

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO



No. 07-099058- -00004-0000

Fecha: 2009-04-30 17:18:36 Dep 2020 NUECREACION
Tra 11 PATENTEIYII Eve. 378 FASENACIONALI
Act. 538 PETICION Folios: 2

AS. 105.146

Señores

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

DIVISION DE NUEVAS CREACIONES

E. S. D.

REF.: Expediente No. 07 099.058 - Solicitud de Patente FASE NACIONAL

Corresp. a la Solicitud Internacional PCT/EP2006/060880.

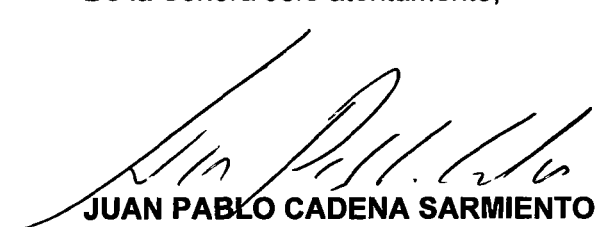
a nombre de: **ALSTOM TECHNOLOGY LTD.**

Titulada: **ÁLABE GUÍA PARA UNA TURBOMÁQUINA.**

JUAN PABLO CADENA SARMIENTO, vecino de Bogotá, portador de la tarjeta profesional No. 57492 del Consejo Superior de la Judicatura, obrando como apoderado de la Sociedad **ALSTOM TECHNOLOGY LTD.**, según lo acredita el documento de poder presentado en esa División, de acuerdo con el Artículo 44 de la Decisión 486 de la Comisión de la Comunidad Andina, me permito solicitar que se examine si la invención contenida en la solicitud en referencia es patentable.

De acuerdo con lo anterior, me permito anexar el recibo oficial de caja No. 09-11,424 por valor de \$452.000.

De la Señora Jefe atentamente,


JUAN PABLO CADENA SARMIENTO

C.C. No. 80.410.337 de Usaquén

T.P. No. 57492 del C.S.J.

Cra 7 No. 71-21 Torre B, Piso 4

Bogotá, 30 de abril de 2009

CHP/MXB/jpg

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No. 07-099058- -00004-0000

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SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

NIT : 800176089-2

RECIBO OFICIAL DE CAJA : 09 - 11,424
: FEBRERO 11 DE 2009

**** CONSIGNACION ****

DEPOSITANTE	TIPO PAGO	BANCO	CUENTA	No. PAGO	FECHA PAGO	Vr. PAGO
BRIGARD & CASTRO LTDA	CONSIGNACION	BANCO DE BOGOTA	062754387	80854211	11/02/2009	35,342,120.00

**** CONCEPTO ****

RENTISTICO	CONCEPTO	TOTAL CONCEPTO
1 50005-01-01 SOLICITUDES	85 EXAMEN DE PATENTABILIDAD DE INVEN	452,000.00
	TOTAL :	\$ 452,000.00

SON: CUATROCIENTOS CINCUENTA Y DOS MIL PESOS

RESPONSABLE : _____

RECIBO DE CAJA APLICADO AL EXPEDIENTE No. _____

DIVISIÓN DE NUEVAS CREACIONES

RADICACIÓN EXPEDIENTE No. 07-99058

EL EXTRACTO DE LA PRESENTE SOLICITUD DE PATENTE DE INVENCION

FUE PUBLICADO EN LA GACETA DE PROPIEDAD INDUSTRIAL No 597 DE

FECHA 31 DE OCTUBRE DE 2008 EL TÉRMINO HÁBIL SEÑALADO POR LA

LEY EXPIRA EL 02 DE FEBRERO DE 2009

NOTA: Dentro del plazo de los seis (6) meses siguientes a partir de la fecha de publicación en la gaceta de Propiedad Industrial, deberá solicitar y cancelar el examen de patentabilidad so pena de que la solicitud caiga en abandono, de acuerdo con lo establecido en el Artículo 44 de la Decisión 486/2000.

SE PRESENTARON OPOSICIONES POR PARTE DE TERCEROS.

SI _____

NO X

289

PATENT SPECIFICATION (11) 1605309

1605309 (21) Application No. 10646/75 (22) Filed 14 Mar 1975
(23) Complete Specification filed 9 Mar 1976
(44) Complete Specification Published 1 Feb 1989
(51) INT. CL. F01D 5/12
(52) Index at Acceptance F1V 106 111 300 310 CL
(72) Inventor: Wilfred Henry Wilkinson



(54) A STATOR BLADE FOR A GAS TURBINE ENGINE

(71) We, ROLLS-ROYCE LIMITED, a British Company of 65 Buckingham Gate, London, SW1E 6AT, formerly ROLLS-ROYCE (1971) LIMITED, a British Company of Norfolk House, St. James's Square, London, SW1Y 4JR, do hereby declare the invention for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:-

This invention relates to a stator blade for a gas turbine engine.

Throughout this specification the term 'stator blade' is to be understood to include within its scope outlet guide vanes, nozzle guide vanes and aerodynamic struts.

Stator blades such as nozzle guide vanes which are located in the hottest parts of the engines have had to withstand more and more arduous conditions as the temperature of the combustion in the engine has increased, and this has recently led to a situation in which the platforms or shrouds of these vanes have caused major difficulties. Thus the platforms which carry various loads from the aerofoil portions of the stators have of necessity been of considerable thickness and consequently difficult to cool.

The present invention provides a construction for a stator blade which enables the platforms to be relatively thin and consequently relatively easily cooled.

According to the present invention a stator blade for a gas turbine engine comprises an aerofoil portion and inner and outer platforms, the aerofoil portion extending through the platforms to form projections, and mounting members extending from one said projection and being adapted to engage with supporting structure so that in operation, loads are transmitted directly from the aerofoil portion through the projection and the mounting member to the supporting structure, the mounting members comprising a pair of dogs extending from the parts of the projection corresponding with opposed flanks of the aerofoil portion. These dogs may be joined by a web which extends into and forms a division across the hollow interior of the aerofoil portion.

The mounting members may engage directly with the supporting structure.

The invention will now be particularly described, merely by way of example, with reference to the accompanying drawings in which:-

Fig. 1 is a view of a gas turbine engine which incorporates a stator blade in accordance with the invention.

Fig. 2 is a sectional view through the nozzle guide vane assembly of the engine of Fig. 1, and

Fig. 3 is a perspective view of the outer shroud of the guide vanes of Fig. 2.

In Fig. 1 there is shown a gas turbine engine 10 comprising a compressor section 11, combustion section 12, turbine section 13 and final nozzle 14. The casing of the engine is shown broken away at the downstream end of the combustion section 12 to expose to view the downstream end of the combustion chamber 15, the nozzle guide vanes 16 and the turbine rotor 17.

The combustion section components are more easily visible in the enlarged section of Fig. 2. It will be seen that the downstream extremity of the combustion chamber 15 is provided with inner and outer flanges 17 and 18 which seal by way of sealing wires 19 and 20 respectively against forward sealing flanges 21 and 22 which extend from the inner and outer platforms or shrouds 23 and 24 of the nozzle guide vanes 16. The platforms 23 and 24 are also provided with rearward sealing flanges 25 and 26; in the case of the inner flange 25 sealing is effected against a resilient sealing member 27 by way of a further sealing wire 28, while in the case of the outer flange 26 an annular spring member 29 is provided to seal against the flange and fixed structure of the engine at 30.

In order to mount each vane 16 and to support it against aerodynamic loads the aerofoil portion 31 is extended inwardly and outwardly past the inner and outer platforms 23 and 24 respectively to produce aerofoil shaped projections 32 and 33. The projections 32 and 33 and associated structure are best seen from Fig. 3. Extending from the projections 32 and 33 are integrally formed mounting members

comprising two dogs of which 34 and 35, which extend from the projection 33 are visible in Fig. 3 while two further dogs extend from the projection 32, only the dog 36 being visible in Fig. 2.

5 The dogs 34 and 35 can be seen from Fig. 3 to be buttressed one against the other by a pair of angled buttresses, of which only one is visible at 37 in Fig. 3, which in turn act on a web 38 which extends between the hollow flanks of the aerofoil portion 31 of the vane 16. It will be understood that a similar arrangement obtains for the inner shroud.

10 Each of the dogs is provided with a cut-away portion to allow engagement with supporting structure of the engine. Thus the cut-away portion 39 in the dog 35 is visible in Fig. 3 and enables the dog to engage with a projection 40 which forms part of a supporting ring 41 which is connected to the supporting structure of the engine.

15 In a similar manner the inner dogs engage with projections from a supporting member 42 which in this case itself forms part of the supporting structure of the engine.

20 It will thus be seen that aerofoil loads in the circumferential and axial directions are taken from the aerofoil portion 31 through the platforms 23 and 24 directly into the projections 32 and 33 and thus directly to the dogs and to the supporting structure of the engine. The platforms 23 and 24 are only called upon to withstand relatively small loads such as those due to the pressure differences across them.

25 In this embodiment the vanes have been described as separate members, however it will be understood that it would be possible to produce the vanes in multiples such as pairs or triples, or to join single vanes metallurgically to produce a multiple.

30 It will be noted that in the present invention the mounting of the aerofoil portion of the guide vane and its support against aerodynamic forces is completely separated from the function of sealing the forward and rearward extremities of the guide vane against adjacent structure: thus in the above embodiment forward and rearward sealing flanges are provided which are completely separate from the guide vane mounting structure. Therefore it is possible to take advantage of the fact that the mounting structure need not be a massive complete flange but can be a number of separate dogs which are directly connected to the aerofoil portion, from 35 which the forces are transmitted; the sealing flanges in this case need not possess considerable intrinsic strength but can be relatively light and of relatively thin section. This reduction in thickness of the platforms and associated flanges reduces considerably the difficulty experienced in providing cooling for this area.

40 It will be understood that a number of modifications could be made to the embodiments described above. Thus it will be appreciated that

it will be possible to use this form of construction for any stator of a gas turbine engine, and while the advantages might not be as considerable in a situation where cooling was not necessary, the construction would be equally suitable.

In addition to the above it will be seen that owing to the provision of sealing arrangements at the forward and rearward extremities of the platforms, the mounting arrangement is effected in an area of the engine in which the temperature is substantially independent of that of the gas flow. This arrangement is claimed in our co-pending application no. 1605310 23546/75 and provides considerable advantage in the mounting of the vane.

WHAT WE CLAIM IS:

1. A stator vane for a gas turbine engine comprising an aerofoil portion and inner and outer platforms, the aerofoil portion extending through the platforms to form projections, and mounting members extending from one said projection and being adapted to engage with supporting structure so that, in operation, loads are transmitted directly from the aerofoil portion through the projection and the mounting member to the supporting structure, the mounting members comprising a pair of dogs extending from those parts of the projection corresponding with the opposed flanks of the aerofoil portion.

2. A stator vane as claimed in claim 1 and in which each said dog comprises a cut-away portion adapted to engage with a projection from said supporting structure.

3. A stator vane as claimed in claim 1 or claim 2 and in which said aerofoil portion is hollow and said dogs are joined by a web which extends into and forms a division across the hollow interior of the aerofoil portion.

4. A stator vane as claimed in any of claims 1 to 3 and in which said supporting structure comprises a ring having projections therefrom, each said projection being adapted to engage with one said dog.

5. A stator vane as claimed in any of claims 1 to 4 and in which two said dogs extend from the projection of the aerofoil portion through the inner platform and two said dogs extend from the projection of the aerofoil portion through the outer platform.

6. A stator vane as claimed in any preceding claim and in which said aerofoil portion is associated with its own separate inner and outer platforms.

7. A stator vane as claimed in any of claims 1 to 5 and in which a plurality of said aerofoil portion are associated with a single outer and a single inner platform.

8. A stator vane for a gas turbine engine substantially as hereinbefore particularly described with reference to the accompanying drawings.

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1 605 309

2 SHEETS This drawing is a reproduction of
the Original on a reduced scale

Sheet 1

FIG. 1.

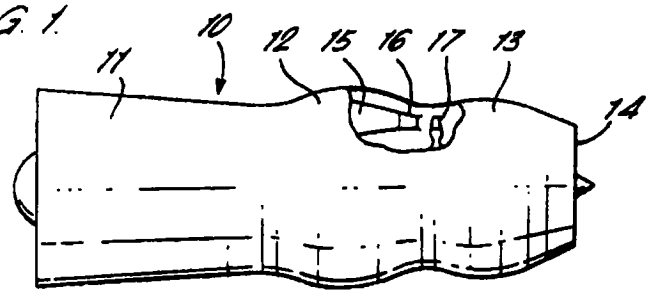
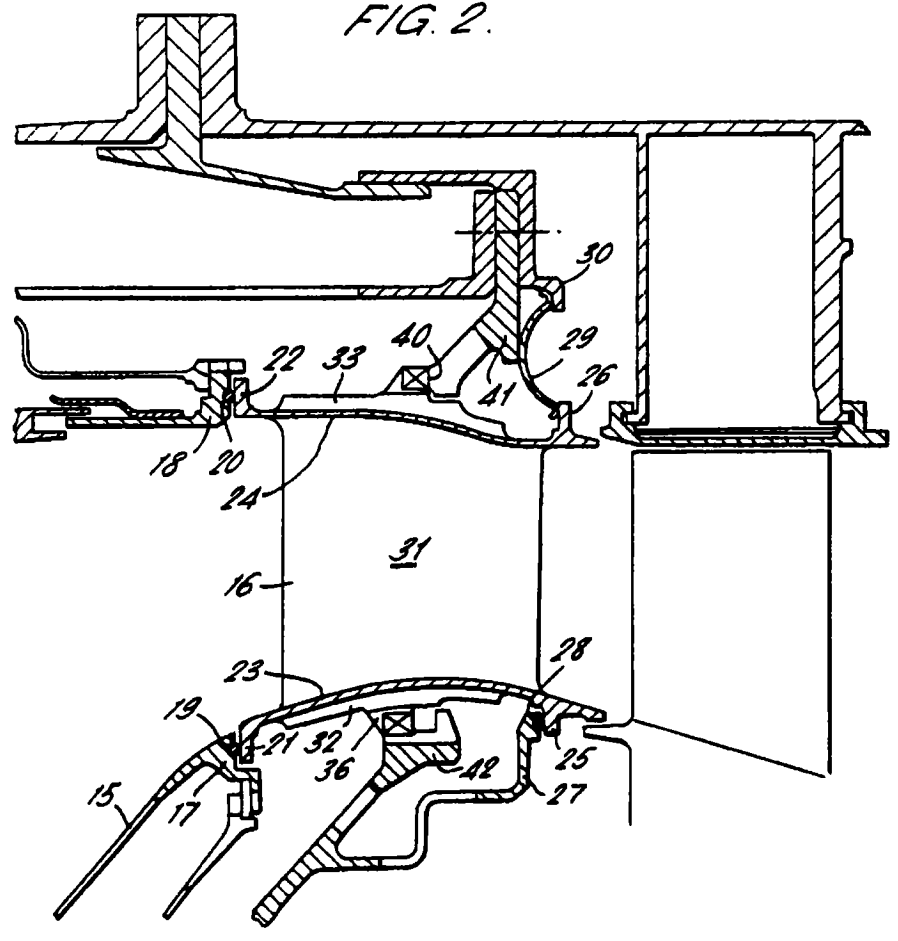


FIG. 2.



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SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
DIRECCION DE NUEVAS CREACIONES

202084

Bogotá, D.C.

Abogado
JUAN PABLO CADENA SARMIENTO
Apoderado

ASUNTO	Radicación	07 – 99058
	Trámite	011
	Evento	378
	Actuación	519
	Oficio	
	Folios	006

1 16495

Patente de Invención	☒	Patente de Modelo de Utilidad	☐
Vía Nacional	☐		
Vía PCT (fase nacional)	☒	Cap. I	☒
		Cap. II	☐

No. Sol. Internacional PCT/EP2006/060880

Fecha de Presentación Internacional 20/03/2006

Como resultado del examen de fondo, realizado con fundamento en el artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina, se le comunica:

1. Documentos estudiados

- | | | | |
|------|--------------------------|--------|---|
| 1.1. | <u>Descripción:</u> | Folios | 50 a 60 |
| 1.2. | <u>Reivindicaciones:</u> | Folios | 61 a 63 |
| 1.3. | <u>Dibujos:</u> | Folios | 64 a 66 |
| 1.4. | <u>Prioridad:</u> | Folios | 5 a 49 (DE102005013794.6 2005-03-24) |

2. Objeto de la invención

Título de la solicitud: "ALABE GUÍA PARA UNA TURBOMÁQUINA".

El problema planteado en esta solicitud se refiere a permitir adoptar medidas en el concepto del álabe guía con las cuales se reduzcan las perdidas por fugas de aire de refrigeración, que se pierde, en gran medida sin ser aprovechado, por las holguras

en el canal de flujo. Las medidas adoptar no deben afectar el funcionamiento ni la posibilidad de montaje de los diferentes componentes. De igual manera debe ser posible mecanizar posteriormente en forma correspondiente los álabes guía que ya se encuentren en operación, con el fin de reducir caudales de fuga que pueden ser perjudiciales.

Para solucionar este problema técnico la solicitud en estudio proporciona un álabe guía para una turbo-máquina, en particular para una etapa de una turbina de gas, con una hoja de alabe guía, una plataforma radialmente exterior acoplada con la hoja de álabe guía, con una cara superior de la plataforma opuesta radialmente a la hoja de álabe guía, en la que se provee una estructura de conexión para la fijación del álabe guía a una estructura de soporte, que presenta secciones de pared lateral limitantes de una cavidad interna y que sobresalen radialmente de la cara superior de la plataforma, en las cuales por lo menos, en ciertos tramos, se dispone un contorno ensamblado, el cual se puede insertar en un alojamiento de perfil contrario en la estructura de soporte, configurado en tal forma, que entre la estructura de conexión y la estructura de soporte se provee por lo menos un medio de sellado.

El objeto de la presente invención se lleva acabo de acuerdo con las características reivindicadas, en la reivindicación 1 (ver folio 61).

El objeto de la solicitud definida anteriormente se encuentra en la Clasificación Internacional de Patentes (IPC), F01D09/04, F01D11/00.

3. Determinación del Estado de la Técnica

Se buscaron documentos del estado de la técnica relacionados, con fecha de publicación anterior a 2005-03-24, que pueden afectar la patentabilidad del objeto de la presente solicitud, encontrándose:

Nº	Documento	Título	Fecha de Publicación
D1	GB1605309	A STATOR BLADE FOR A GAS TURBINE ENGINE	Febrero 01, 1989

"D1 GB1605309 Se refiere a un dispositivo de fijación y sellado de las paletas de guía de un motor de turbina de gas y, en particular para las paletas de combustión guía de la cámara. La parte de la paleta en forma aerodinámica se extiende más allá de los aros interior y exterior a fin de formar camellones que comprende las garras de fijación a la estructura fija del motor, los aros, dijo que terminan en las mejillas de cierre aguas arriba y aguas abajo. Dado que las fuerzas aerodinámicas ejercidas sobre dichos elementos son transmitidos a través de las crestas, los aros pueden ser delgados y fácilmente se enfrían y el dispositivo de fijación se encuentra lejos de las corrientes de gases calientes."

4. Análisis de patentabilidad (artículo 14 D 486)

4.1. Novedad (artículo 16 D 486)

Teniendo en cuenta que el documento **GB1605309** (mencionado de ahora en adelante como **D1**), que se refiere a: un **"A stator blade for a gas turbine engine"** y al comparar elemento por elemento de la invención tal como está definido en la reivindicación independiente 1 con el documento **D1**, vemos que el dicho documento contiene todas las características técnicas, como son:

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- Álabes guía para una turbo-máquina, en particular para una etapa de turbina de gas, con una hoja de álabes guía (16), una plataforma (42) radialmente exterior acoplada con la hoja de álabes guía (16) con una cara superior de la plataforma (31) radialmente opuesta a la hoja de álabes guía (16), en la cual, para la fijación del álabes guía (16) a una estructura de soporte (22, 26), se provee una estructura de conexión (22, 26), que presenta secciones de pared lateral (33) las cuales definen una cavidad interna y sobresalen radialmente de la cara de la plataforma (31), en las cuales se provee por lo menos en determinados tramos un contorno de inserción (34, 35), que se puede insertarse en un alojamiento de perfil contrario dentro de la estructura de soporte (22, 26), caracterizado porque entre la estructura de conexión (22, 26) y la estructura de soporte (42) se provee por lo menos un medio de sellado (20). "Ver página 1 desde renglón 72 hasta la página 2 renglón 24; junto a la figura 2 y 3".

Realizada la comparación del documento D1 con la presente solicitud de patente de invención, se observa que dicho documento contiene todas las características técnicas de la reivindicación independiente 1; con lo cual quedaría desvirtuada la novedad de esta.

5. Conclusión:

Los requisitos de patentabilidad de la presente solicitud se encuentran afectados así:

Nº	Documento Nº	Reivindicaciones Afectadas	Requisito que Afecta
D1	GB1605309	1 a 9	Novedad

En cumplimiento del artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina, se le indica que debe dar respuesta dentro del término de sesenta días contados a partir de la fecha de notificación de la presente comunicación. En caso de no dar respuesta al presente requerimiento, o si a pesar de la respuesta subsistieran los impedimentos para la concesión, se denegará la patente.

Notifíquese el presente oficio conforme a lo dispuesto en el numeral 5.2, literal e), del capítulo quinto del título primero de la Circular Única Nº 10 de 2001.


JOSÉ LUIS SALAZAR LÓPEZ
 Director de Nuevas Creaciones (E)

23 DIC. 2001

El anterior requerimiento fue notificado por fijación en lista, de fecha _____

CONCEPTO TÉCNICO No. 4047	EXAMINADOR TÉCNICO Código No. 84
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