantially continuous surface. Providing access to the combustion chamber for acoustic coupling would require modifying the tiles, in other words either making special refractory tiles with access holes or drilling holes in metallic tiles. This would in any case incur additional costs and may also put the mechanical resistance of the tiles at risk. Moreover, tile holders, which are used to retain the tiles against the shell of the combustion chamber, limit the space available for coupling acoustic dampers and the positioning thereof is made difficult if possible at all.

[0004] EP 1 605 209 A1 discloses a tile holder for a combustor of a gas turbine, comprising a connector having a tubular body and a retaining system, that secures the tubular body in a seat through a wall and retains a tile against the wall. An acoustic damper has a damping volume and a neck acoustically coupled to the outside through the tubular body. Other examples of tile holders and/or acoustic dampers are known from EP 2 865 947 A1, EP 1 862 740 A1, WO 2012/057994 A2, DE 10 2011 075582 A1, EP 1 596 130 A1, EP 1 849 974 A2, EP 2 251 535 A2 and WO 2015/022222 A1.

[0005] The object of the present invention is therefore to provide a tile holder for a combustor of a gas turbine, which allows to overcome or at least reduce the limitations described above.

[0006] According to the present invention, there is provided a tile holder for a combustor of a gas turbine, comprising:

a connector having a tubular body extending along a first axis and a retaining system, configured to secure the tubular body in a seat through a wall and to retain a tile against the wall;

an acoustic damper having a damping volume and a neck at least in part extending along a second axis;

wherein the neck is acoustically coupled to the outside through the tubular body and the first axis is transverse to the second axis.

[0007] The tile holder therefore provides also the functions of mechanical supporting and acoustic coupling for an acoustic damper. Acoustic dampers can thus be easily fitted to the combustor and acoustically coupled to the combustion chamber and there is no need to modify the tiles. All tiles having a through seat for receiving a tile holder, no matter whether metallic tiles or refractory tiles, can be equally used for the purpose of supporting and acoustically coupling acoustic dampers.

[0008] According to an aspect of the present invention, the retaining system comprises a retaining member at a tile-coupling end of the tubular body, the retaining member projecting radially outward from the tubular body.

[0009] The inner end of the tile holder, that faces the inside of the combustion chamber, is configured to easily engage and firmly retain a respective tile.

[0010] According to an aspect of the present invention, the retaining member comprises a retaining ring removably coupled to the tile-coupling end of the tubular body.

[0011] Removable connection (e.g. threaded connection) simplifies assembling and disassembling of the tile holder and acoustic damper, that is particularly appreciated in maintenance operation for replacement of any of the connector, acoustic damper and tile as required.

[0012] According to an aspect of the present invention, the retaining system comprises a threaded portion at a wall-coupling end of the tubular body.

[0013] The threaded portion provides for direct coupling the shell of the combustion chamber, which is usually provided with threaded through seats for receiving conventional tile holders.

[0014] According to an aspect of the present invention, the retaining system comprises an externally threaded bushing fitted onto the wall-coupling end of the tubular body.

[0015] Parts of the tile holder can be easily mounted and removed. For example, the tubular body may be extracted and replaced without removing the threaded bushing, which may remain permanently connected to the shell because of high operating temperatures.

[0016] According to an aspect of the present invention, the neck comprises a securing mechanism configured to secure the neck to the wall.

[0017] The securing mechanism helps fastening the neck directly and independently to an outer face of the shell of the combustion chamber. Other parts of the tile holder, such as the threaded portion of the retaining system, may be removed (e.g. for the purpose of replacing the tile) without intervening on the acoustic damper.

[0018] According to an aspect of the present invention, the securing mechanism comprises mounting plates, in-

tegral with the neck and provided with mounting holes, and screws through the mounting holes for connecting to seats in the wall.

[0019] According to an aspect of the present invention, the screws are parallel to the first axis of the tubular body or the screws are parallel to a portion of the neck at an interface with the tubular body.

[0020] The screws can be easily tightened into respective receiving threaded holes in the outer face of the shell of the combustion chamber. The orientation of the screws may be conveniently selected as desired depending on the freedom to make the receiving holes, namely while manufacturing a new machine or during retrofitting operations.

[0021] According to an aspect of the present invention, the neck of the acoustic damper comprises a terminal duct, having the damping volume at one end, and an intermediate duct, between the tubular body and the terminal duct.

[0022] Modular construction of the acoustic damper increases flexibility of use and ease of mount.

[0023] According to an aspect of the present invention, the intermediate duct is coaxial to the terminal duct.

[0024] According to an aspect of the present invention, the intermediate duct extends along a third axis which is transverse to the first axis and to the second axis.

[0025] Accordingly, the configuration of the acoustic damper can be flexibly selected to meet both acoustic requirements and space limitations.

[0026] According to an aspect of the present invention, the terminal duct and the intermediate duct comprise respective coupling flanges for releasable mutual connection.

[0027] The coupling through flanges can be easily released for removing and replacing the acoustic damper. Maintenance and retrofit are therefore made simpler.

[0028] According to an aspect of the present invention, the tubular body has a rounded edge coupled to the neck, whereby a smooth transition is defined between the tubular body and the neck.

[0029] The smooth transition is beneficial for the properties of the acoustic damper.

[0030] According to an aspect of the present invention, a combustor of a gas turbine comprises a combustion chamber, having a shell defined by a wall and a heat-shield on an inner surface of the wall, wherein the heat-shield comprises a plurality of tiles and at least one damper connection tile is retained against the wall by a tile holder according to any one of the preceding claims.

[0031] According to an aspect of the present invention, the wall has a through seat and the connector of the tile holder is fitted in the through seat.

[0032] According to an aspect of the present invention, the damper connection tile has a rim that delimits at least a portion of a retaining seat and the connector engages the rim to retain the damper connection tile against the wall.

[0033] The present invention will now be described with reference to the accompanying drawings, which illustrate some examples of non-limiting embodiments, wherein:

- Figure 1 is a side view, cut along a vertical axial plane, of a combustor of a gas turbine, with parts removed for clarity;
- Figure 2 is an enlarged side view, cut along a longitudinal axial plane, of a tile holder in accordance with an embodiment of the present invention incorporated in the combustor of figure 1;
- Figure 3 is an enlarged view of a detail of figure 2;
- Figure 4 is a front view of the tile holder of Figure 2;
- Figure 5 is a side view of a tile holder in accordance with another embodiment of the present invention;
- Figure 6 is a side view of a tile holder in accordance with another embodiment of the present invention; and
- Figure 7 is a side view, cut along an axial plane, of a tile holder in accordance with another embodiment of the present invention.

[0034] Figures 1 illustrates a combustor 1 of a gas turbine (with parts removed for the sake of clarity). The combustor 1 comprises an annular combustion chamber 2, extending around an axis A and having a shell defined by an annular wall 3 and a heat-shield 5 on an inner surface of the annular wall 3. The arrangement herein described is given purely by way of example and is not to be considered limiting, however. In particular, the combustion chamber may be of any type, such as of the silo or can or cannular type.

[0035] The heat-shield 5 comprises a plurality of first thermoinsulating tiles 7 of a metallic alloy and a plurality of second thermoinsulating tiles 8 of refractory material, all arranged in adjacent circumferential rows, around the axis A of the combustion chamber 2. In one embodiment, the thermoinsulating tiles 7, 8 may be of generally quadrangular shape. Also other shapes are available, however.

[0036] At least one of the first thermoinsulating tiles 7, selected for the purpose of coupling an acoustic damper, is fastened to the annular wall 3 by a tile holder 10 in accordance with an embodiment of the present invention. The tile holder 10 comprises a connector 11 and an acoustic damper 12 coupled to the inside of the combustor chamber 2 through the connector 11 as described hereinafter. The other first thermoinsulating tiles 7 may be supported by further tile holders 10 or by conventional tile holders, as desired for the purpose of coupling acoustic dampers to the combustion chamber 2.

[0037] The second thermoinsulating tiles 8 are provided with spring holders 13, which engage circumferential guides 14, which are formed on the inner face of the wall 3 and extend around the axis A.

[0038] As already mentioned, the tile holder 10 comprises a connector 11 and an acoustic damper 12 coupled to the inside of the combustor chamber 2 through the

connector 11.

[0039] As illustrated in figures 2 to 4, the connector 11 comprises a tubular body 15, which extends along a connector axis X1, and a retaining system 17, configured to secure the tubular body 15 in a threaded through seat 18 in the annular wall 3 and to retain the respective first thermoinsulating tile 7 against the annular wall 3. The tubular body may have any suitable cross-section, such as circular, elliptical or polygonal cross-section and the present disclosure is not limited to a specific example.

[0040] The retaining system 17 comprises a retaining member 20 at a first end of the tubular body 15 coupled to the first thermoinsulating tile 7. Specifically, the first thermoinsulating tile 7 has a through retaining seat 21 delimited by a rim 22. In one embodiment, the retaining seat 21 is provided centrally in the first thermoinsulating tile 7. In other embodiments not shown, however, the retaining seat may be provided between two or more first thermoinsulating tiles. In this case, each first thermoinsulating tile has a rim that delimits a portion of the through retaining seat. The retaining member 20 projects radially outward from the tubular body 15 and engages the rim 22 to retain the first thermoinsulating tile 7 against the annular wall 3. In one embodiment, the retaining member 20 comprises a retaining ring removably coupled to the first end of the tubular body 15, e.g. by a threaded coupling.

[0041] The retaining system 17 comprises a threaded portion 23 at a second end of the tubular body 15 coupled to the annular wall 3. In one embodiment, the threaded portion 23 is defined on an outer surface of an externally threaded bushing 25 fitted onto the second end of the tubular body 15. The bushing 25 is inserted into the threaded through seat 18 in the annular wall 3 of the combustion chamber 2 to secure the tile holder 10.

[0042] The acoustic damper 12 has a damping volume 30 and a neck 31 that extends at least in part along a neck axis X2 and is acoustically coupled to the outside of the acoustic damper 12 through the tubular body 15 of the connector 11. Here, the outside of the acoustic damper 12 is the inside of the combustion chamber 2.

[0043] The size and shape of the damping volume 30, and the length, the diameter and cross section of the neck 31 are selected to obtain damping effect in a frequency band as desired in connection with operation of the combustor 1. In particular, the neck 31 may have any suitable cross-section and the diameter or cross dimension may be either constant or variable along the neck axis X2. The tubular body 15 has also the function of extension of the neck 31, so an equivalent neck length that may be considered, that includes also the length of the tubular body 15.

[0044] The connector axis X1 and the neck axis X2 are transverse to the one another, so a duct defined by the tubular body 15 and the neck 31 and connecting the combustion chamber 2 and the damper volume 30 forms a bend 33 at an interface of the neck 31 and the connector 11. The angle between the connector axis X1 and the neck axis X2 may be selected to comply with space occupation requirements. In one embodiment, the neck 31 is arranged substantially radially with respect to axis A.

[0045] The neck 31 of the acoustic damper 12 comprises a terminal duct 31a, at one end of which the damping volume 30 is located, and an intermediate duct 31b, between the tubular body 15 and the terminal duct 31a. In one embodiment, the intermediate duct 31b is coaxial to the terminal duct 31a. The terminal duct 31a and the intermediate duct 31b comprise respective coupling flanges 31c, 31d for releasable mutual connection.

[0046] The neck 31 is also provided with a securing mechanism 35 configured to secure the neck 31 to the annular wall 3 of the combustion chamber 2. In one embodiment, the securing mechanism 35 comprises mounting plates 36, integral with the intermediate duct 31b of the neck 31 and having mounting holes 37, and screws 38 through the mounting holes 37. The screws 37 are coupled to respective threaded seats in the outer face of the annular wall 3. In the embodiment of figure 2 and 3, the screws 37 are parallel to the neck axis X2 in a portion of the neck 31 at an interface with the tubular body 15. At the interface, the tubular body 15 has a rounded edge 15a coupled to the neck 31, whereby a smooth transition is defined between the tubular body 15 and the neck 31. A belleville washer 39 is arranged between the rounded edge 15a of the tubular body 15 and the threaded bushing 25. When the screws 37 are tightened to the annular wall 3, an interface edge of the intermediate duct 31b of the neck 31 is pressed against the tubular body 15 and the bushing 25 and seals the junction between the connector 11 and the acoustic damper 12.

[0047] In another embodiment of the invention, illustrated in figure 5, the neck 31 of the acoustic damper 12 is provided with a securing mechanism, here indicated by 135, which is configured to secure the neck 31 to the annular wall 3 of the combustion chamber 2 and comprises mounting plates 136, integral with the neck 31 and having mounting holes 137, and screws 138 through the mounting holes 137. The screws 138 are coupled to respective threaded seats in the outer face of the annular wall 3. In the embodiment of figure 5, the screws 138 are parallel to the connector axis X1.

[0048] Figure 6 shows another embodiment of the invention. Here, the acoustic damper 12 has a neck 231 with a terminal portion 231a which extend along the neck axis X2 and an intermediate duct 231b that extends along an intermediate axis X3, which is transverse both to the connector axis X1 and to the axis. A securing mechanism 235 with screws 238 are parallel to the connector axis X1.

[0049] In the embodiment of figure 7, in combustor 300 of a gas turbine a tile holder 310 comprises a connector 311 and an acoustic damper 312 as described. The tile holder 310 is coupled to a thermoinsulating tiles 308 of refractory material, which has a through retaining seat 321. Second thermoinsulating tiles 8 with a central hole are normally present in annular combustion chamber of gas turbines as closure tiles. While the other second ther-

moinsulating tiles 308 are slidably inserted along circumferential guides (as circumferential guides 14 of figure 1), the closure tiles are inserted last and need to be secured to the annular wall 3 by tile holders. For this reason such tiles are provided with through holes.

[0050] Finally, it is evident that described modifications and variations can be made to the tile holder described, without departing from the scope of the present invention, as defined in the appended claims.

Claims

1. A tile holder for a combustor of a gas turbine, comprising:

   a connector (11; 311) having a tubular body (15) extending along a first axis (X1) and a retaining system (17), configured to secure the tubular body (15) in a seat (18) through a wall (3) and to retain a tile (7; 308) against the wall (3);
   an acoustic damper (12; 312) having a damping volume (30) and a neck (31) at least in part extending along a second axis (X2);
   characterized in that the neck (31) is acoustically coupled to the outside through the tubular body (15) and the first axis (X1) is transverse to the second axis (X2).

2. The tile holder (7; 308) according to claim 1, wherein the retaining system (17) comprises a retaining member (20) at a tile-coupling end of the tubular body (15), the retaining member (20) projecting radially outward from the tubular body (15).

3. The tile holder (7; 308) according to claim 2, wherein the retaining member (20) comprises a retaining ring removably coupled to the tile-coupling end of the tubular body (15).

4. The tile holder (7; 308) according to any one of the preceding claims, wherein the retaining system (17) comprises a threaded portion (23) at a wall-coupling end of the tubular body (15).

5. The tile holder (7; 308) according to claim 4, wherein the retaining system (17) comprises an externally threaded bushing (25) fitted onto the wall-coupling end of the tubular body (15).

6. The tile holder (7; 308) according to any one of the preceding claims, wherein the neck (31) comprises a securing mechanism (35) configured to secure the neck (31) to the wall (3).

7. The tile holder (7; 308) according to claim 6, wherein the securing mechanism (35) comprises mounting plates (36), integral with the neck (31) and provided with mounting holes (37), and screws (38) through the mounting holes (37) for connecting to threaded seats in the wall (3).

8. The tile holder (7; 308) according to claim 7, wherein the screws (38) are parallel to the first axis (X1) of the tubular body (15) or the screws (38) are parallel to a portion of the neck (31) at an interface with the tubular body (15).

9. The tile holder (7; 308) according to any one of the preceding claims, wherein the neck (31) of the acoustic damper (12; 312) comprises a terminal duct (31a), having the damping volume (30) at one end, and an intermediate duct (31b), between the tubular body (15) and the terminal duct (31a).

10. The tile holder (7; 308) according to claim 9, wherein the intermediate duct (31b) is coaxial to the terminal duct (31a).

11. The tile holder (7; 308) according to claim 10, wherein the intermediate duct (31b) extends along a third axis (X3) which is transverse to the first axis (X1) and to the second axis (X2).

12. The tile holder according to any one of claims 9 to 11, wherein the terminal duct (31a) and the intermediate duct (31b) comprise respective coupling flanges (31c, 31d) for releasable mutual connection.

13. The tile holder according to any one of claims 9 to 12, wherein the tubular body (15) has a rounded edge (15a) coupled to the neck (31), whereby a smooth transition is defined between the tubular body (15) and the neck (31).

14. A combustor of a gas turbine comprising a combustion chamber (2), having a shell defined by a wall (3) and a heat-shield (5) on an inner surface of the wall (3), wherein the heat-shield (5) comprises a plurality of tiles and at least one damper connection tile (7; 308) is retained against the wall (3) by a tile holder (10) according to any one of the preceding claims.

15. The combustor according to claim 14, wherein the wall (3) has a through seat (18) and the connector (11; 311) of the tile holder (10) is fitted in the through seat (18).

16. The combustor according to claim 14 or 15, wherein the damper connection tile (7; 308) has a rim (22) that delimits at least a portion of a through seat (18) and the connector (11; 311) engages the rim (22) to retain the damper connection tile (7; 308) against the wall (3).

Patentansprüche

1. Plattenhalter für einen Brenner einer Gasturbine, der Folgendes umfasst:

   ein Verbindungsstück (11; 311), das einen röhrenförmigen Körper (15), der sich entlang einer ersten Achse (X1) erstreckt, und ein Haltesystem (17), das konfiguriert ist, den röhrenförmigen Körper (15) in einer durch eine Wand (3) verlaufenden Aufnahme (18) zu befestigen und eine Platte (7; 308) gegen die Wand (3) zu halten, aufweist; und
   einen Schalldämpfer (12; 312), der ein Dämpfungsvolumen (30) und einen Hals (31) aufweist, der sich zumindest teilweise entlang einer zweiten Achse (X2) erstreckt;
   dadurch gekennzeichnet, dass der Hals (31) durch den röhrenförmigen Körper (15) mit der Außenseite akustisch gekoppelt ist und die erste Achse (X1) quer zu der zweiten Achse (X2) ist.

2. Plattenhalter (7; 308) nach Anspruch 1, wobei das Haltesystem (17) an einem mit der Platte koppelnden Ende des röhrenförmigen Körpers (15) ein Halteelement (20) umfasst, wobei das Halteelement (20) von dem röhrenförmigen Körper (15) radial nach außen vorsteht.

3. Plattenhalter (7; 308) nach Anspruch 2, wobei das Halteelement (20) einen Haltering umfasst, der an das mit der Platte koppelnde Ende des röhrenförmigen Körpers (15) lösbar gekoppelt ist.

4. Plattenhalter (7; 308) nach einem der vorhergehenden Ansprüche, wobei das Haltesystem (17) an einem mit der Platte koppelnden Ende des röhrenförmigen Körpers (15) einen mit einem Gewinde versehenen Abschnitt (23) aufweist.

5. Plattenhalter (7; 308) nach Anspruch 4, wobei das Haltesystem (17) eine mit einem Außengewinde versehene Buchse (25) umfasst, die an dem mit der Platte koppelnden Ende des röhrenförmigen Körpers (15) angebracht ist.

6. Plattenhalter (7; 308) nach einem der vorhergehenden Ansprüche, wobei der Hals (31) einen Befestigungsmechanismus (35) umfasst, der konfiguriert ist, den Hals (31) an der Wand (3) zu befestigen.

7. Plattenhalter (7; 308) nach Anspruch 6, wobei der Befestigungsmechanismus (35) Montageplatten (36), die mit dem Hals (31) einteilig ausgebildet sind und mit Montagelöchern (37) versehen sind, und Schrauben (38) durch die Montagelöcher (37) umfasst, um sie mit den mit Gewinde versehenen Aufnahmen in der Wand (3) zu verbinden.

8. Plattenhalter (7; 308) nach Anspruch 7, wobei die Schrauben (38) zu der ersten Achse (X1) des röhrenförmigen Körpers (15) parallel sind oder die Schrauben (38) an einer Grenzfläche mit dem röhrenförmigen Körper (15) zu einem Abschnitt des Halses (31) parallel sind.

9. Plattenhalter (7; 308) nach einem der vorhergehenden Ansprüche, wobei der Hals (31) des Schalldämpfers (12; 312) einen Anschlusskanal (31a), an dessen einem Ende sich das Dämpfungsvolumen (30) befindet, und einen Zwischenkanal (31b) zwischen dem röhrenförmigen Körper (15) und dem Anschlusskanal (31a) umfasst.

10. Plattenhalter (7; 308) nach Anspruch 9, wobei der Zwischenkanal (31b) koaxial zu dem Anschlusskanal (31a) ist.

11. Plattenhalter (7; 308) nach Anspruch 10, wobei sich der Zwischenkanal (31b) entlang einer dritten Achse (X3) erstreckt, die quer zu der ersten Achse (X1) und zu der zweiten Achse (X2) ist.

12. Plattenhalter (7; 308) nach einem der Ansprüche 9 bis 11, wobei der Anschlusskanal (31a) und der Zwischenkanal (31b) zur lösbaren gegenseitigen Verbindung jeweils Kopplungsflansche (31c, 31d) aufweisen.

13. Plattenhalter (7; 308) nach einem der Ansprüche 9 bis 12, wobei der röhrenförmige Körper (15) eine abgerundete Kante (15a) aufweist, die mit dem Hals (31) verbunden ist, wobei zwischen dem röhrenförmigen Körper (15) und dem Hals (31) ein glatter Übergang definiert ist.

14. Brenner einer Gasturbine, der eine Brennkammer (2) umfasst, die eine Hülle, die durch eine Wand (3) definiert ist, und einen Hitzeschild (5) auf einer Innenfläche der Wand (3) aufweist, wobei der Hitzeschild (5) mehrere Platten umfasst und mindestens eine Dämpferverbindungsplatte (7; 308) durch einen Plattenhalter (10) nach einem der vorhergehenden Ansprüche gegen die Wand (3) gehalten wird.

15. Brenner nach Anspruch 14, wobei die Wand (3) eine Durchgangsaufnahme (18) aufweist und das Verbindungsstück (11; 311) des Plattenhalters (10) in der Durchgangsaufnahme (18) angebracht ist.

16. Brenner nach Anspruch 14 oder 15, wobei die Dämpferverbindungsplatte (7; 308) einen Kranz (22) aufweist, der zumindest einen Teil einer Durchgangsaufnahme (18) begrenzt, und das Verbindungsstück (11; 311) mit dem Kranz (22) in Eingriff ist, um die Dämpferverbindungsplatte (7; 308) gegen die Wand (3) zu halten.

Revendications

1. Support de tuile pour le brûleur d'une turbine à gaz comprenant :

   un connecteur (11 ; 311) avec un corps tubulaire (15) se prolongeant le long d'un premier axe (X1) et un système de retenue (17), configuré pour fixer le corps tubulaire (15) dans une assise (18) à travers une paroi (3) et pour maintenir une tuile (7 ; 308) contre la paroi (3) ;
   un absorbeur acoustique (12 ; 312) avec un volume d'absorption (30) et une couronne (31) se prolongeant au moins en partie le long d'un second axe (X2) ;
   caractérisé par le fait que la couronne (31) est reliée acoustiquement sur l'extérieur à travers le corps tubulaire (15) et le premier axe (X1) est transversal par rapport au second axe (X2).

2. Support de tuile (7 ; 308) selon la revendication 1, dans lequel le système de retenue (17) comprend un élément de retenue (20) à une extrémité de couplage de tuile du corps tubulaire (15), l'élément de retenue (20) se projetant de façon radiale vers l'extérieur du corps tubulaire (15).

3. Support de tuile (7 ; 308) selon la revendication 2, dans lequel l'élément de retenue (20) comprend une bague de retenue couplée, de façon amovible, à l'extrémité de couplage de tuile du corps tubulaire (15).

4. Support de tuile (7 ; 308) selon l'une quelconque des revendications précédentes, dans lequel le système de retenue (17) comprend une partie filetée (23) sur une extrémité de couplage de paroi du corps tubulaire (15).

5. Support de tuile (7 ; 308) selon la revendication 4, dans lequel le système de retenue (17) comprend une bague (25) filetée à l'extérieur installée sur l'extrémité de couplage de paroi du corps tubulaire (15).

6. Support de tuile (7 ; 308) selon l'une quelconque des revendications précédentes, dans lequel la couronne (31) comprend un mécanisme de fixation (35) configuré pour fixer la couronne (31) sur la paroi (3).

7. Support de tuile (7 ; 308) selon la revendication 6, dans lequel le mécanisme de fixation (35) comprend des plaques de montage (36), faisant partie intégrante de la couronne (31) et dotées d'orifices de montage (37), et de vis (38) à travers les orifices de montage (37) pour la connexion à des sièges filetés dans la paroi (3).

8. Support de tuile (7 ; 308) selon la revendication 7, dans lequel les vis (38) sont parallèles au premier axe (X1) du corps tubulaire (15) ou les vis (38) sont parallèles à une partie de la couronne (31) sur une interface avec le corps tubulaire (15).

9. Support de tuile (7 ; 308) selon l'une quelconque des revendications précédentes, dans lequel la couronne (31) de l'absorbeur acoustique (12 ; 312) est constituée d'un conduit terminal (31a), ayant le volume d'absorption (30) sur une extrémité, et un conduit intermédiaire (31b), entre le corps tubulaire (15) et le conduit terminal (31a).

10. Support de tuile (7 ; 308) selon la revendication 9, dans lequel le conduit intermédiaire (31b) est coaxial au conduit terminal (31a).

11. Support de tuile (7 ; 308) selon la revendication 10, dans lequel le conduit intermédiaire (31b) se prolonge le long d'un troisième axe (X3) qui est transversal par rapport au premier axe (X1) et au second axe (X2).

12. Support de tuile (7 ; 308) selon l'une quelconque des revendications 9 à 11, dans lequel le conduit terminal (31a) et le conduit intermédiaire (31b) comprennent des brides d'accouplement respectives (31c, 31d) pour la connexion mutuelle séparable.

13. Support de tuile (7 ; 308) selon l'une quelconque des revendications 9 à 12, dans lequel le corps tubulaire (15) comprend un bord arrondi (15a) couplé à la couronne (31), par lequel une transition lisse est définie entre le corps tubulaire (15) et la couronne (31).

14. Brûleur de turbine à gaz comprenant une chambre de combustion (2), ayant une coque définie par une paroi (3) et un bouclier thermique (5) sur une surface interne de la paroi (3), dans lequel le bouclier thermique (5) comprend plusieurs tuiles et au moins une tuile de connexion d'absorbeur (7 ; 308) est maintenue contre la paroi (3) par un support de tuile (10) selon l'une quelconque des revendications précédentes.

15. Brûleur selon la revendication 14, dans lequel la paroi (3) comprend une assise traversante (18) et le connecteur (11 ; 311) du support de tuile (10) est fixé dans l'assise traversante (18).

16. Brûleur selon la revendication 14 ou 15, dans lequel la tuile de connexion d'absorbeur (7 ; 308) présente un bord (22) qui délimite au moins une partie d'une assise traversante (18) et dans lequel le connecteur (11 ; 311) s'engage dans le bord (22) pour maintenir la tuile de connexion d'absorbeur (7 ; 308) contre la paroi (3).

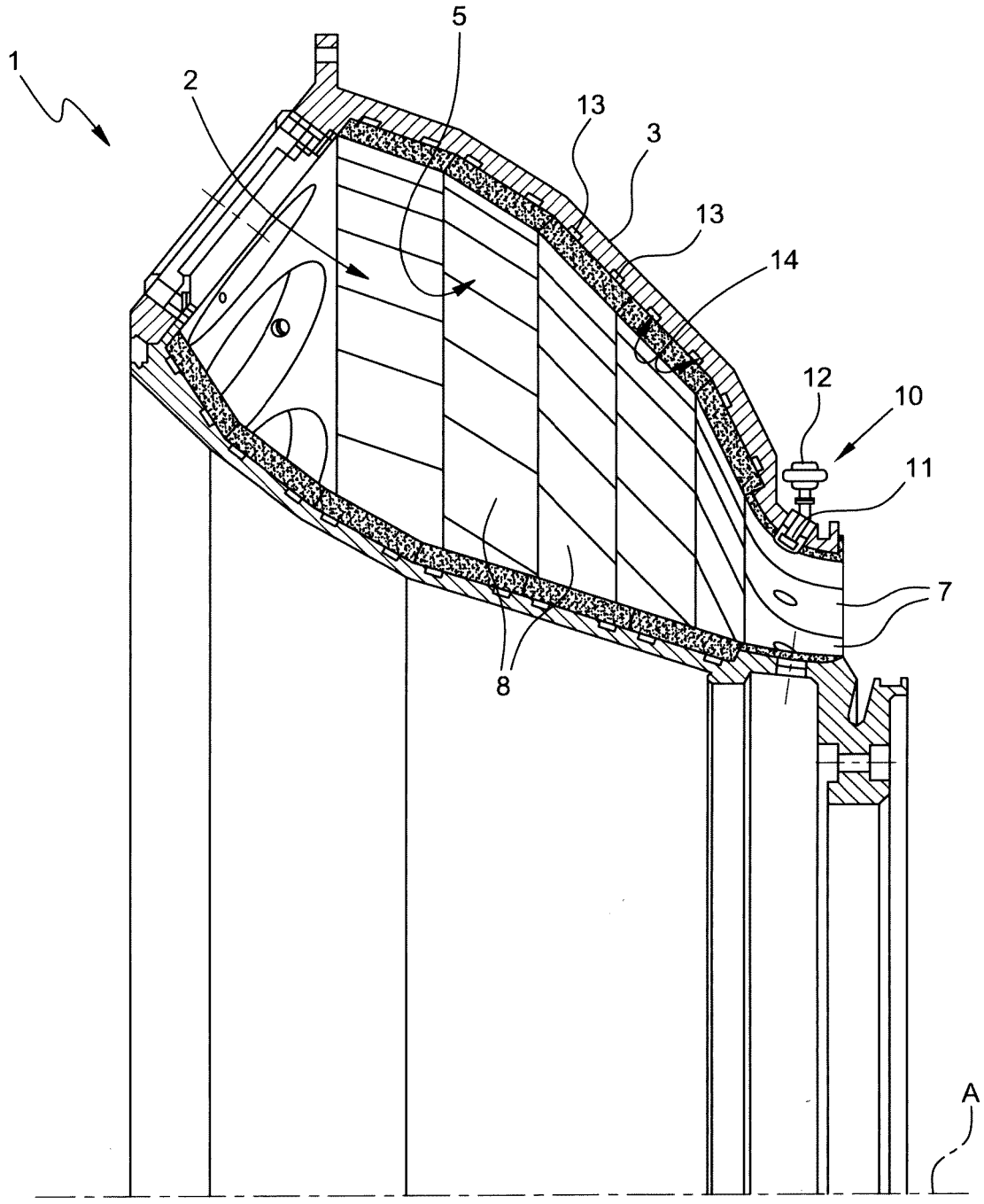

FIG. 1

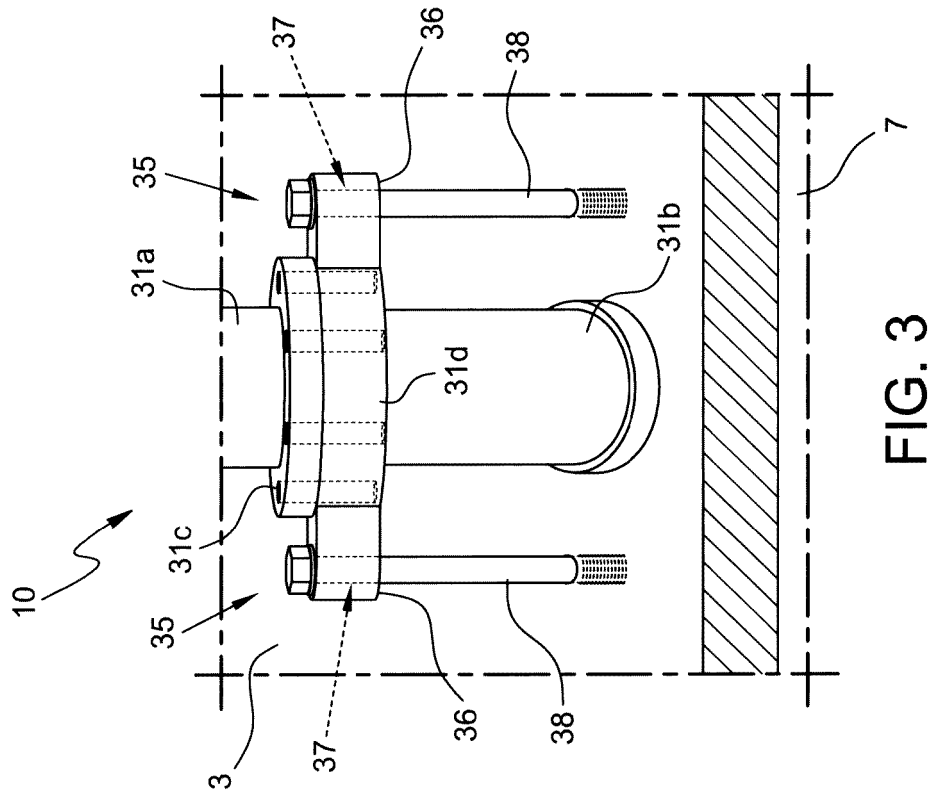
37
36
38
35
31a
31b
7
31d
31c
10
35
3
37
36
38

FIG. 3

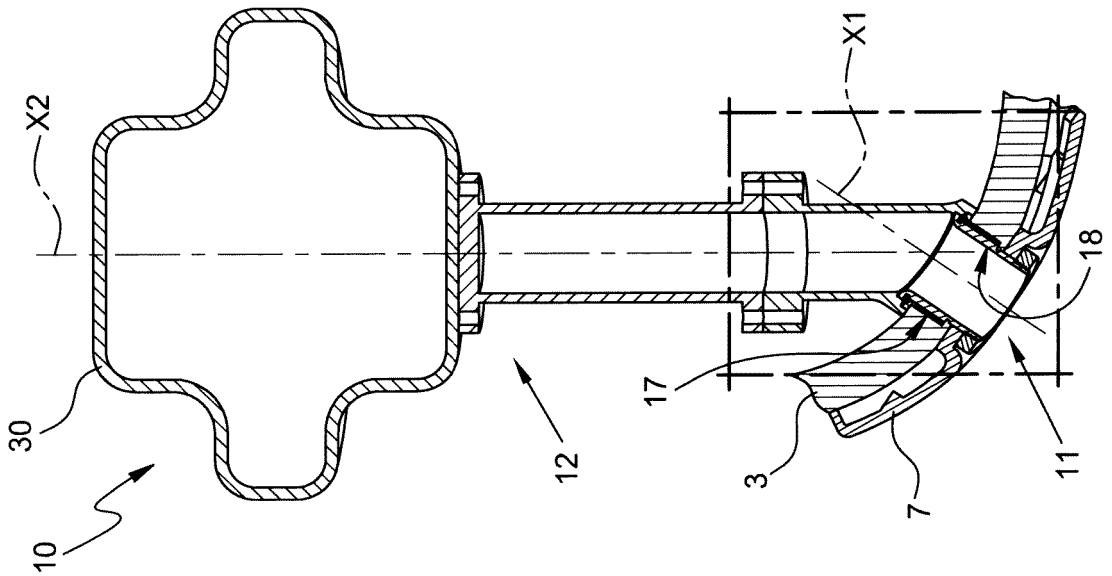
X2
X1
18
30
17
12
3
11
10
7

FIG. 2

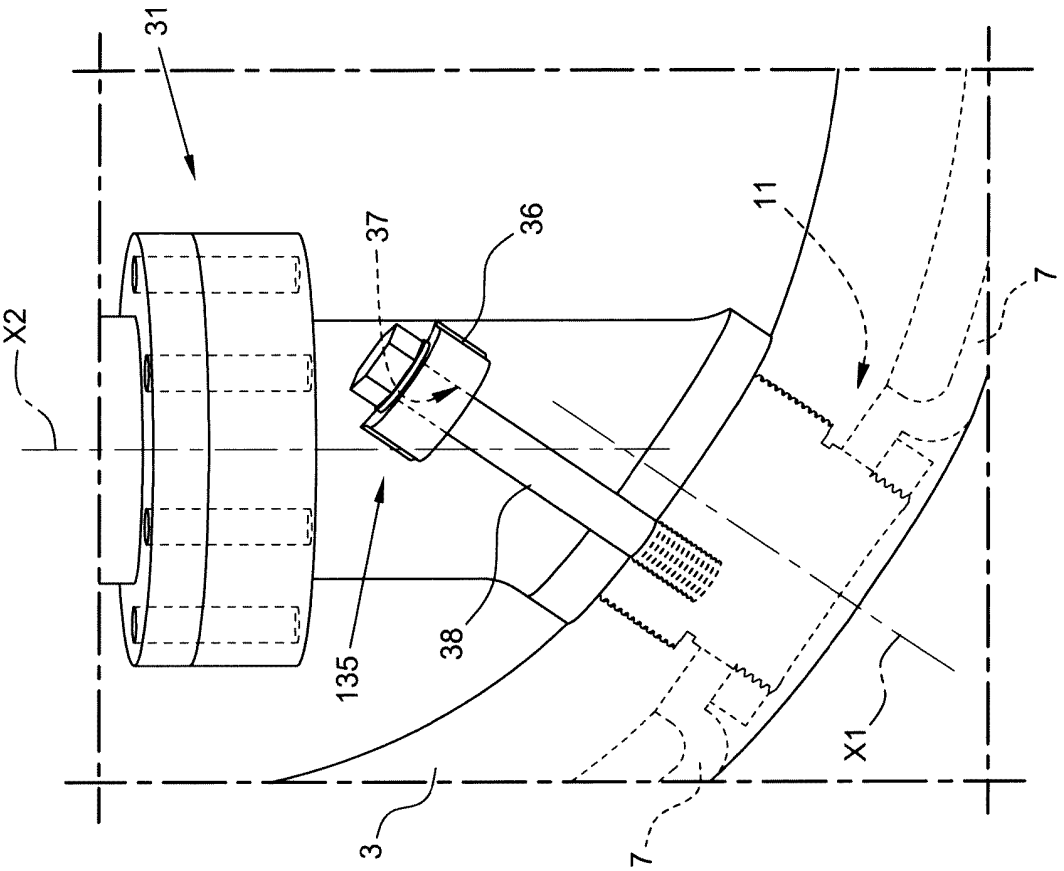
31
37
36
11
7
X2
135
38
X1
3
7

FIG. 5

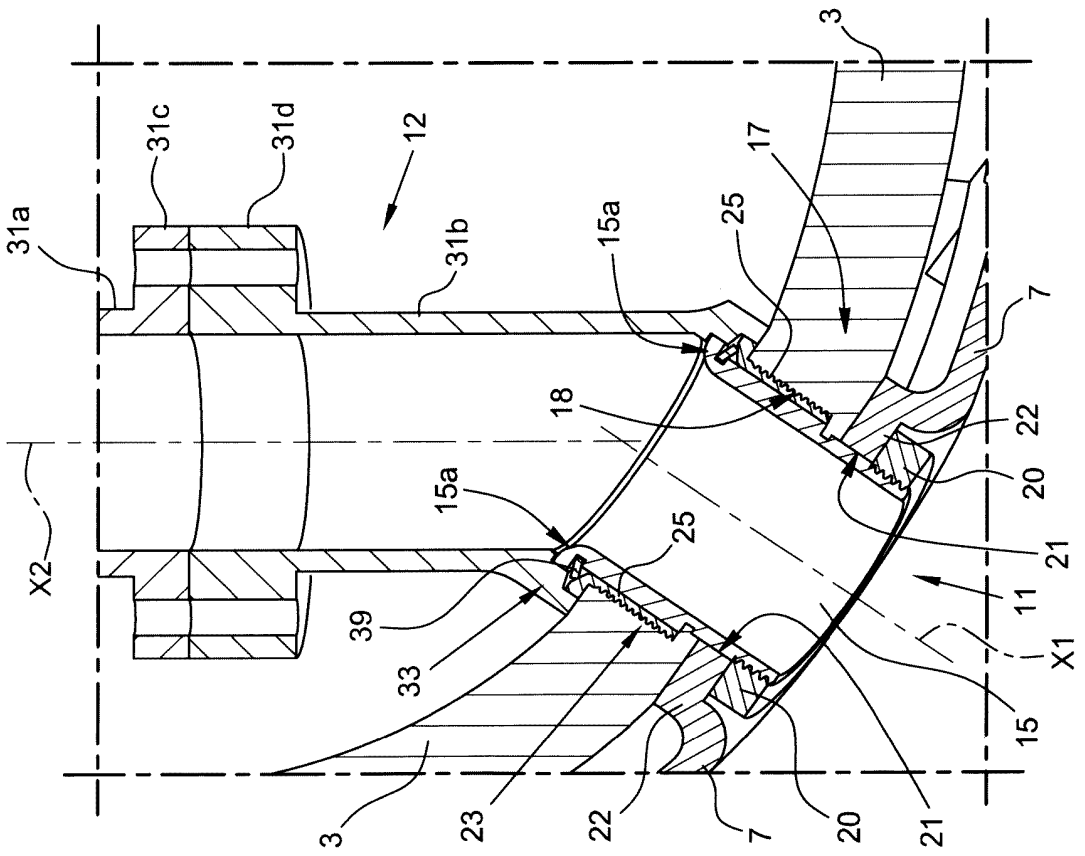
3
31c
31d
12
17
31a
31b
15a
25
7
18
22
20
15a
25
21
X2
39
11
33
X1
15
3
23
22
7
20
21

FIG. 4

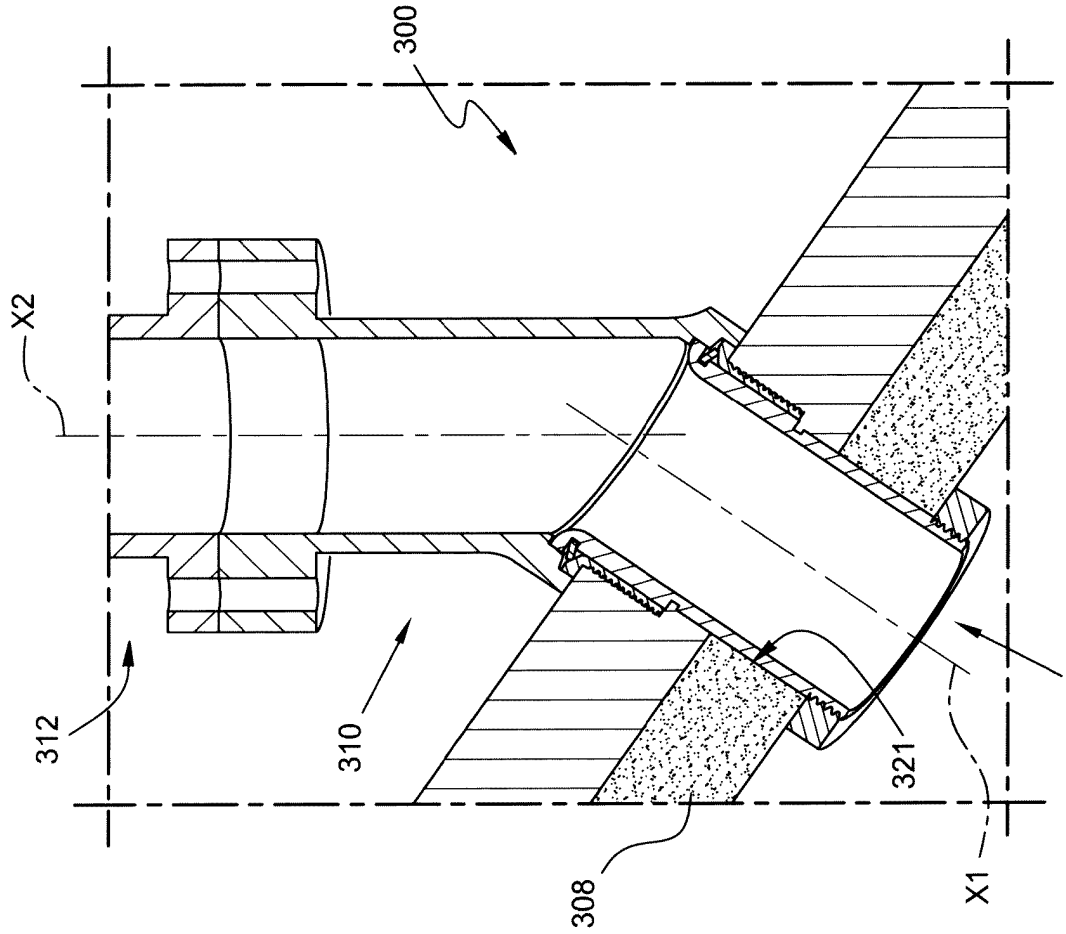
300
X2
312
310
308
321
311
X1

FIG. 7

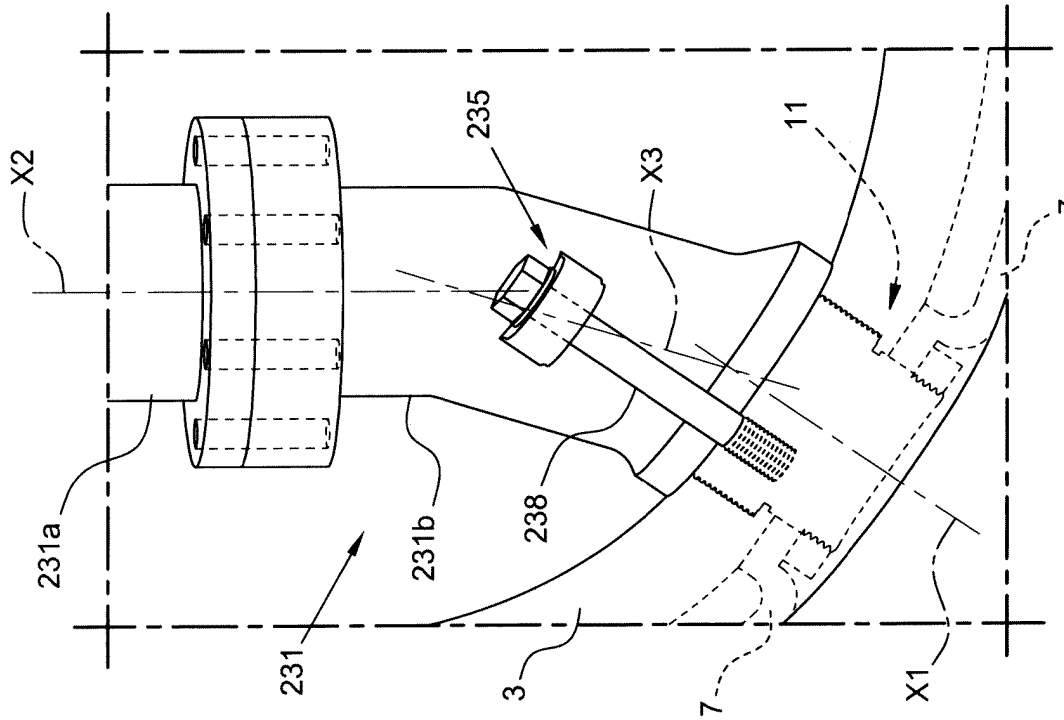
X2
235
X3
11
7
231a
231b
238
231
3
7
X1

FIG. 6

REFERENCES CITED IN THE DESCRIPTION

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