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(54) **CENTRIFUGAL COMPRESSOR**

ZENTRIFUGALVERDICHTER

COMPRESSEUR CENTRIFUGE

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Description

[TECHNICAL FIELD]

[0001] The present invention relates to a centrifugal compressor in which a vane blade is able to be moved into and out of a diffuser passage as defined in the preamble of claim 1. Such a compressor is known eg from JP 2001329996.

[BACKGROUND ART]

[0002] There has been disclosed a technique as in the preamble of claim 1, in which a vane blade is formed integrally with a diaphragm, and
fluid pressure inside the diaphragm is adjusted to deform the diaphragm, so that the deformation of the diaphragm is transmitted to the vane blade, thereby causing the vane blade to move into and out of the diffuser passage (see, for example, a first patent document). With this construction, in the first patent document (see below), when the operation flow rate of a centrifugal compressor is a small flow rate, the vane blade is caused to project into the diffuser passage, whereas when the operation flow rate of the centrifugal compressor is a large flow rate, the vane blade is caused to be buried into the side wall of the diffuser passage.

[PRIOR ART REFERENCES]

[PATENT DOCUMENTS]

[0003]

[First patent Document] Patent Laid-Open Publication JP 2001-329996 A
[Second patent Document] DE 10 2006 009354 A1

[0004] DE 10 2006 009354 A1 discloses a centrifugal compressor having a configuration in which by a locking member moved by the use of air pressure, a bellows elongates and contracts, and along with this movement, a diffuser wall is allowed to shift back and forth. The locking member and the diffuser wall are arranged at each other.

[SUMMARY OF THE INVENTION]

[PROBLEMS TO BE SOLVED BY THE INVENTION]

[0005] In the technique of the first patent document (see above), the diaphragm is formed integrally with the vane blade. Therefore, when the diaphragm is not able to be deformed in an accurate manner because of variation in the thickness of the diaphragm or difference in the hardness of a part of the diaphragm from the others thereof, the direction of protrusion of the vane blade will deviate from a specified direction. When the direction of protrusion of the vane blade deviates from the specified direction, the vane blade may bite a peripheral edge portion of a slit through which the vane blade is caused to protrude into the diffuser passage. In addition, the friction at the time of the vane blade passing through the slit may become large, thus giving rise to wear of the vane blade and an increase in a driving force for operating the vane blade.

[0006] The present invention has been made in view of the above-mentioned circumstances, and has for its object to provide a technique in a centrifugal compressor in which the direction of protrusion of a vane blade is avoided from deviating from a specified direction as a result of a deformation of a deformation member.

[MEANS FOR SOLVING THE PROBLEMS]

[0007] In the present invention, the following construction is adopted. That is, the present invention resides in a centrifugal compressor which is provided with:

a vane blade that is movable into and out of a diffuser passage;
a space that is formed in a wall of the diffuser passage in which said vane blade is caused to be buried; and
a deformation member that divides said space into a diffuser side chamber and an anti-diffuser side chamber, and deforms to change the volume of said anti-diffuser side chamber, said deformation member causing said vane blade to move in a specified direction thereby to protrude into said diffuser passage due to a deformation thereof at the time of increasing the volume of said anti-diffuser side chamber;
wherein said vane blade and said deformation member are separate bodies from each other, and only a displacement in the specified direction of a portion of said deformation member which is made into contact with said vane blade due to the deformation thereof at the time of increasing the volume of said anti-diffuser side chamber acts on said vane blade.

[0008] In the deformation of the deformation member at the time of increasing the volume of the anti-diffuser side chamber, a portion of the deformation member, being in contact with the vane blade, is not only displaced in the specified direction to cause the vane blade to protrude into the diffuser passage, but also can be displaced in a direction other than the specified direction, too. At this time, when the portion of the deformation member, which is in contact with the vane blade, is formed integrally with the vane blade, the vane blade may also move not in the specified direction but in the direction other than the specified direction, in accordance with the deformation of the deformation member.

[0009] However, in the present invention, the vane blade and the deformation member are separate bodies

from each other. For this reason, the displacement in the direction other than the specified direction of the portion of the deformation member in contact with the vane blade only causes the portion of the deformation member in contact with the vane blade to move with respect to the vane blade, but does not act on the vane blade, thus making it difficult for the vane blade to move in a direction other than the specified direction. On the other hand, only a displacement in the specified direction of the portion of the deformation member in contact with the vane blade acts on the vane blade, thereby causing the vane blade to move in the specified direction. Accordingly, it is possible to avoid the direction of protrusion of the vane blade from deviating from the specified direction as a result of the deformation of the deformation member.

[0010] As a result, it is possible to avoid the direction of protrusion of the vane blade from deviating from the specified direction, thus avoiding the vane blade from biting a peripheral edge portion of a slit through which the vane blade is caused to protrude into the diffuser passage. In addition, it is also possible to avoid friction at the time of the vane blade passing through the slit from becoming large, thereby avoiding the occurrence of wear of the vane blade and an increase in a driving force for operating the vane blade.

[0011] Provision may further be made for:

an urging member that urges said vane blade in a manner such that said vane blade is caused to be buried into said diffuser passage wall; and

a stopper that positions said vane blade against the urging of said urging member when an amount of protrusion into said diffuser passage of said vane blade is equal to or less than a predetermined amount;

wherein said deformation member is able to be moved away from said vane blade that is positioned by said stopper, by decreasing the volume of said anti-diffuser side chamber.

[0012] Here, the predetermined amount is an amount which, when the amount of protrusion is equal to or less than that amount, can deal with a case where the operation flow rate of the centrifugal compressor is a large flow rate.

[0013] According to this, in cases where the amount of protrusion of the vane blade into the diffuser passage is equal to or less than the predetermined amount, the deformation member can be caused to separate from the vane blade positioned by the stopper. As a result of this, it is possible to avoid heat transfer from the vane blade to the deformation member. Accordingly, it is possible to suppress the deformation member from being thermally deteriorated resulting from the heat transfer from the vane blade.

[0014] In cases where the centrifugal compressor operates so as to make air to be supplied at a high flow rate and at a high supercharging pressure, the volume of said anti-diffuser side chamber may be made small until said deformation member and said vane blade positioned by said stopper are separated from each other.

[0015] In cases where the centrifugal compressor operates to make air to be supplied at a high flow rate and at a high supercharging pressure, the air flowing through the diffuser passages becomes a high temperature, and the vane blade, which has been caused to be buried into the diffuser passage wall, is similarly at a high temperature. In this case, the volume of the anti-diffuser side chamber is made small until the deformation member and the vane blade positioned by the stopper are separated from each other, so the deformation member and the vane blade are separated or away from each other, thus making it possible to avoid the heat transfer from the vane blade of the high temperature to the deformation member. Accordingly, in cases where the centrifugal compressor operates to make air to be supplied at a high flow rate and at a high supercharging pressure, it is possible to suppress the deformation member from being thermally deteriorated resulting from the heat transfer from the vane blade of the high temperature.

[EFFECT OF THE INVENTION]

[0016] According to the present invention, in a centrifugal compressor, it is possible to avoid the direction of protrusion of a vane blade from deviating from a specified direction as a result of a deformation of a deformation member.

[BRIEF DESCRIPTION OF THE DRAWINGS]

[0017]

[Fig. 1] is a view showing the schematic construction of a centrifugal compressor according to a first embodiment of the present invention.

[Fig. 2] is views showing a protruded state and a buried state of a vane blade according to the first embodiment.

[Fig. 3] is a view showing a problem of a conventional vane blade.

[Fig. 4] is a view showing a feature of the vane blade according to the first embodiment.

[BEST MODE FOR CARRYING OUT THE INVENTION]

[0018] Hereinafter, a specific embodiment of the present invention will be described.

<First Embodiment>

(Construction of a Centrifugal Compressor)

[0019] Fig. 1 is a view showing the schematic construction of a centrifugal compressor according to a first embodiment of the present invention. The centrifugal com-

pressor 1 shown in Fig. 1 is provided with a scroll casing 2, and it has an impeller 3 arranged in an axial center inside the scroll casing 2. Air as a gas, which has flowed into the centrifugal compressor 1, is guided to flow into a diffuser passage 5 formed on an outer peripheral side of the impeller 3 by means of vanes 4 which are arranged in a circumferential direction of the impeller 3 at equal intervals.

[0020] The diffuser passage 5 is sandwiched or enclosed by diffuser passage walls, which are part of the scroll casing 2. One of the diffuser passage walls on a left-hand side of Fig. 1 is composed of a plate-shaped diffuser plate 6, and is formed separately from a casing main body. Space 7, which can be covered with the diffuser plate 6, is formed in the one diffuser passage wall (hereinafter referred to as the diffuser passage wall) on which the diffuser plate 6 is arranged. The space 7 is of a hollow cylindrical shape, and can receive a vane blade 8 which is movable into and out of the interior of the diffuser passage 5.

[0021] The vane blade 8 is provided with an annular disk 9, and a plurality of blade portions 10 which have their one ends fixed to the disk 9 and are arranged in a circumferential direction at intervals. The diffuser plate 6 is formed with slits 11 into which the blade portions 10 of the vane blade 8 are inserted, respectively. With this construction, when the disk 9 of the vane blade 8 is brought close to the diffuser plate 6, the blade portions 10 of the vane blade 8 protrude from the slits 11, respectively, into the diffuser passage 5. On the other hand, when the disk 9 of the vane blade 8 is moved away from the diffuser plate 6 (the diffuser passage 5), the blade portions 10 are received in the space 7 while being guided by the slits 11, respectively, so that the vane blade 8 is buried or drawn in the diffuser passage wall.

[0022] In the space 7 where the vane blade 8 is received, there is arranged a diaphragm 12, as a deformation member, which serves to divide the space 7 into a diffuser side chamber 7a and an anti-diffuser side chamber 7b, and to deform to change the volume of the anti-diffuser side chamber 7b. The diaphragm 12 is of an annular shape which can swell or expand in the direction of the diffuser side chamber 7a, and is composed of a rubber-like elastic body so as to be elastically deformable, and has an outer edge and an inner edge both fixedly secured to the wall of the space 7 in an airtight manner. The diaphragm 12 can push the disk 9 of the vane blade 8 toward the side of the diffuser passage 5 by being swelled or expanded in a manner such that the anti-diffuser side chamber 7b is made larger. The diaphragm 12 and the disk 9 are different bodies from each other. If the diaphragm 12 has not been deformed to swell, the diaphragm 12 and the disk 9 are separated or away from each other. In other words, the diaphragm 12 is able to be moved away from the disk 9 of the vane blade 8 that is positioned by stoppers 13, by decreasing the volume of the anti-diffuser side chamber 7b.

[0023] In the diffuser side chamber 7a in the space 7, there is arranged a compression spring 14, as an urging member, which serves to urge the disk 9 of the vane blade 8 so as to cause the vane blade 8 to be buried in the diffuser passage wall. The compression spring 14 is compressed inside the diffuser side chamber 7a, and urges the disk 9 in a direction opposite to the direction of the diffuser passage 5.

[0024] In a position in which the compression spring 14 in the diffuser side chamber 7a urges the disk 9 of the vane blade 8 thereby to cause the vane blade 8 to be buried in the diffuser passage wall, there is arranged a stopper 13 which serves to position the disk 9 of the vane blade 8 against the urging of the compression spring 14. If the disk 9 abuts against the stoppers 13 in a state urged by the compression springs 14,respectively, so that there will be no action due to the swelling or expanding deformation of the diaphragms 12, the vane blade 8 can be maintained in a state in which it is caused to be buried in the diffuser passage 5.

[0025] The centrifugal compressor 1 of this embodiment is provided with a fluid pressure adjusting mechanism 15 which serves to apply fluid pressure to the anti-diffuser side chamber 7b. Between the fluid pressure adjusting mechanism 15 and the anti-diffuser side chamber 7b, there is arranged a fluid passage 16 which circulates or supply fluid from the fluid pressure adjusting mechanism 15 to the anti-diffuser side chamber 7b.

(Operation of the Centrifugal Compressor)

[0026] Fig. 2 is views showing a protruded state and a buried state of the vane blade according to this embodiment, wherein Fig. 2A shows the protruded state in which the vane blade has been protruded into the diffuser passage, and Fig. 2B shows the buried state in which the vane blade has been buried in the diffuser passage wall.

[0027] In cases where the centrifugal compressor 1 operates so as to cause air to be supplied at a low flow rate and at a low supercharging pressure, the fluid pressure adjusting mechanism 15 causes fluid to flow into the anti-diffuser side chamber 7b thereby to pressurize the anti-diffuser side chamber 7b, so that the diaphragm 12 is caused to perform swelling deformation, thus increasing the volume of the anti-diffuser side chamber 7b. As a result of this, the diaphragm 12 is displaced to push the disk 9 of the vane blade 8, so the disk 9 is moved in the specified direction of an illustrated arrow A to cause the blade portions 10 of the vane blade 8 to protrude into the diffuser passage 5, whereby the blade portions 10 of the vane blade 8 are protruded from the slits 11, respectively, into the diffuser passage 5, as shown in Fig. 2(a).

[0028] Fig. 3 is a view showing a problem of a conventional vane blade. Here, in the swelling deformation of a diaphragm at the time of increasing the volume of an anti-diffuser side chamber, a portion of the diaphragm, being in contact with a disk of the vane blade, is not only displaced in a specified direction to cause the disk of the vane blade to protrude into a diffuser passage, but also

can be displaced in a direction other than the specified direction, too. At this time, if the portion of the diaphragm in contact with the disk of the vane blade as shown in a region C of Fig. 3 is formed integrally with the vane blade, the vane blade may not move in the specified direction shown by a broken line arrow, in accordance with the swelling deformation of the diaphragm as shown by an arrow B, but may move in a direction other than the specified direction, as shown in the arrow B. If so, the direction of protrusion of the blade portions of the vane blade may deviate from the specified direction, and the blade portions of the vane blade may bite peripheral edge portions of slits to stop moving. In addition, even if the blade portions of the vane blade do not bite, they may be rubbed against the peripheral edge portions of the slits, and friction at that time may become large, thus giving rise to an increase in wear of the blade portions of the vane blade or an increase in the driving forces of a fluid pressure adjusting mechanism.

[0029] Fig. 4 is a view showing a feature of the vane blade according to this first embodiment. In this embodiment, the vane blade 8 and a diaphragm 12 are different or separate bodies from each other, and in a portion shown in a region D of Fig. 4, the diaphragm 12 is only in contact with the disk 9 of the vane blade 8. For this reason, even in cases where the diaphragm 12 is deformed in a direction of the arrow B other than the specified direction, such a displacement in a direction other than the specified direction of the portion of the diaphragm 12 in contact with the vane blade 8 only causes the portion of the diaphragm 12 in contact with the disk 9 of the vane blade 8 to move in position (shift in position) with respect to the vane blade 8, but does not act on the vane blade 8, thus making it difficult for the vane blade 8 to move in a direction other than the specified direction. On the other hand, only a displacement in the specified direction of the portion of the diaphragm 12 in contact with the disk 9 of the vane blade 8 acts on the vane blade 8, so that the vane blade 8 is caused to move in the specified direction of the illustrated arrow A. Accordingly, in the present embodiment, it is possible to avoid the direction of protrusion of a blade portion 10 of the vane blade 8 from deviating from the specified direction as a result of the deformation of the diaphragm 12.

[0030] As a result, it is possible to avoid the direction of protrusion of the blade portions 10 of the vane blade 8 from deviating from the specified direction, thus avoiding the blade portions 10 of the vane blade 8 from biting the peripheral edge portions of the slits 11 to stop moving. In addition, it is also possible to avoid the blade portions 10 of the vane blade 8 from being rubbed against the peripheral edge portions of the slits 11 at the time of the blade portions 10 passing through the slits 11, respectively, and hence, friction at that time from becoming large, thereby avoiding the occurrence of wear of the blade portions 10 of the vane blade 8 and an increase in the driving forces of the fluid pressure adjusting mechanism 15.

[0031] On the other hand, in cases where the centrifugal compressor 1 operates so as to make air to be supplied at a high flow rate and at a high supercharging pressure, the fluid pressure adjusting mechanism 15 suck fluid from the anti-diffuser side chamber 7b thereby to reduce the pressure in the anti-diffuser side chamber 7b, so that the diaphragm 12 is caused to perform deflating or retracting deformation, thus decreasing the volume of the anti-diffuser side chamber 7b. As a result of this, a force from the diaphragm 12 to cause the vane blade 8 to move in the specified direction to protrude into the diffuser passage 5 stop acting thereon. Then, the disk 9 is urged by means of the compression springs 14 to abut against the stoppers 13 to be positioned thereby, so that the blade portions 10 of the vane blade 8 are respectively buried in the diffuser passage wall, as shown in Fig. 2B.

[0032] At this time, the fluid pressure adjusting mechanism 15 operates to make small the volume of the anti-diffuser side chamber 7b until it separates the diaphragm 12 from the disk 9 of the vane blade 8 positioned by the stoppers 13, so that the diaphragm 12 takes a steady shape which is not deformed. For this reason, as shown in Fig. 2B, the diaphragm 12 and the disk 9 of the vane blade 8 positioned by the stoppers 13 are separated or away from each other. Here, in cases where the centrifugal compressor 1 is operated to make air to be supplied at a high flow rate and at a high supercharging pressure, the air flowing through the diffuser passage 5 becomes a high temperature of about 180 degrees C, and the vane blade 8, which has been buried in the diffuser passage wall, is similarly at a high temperature through the action of the air which flows in from the slits 11. In this case, because the volume of the anti-diffuser side chamber 7b is made small by means of the fluid pressure adjusting mechanism 15 until the diaphragm 12 is separated or away from the disk 9 of the vane blade 8 positioned by the stoppers 13, the diaphragm 12 and the disk 9 of the vane blade 8 are separated or away from each other, thus making it possible to avoid heat transfer from the vane blade 8 of the high temperature to the diaphragm 12. Accordingly, in cases where the centrifugal compressor 1 operates so as to make air to be supplied at a high flow rate and at a high supercharging pressure, it is possible to suppress the diaphragm 12, which is rubber-like elastic body, from being thermally deteriorated resulting from the heat transfer from the vane blade 8 of the high temperature, thereby making it possible to improve the endurance reliability of the diaphragm 12.

[0033] The centrifugal compressor according to the present invention is not limited to the above-mentioned embodiment, but can be subjected to various changes and modifications within the scope not departing from the gist of the present invention. For example, as the deformation members, there may be used bellows, besides the diaphragms, and as a material therefor, there may also be used resin, metal or the like, besides a rubber-like elastic material. In addition, at the time when the diaphragm is separated or away from the disk of the vane

blade positioned by the stoppers, the volume of the anti-diffuser side chamber can be made small by continuously reducing fluid pressure by means of the fluid pressure adjusting mechanism. The driving force to cause the diaphragm to deform may not be adjusted by fluid pressure supplied by means of the fluid pressure adjusting mechanism. As the urging members, besides the compression springs, there may be used rubber-like elastic bodies, elastic bodies using resin, or the like, in addition to tension springs. As the case where the stoppers position the vane blade against the urging of the compression springs, there may not only be a case where the vane blade is in a position in which it is buried in the diffuser passage wall, but also a case where the amount of protrusion of the vane blade into the diffuser passage is equal to or less than a predetermined amount. Here, the predetermined amount is an amount which, when the amount of protrusion is equal to or less than that amount, can deal with a case where the operation flow rate of the centrifugal compressor is a large flow rate.

[EXPLANATION OF REFERENCE NUMERALS AND CHARACTERS]

[0034]

1: centrifugal compressor
2: scroll casing
3: impeller
4: vanes
5: diffuser passage
6: diffuser plate
7: space
7a: diffuser side chamber
7b: anti-diffuser side chamber
8: vane blade
9: disk
10: blade portions
11: slits
12: diaphragm
13: stoppers
14: compression springs
15: fluid pressure adjusting mechanism
16: flow passage

Claims

1. A centrifugal compressor (1) comprising:

a vane blade (8) that is movable into and out of a diffuser passage (5);
a space (7) that is formed in a wall of the diffuser passage (5) to allow said vane blade (8) to be buried therein; and
a deformation member (12) that divides said space (7) into a diffuser side chamber (7a) and an anti-diffuser side chamber (7b), and deforms to change the volume of said anti-diffuser side chamber (7b), said deformation member (12) causing said vane blade (8) to move in a specified direction thereby to protrude into said diffuser passage (5) due to a deformation thereof at the time of increasing the volume of said anti-diffuser side chamber (7b);

characterized in that

said vane blade (8) and said deformation member (12) are separate bodies from each other, and only a displacement in the specified direction of a portion of said deformation member (12) which is made into contact with said vane blade (8) due to the deformation thereof at the time of increasing the volume of said anti-diffuser side chamber (7b) acts on said vane blade (8).

2. The centrifugal compressor (1) as set forth in claim 1, further comprising:

an urging member (14) that urges said vane blade (8) in a manner such that said vane blade (8) is caused to be buried into said diffuser passage wall; and
a stopper (13) that positions said vane blade (8) against the urging of said urging member (14) when an amount of protrusion into said diffuser passage (5) of said vane blade (8) is equal to or less than a predetermined amount;
wherein said deformation member (12) is able to be moved away from said vane blade (8) that is positioned by said stopper (13), by decreasing the volume of said anti-diffuser side chamber (7b).

3. The centrifugal compressor (1) as set forth in claim 2, wherein

in cases where the centrifugal compressor (1) operates so as to make air to be supplied at a high flow rate and at a high supercharging pressure, the volume of said anti-diffuser side chamber (7b) is made small until said deformation member (12) and said vane blade (8) positioned by said stopper (13) are separated from each other.

Patentansprüche

1. Zentrifugalkompressor (1) mit:

einem Flügelblatt (8), das in einen Diffuserkanal (5) hinein und aus diesem heraus bewegbar ist;
einem Raum (7), der in einer Wand des Diffuserkanals (5) so ausgebildet ist, dass ermöglich

wird, dass das Flügelblatt (8) in diesem eingebettet wird; und
einem Verformungselement (12), das den Raum (7) in eine diffuserseitige Kammer (7a) und eine gegendiffuserseitige Kammer (7b) teilt und sich so verformt, dass das Volumen der gegendiffuserseitigen Kammer (7b) geändert wird, wobei das Verformungselement (12) bewirkt, dass das Flügelblatt (8) sich in eine spezifische Richtung bewegt, wodurch es in den Diffuserkanal (5) hinein vorragt aufgrund seiner Verformung zu dem Zeitpunkt einer Erhöhung des Volumens der gegendiffuserseitigen Kammer (7b);
dadurch gekennzeichnet, dass
das Flügelblatt (8) und das Verformungselement (12) voneinander getrennte Körper sind, und lediglich eine Verschiebung in der spezifischen Richtung eines Abschnittes des Verformungselementes (12), das dazu gebracht wird, dass es mit dem Flügelblatt (8) aufgrund seiner Verformung zu dem Zeitpunkt der Erhöhung des Volumens der gegendiffuserseitigen Kammer (7b) in Kontakt gelangt, an dem Flügelblatt (8) wirkt.

2. Zentrifugalkompressor (1) gemäß Anspruch 1, der des Weiteren Folgendes aufweist:

ein Drängelement (14), das das Flügelblatt (8) in einer derartigen Weise drängt, dass das Flügelblatt (8) dazu gebracht wird, dass es in die Diffuserkanalwand eingebettet wird; und
einen Stopper (13), der das Flügelblatt (8) entgegen dem Drängen des Drängelementes (14) positioniert, wenn ein Vorragebetrag in den Diffuserkanal (5) des Flügelblattes (8) gleich wie oder geringer als ein vorbestimmter Betrag ist;
wobei das Verformungselement (12) dazu in der Lage ist, von dem Flügelblatt (8), das durch den Stopper (13) positioniert ist, wegbewegt zu werden durch Verringern des Volumens der gegendiffuserseitigen Kammer (7b).

3. Zentrifugalkompressor (1) gemäß Anspruch 2, wobei
in den Fällen, bei denen der Zentrifugalkompressor (1) so arbeitet, dass Luft dazu gebracht wird, dass sie bei einer hohen Strömungsrate und einem hohen Aufladedruck geliefert wird, das Volumen der gegendiffuserseitigen Kammer (7b) gering gestaltet wird, bis das Verformungselement (12) und das Flügelblatt (8), das durch den Stopper (13) positioniert wird, voneinander getrennt sind.

Revendications

1. Compresseur centrifuge (1) comprenant :

une pale d'aube (8) qui est mobile à l'intérieur de et hors d'un passage de diffusion (5) ;
un espace (7) qui est formé dans un mur du passage de diffusion (5) pour permettre à ladite pale d'aube (8) d'y être enfouie ; et
un élément de déformation (12) qui divise ledit espace (7) en une chambre latérale de diffusion (7a) et une chambre latérale d'anti-diffusion (7b), et se déforme pour changer le volume de ladite chambre latérale d'anti-diffusion (7b), ledit élément de déformation (12) amenant le déplacement de ladite pale d'aube (8) dans une direction ainsi spécifiée pour faire saillie à l'intérieur dudit passage de diffusion (5) en raison d'une déformation de celui-ci au moment d'augmenter le volume de ladite chambre latérale d'anti-diffusion (7b) ;
caractérisé en ce que
ladite pale d'aube (8) et ledit élément de déformation (12) sont des corps séparés l'un de l'autre, et seul un déplacement dans la direction spécifiée d'une partie dudit élément de déformation (12) qui est mis en contact avec la pale d'aube (8) en raison de la déformation de celui-ci au moment d'augmenter le volume de ladite chambre latérale d'anti-diffusion (7b) agit sur ladite pale d'aube (8).

2. Compresseur centrifuge (1) selon la revendication 1, comprenant en outre :

un élément de poussée (14) qui pousse ladite pale d'aube (8) de manière que ladite pale d'aube (8) soit amenée à être enfouie à l'intérieur dudit mur du passage de diffusion ; et
une butée (13) qui positionne ladite pale d'aube (8) contre la poussée dudit élément de poussée (14) quand une quantité de saillie à l'intérieur dudit passage de diffusion (5) de ladite pale d'aube (8) est égale ou inférieure à une quantité prédéterminée ;
dans lequel ledit élément de déformation (12) peut être éloigné de ladite pale d'aube (8) qui est positionnée par ladite butée (13), en diminuant le volume de ladite chambre latérale d'anti-diffusion (7b).

3. Compresseur centrifuge (1) selon la revendication 2, dans lequel :

dans des cas où le compresseur centrifuge (1) fonctionne de manière à alimenter de l'air à un débit élevé et à une pression de suralimentation élevée, le volume de ladite chambre latérale d'anti-diffusion (7b) est réduit jusqu'à ce que ledit élément de déformation (12) et ladite pale d'aube (8) positionnée par ladite butée (13) soient séparés l'un de l'autre.

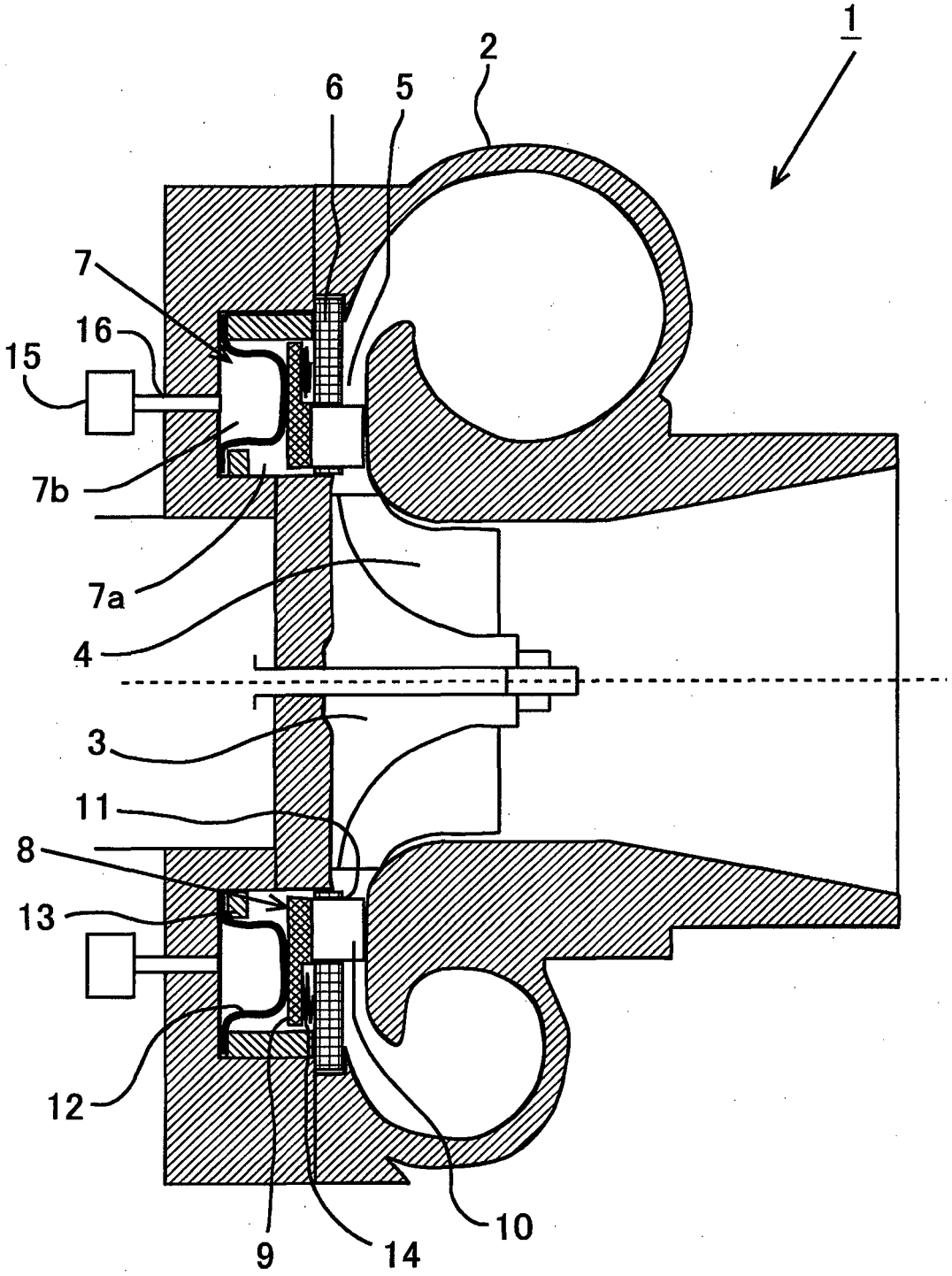

Fig.1

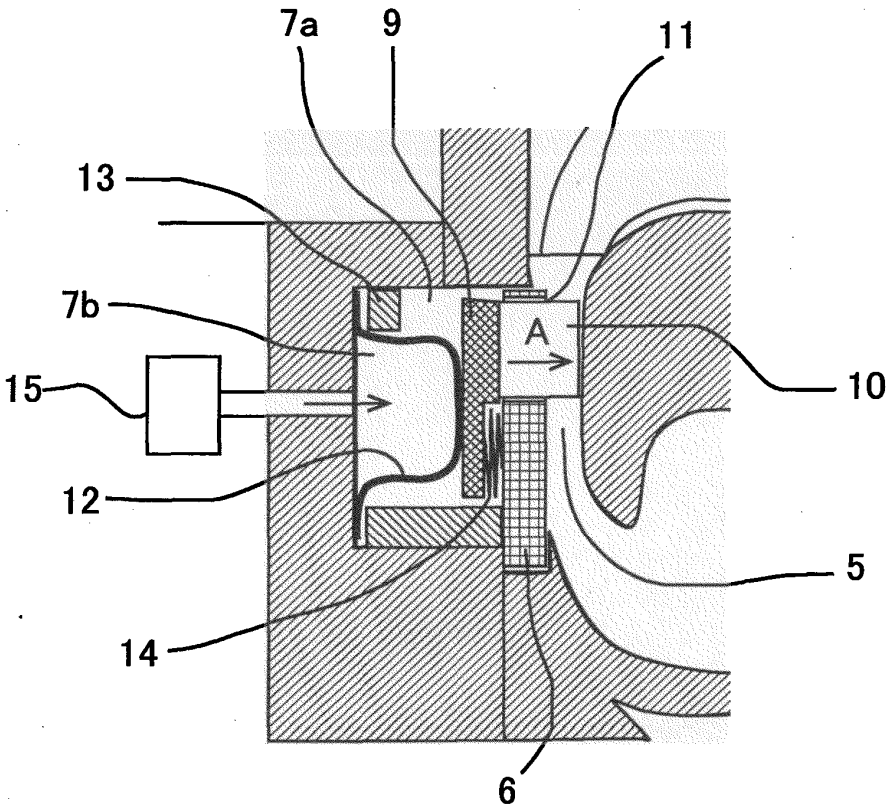

Fig.2A

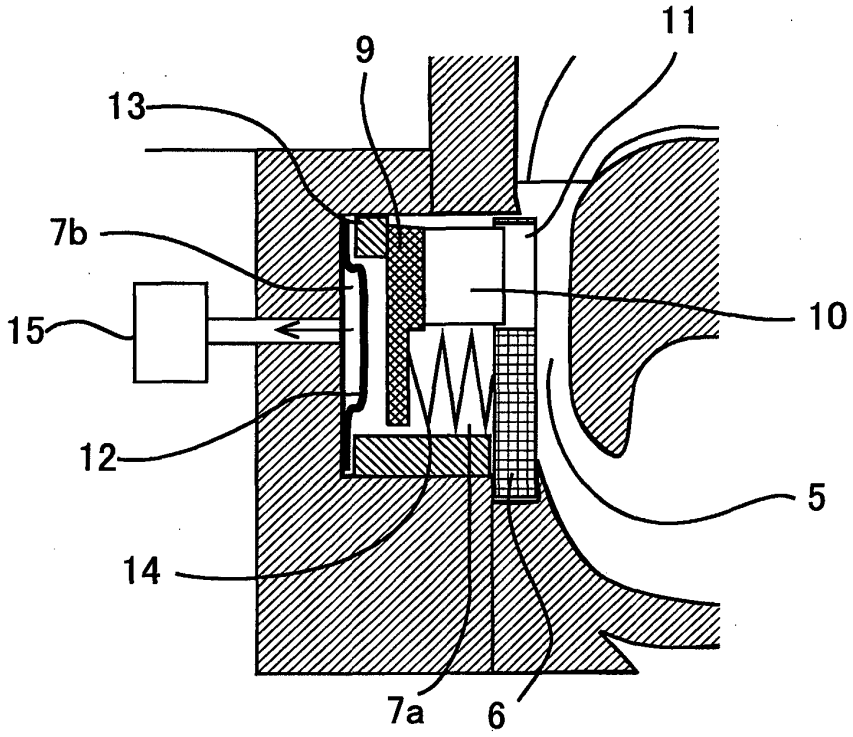

Fig.2B

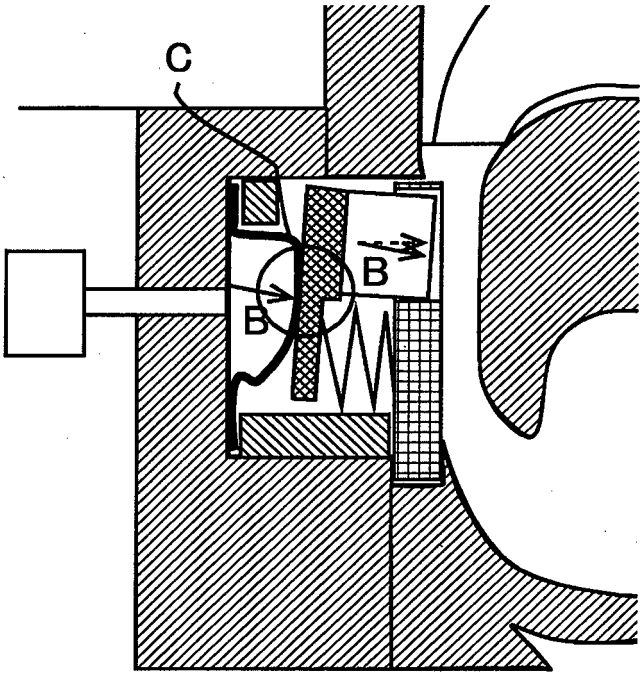

Fig.3

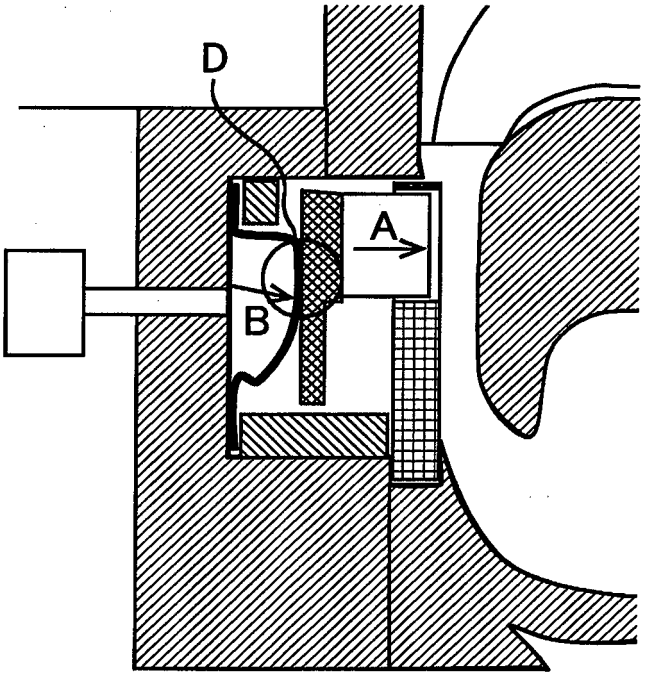

Fig.4

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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