

Appeal decision

Appeal No. 2018-6136

Appellant BorgWarner Inc.

Patent Attorney OHGA, Shinji

Patent Attorney HYAKUMOTO, Hiroyuki

The case of appeal against the examiner's decision of refusal of Japanese Patent Application No. 2015-544086, entitled "Exhaust-gas turbocharger", [international publication on May 30, 2014, WO2014/081602; and national publication of the translated version on Dec. 14, 2015, National Publication of International Patent Application No. 2015-535569, the number of claims (6)] has resulted in the following appeal decision:

Conclusion

The examiner's decision is revoked.

The invention of the present application shall be granted a patent.

Reason

No. 1 History of the procedures

The present application is an application that was originally filed on Nov. 14, 2013 (Heisei 25) as an International Patent Application (priority claim under the Paris Convention on Nov. 23, 2012 (Heisei 24), (DE) Federal Republic of Germany), and the procedures thereof are as follows.

May 23, 2017 (date of dispatch)	: A written notice of reasons for refusal
Oct. 17, 2017 amendment	: Submission of a written opinion, and a written amendment
Jan. 5, 2018 (date of dispatch) "Examiner's decision")	: Decision of refusal (hereinafter, referred to as "Examiner's decision")
May 7, 2018 a written amendment	: Submission of a written request for appeal, and a written amendment
Dec. 25, 2018 (date of dispatch)	: A written notice of reasons for refusal

(hereinafter, referred to as "Reasons for refusal by the body")

Apr. 9, 2019 : A response record

Apr. 12, 2019 : Submission of a written opinion, and a written amendment

No. 2 Outline of the Examiner's decision

An outline of the Examiner's decision is as follows.

The inventions according to Claims 1 to 4 of the present application would have been easily made by a person ordinarily skilled in the art in the technical field of the inventions based on the following Cited Documents 1 to 3, and, therefore, the appellant should not be granted a patent in accordance with the provisions of Article 29(2) of the Patent Act.

List of Cited Documents, etc.

1. Japanese Unexamined Patent Application Publication No. 2010-180864
2. Japanese Unexamined Patent Application Publication No. H10-37754 (a document indicating a well-known art)
3. International Publication No. WO 2011/066130 (a document indicating a well-known art)

No. 3 Outline of reasons for refusal of the body

The outline of the reasons for refusal by the body is as follows.

In the present application, the statements of the scope of claims (Claims 1 and 2) do not meet the requirement stipulated in Article 36(6)(i) of the Patent Act.

No. 4 The Invention

The inventions according to Claims 1 to 6 of the present application (hereinafter, referred to as "Invention 1" to "Invention 6") are specified by the matters described in Claims 1 to 6 of the Scope of Claims amended by the amendment on Apr. 12, 2019, and are as follows.

"[Claim 1]

An exhaust-gas turbocharger (1) comprising:

a turbine (2), wherein a turbine wheel (3) is surrounded by an inflow duct (4),
and

a VTG cartridge (5), which is arranged in the inflow duct (4) and includes a multiplicity of vanes (8) mounted in a vane bearing ring (7) by way of rotatable vane shafts (9), wherein the rotatable vane shafts (9) are connected to vane levers (10) having lever heads (11) engaging into associated grooves (12) in an adjusting ring (13) which surrounds the vane bearing ring (7) on the outside, whereby rotation of the adjusting ring (13) pivots the vanes (8), and the exhaust-gas turbocharger (1) including,

a radial bearing formed by the vane levers (10) so as to attach the adjusting ring (13) to the vane bearing ring (7) in the radial direction, wherein

two min-flow stops (25, 26) are arranged in the vane bearing ring (7) at a selective angle interval (α) with respect to each other, and each of the min-flow stops (25, 26) is positioned so as to contact with the adjusting ring (13) at the position of minimum exhaust gas throughput of the VTG cartridge to stop rotation of the adjusting ring (13).

[Claim 2]

The exhaust-gas turbocharger as claimed in Claim 1, wherein the min-flow stops (25, 26) are in a form of pins.

[Claim 3]

The exhaust-gas turbocharger (1) as claimed in Claim 1 or Claim 2, wherein, in the exhaust-gas turbocharger (1), the radial bearing is formed between the lever heads (11) of the vane levers (10) and a facing surface (15) of the grooves (12) of the adjusting ring (13).

[Claim 4]

The exhaust-gas turbocharger (1) as claimed in any one of Claims 1 to 3, wherein, in the exhaust-gas turbocharger (1), a concave part of the adjusting ring (13) has parallel stop edges (27, 28).

[Claim 5]

A VTG cartridge (5) of an exhaust-gas turbocharger (1), comprising:

a disc (6) and a vane bearing ring (7), which delimit an inflow duct (4), and

a multiplicity of vanes (8), wherein the vanes (8) are arranged in the inflow duct (4) and are mounted in the vane bearing ring (7) by way of rotatable vane shafts (9), wherein the rotatable vane shafts (9) are connected to vane levers (10) having lever heads (11) engaging into associated grooves (12) in an adjusting ring (13) which surrounds the vane bearing ring (7) on the outside, whereby rotation of the adjusting ring (13) pivots the vanes (8), and the VTG cartridge (5) including,

a radial bearing formed by the vane levers (10) so as to attach the adjusting ring (13) to the vane bearing ring (7) in the radial direction, wherein,

two min-flow stops (25, 26) are arranged in the vane bearing ring (7) at a selective angle interval (α) with respect to each other, and each of the min-flow stops (25, 26) is positioned so as to contact with the adjusting ring (13) at the position of minimum exhaust gas throughput of the VTG cartridge to stop rotation of the adjusting ring (13).

[Claim 6]

The VTG cartridge as claimed in Claim 5, wherein,

the min-flow stops (25, 26) are a form of pins, and wherein,

concave parts (29, 30) of the adjusting ring (13) that come in contact with the min-flow stops (25, 26) have parallel stop edges (27, 28)."

No. 5 Judgment on the reasons for refusal by the body (Article 36(6)(i) of the Patent Act)

As a result of deleting the statements of Claim 1 before the relevant amendment that "the radial bearing is formed between the lever heads (11) of the vane levers (10) and a radial direction outer plane of the concave parts (29, 30) of the adjusting ring, and

the concave part of the adjusting ring (13) has parallel stop edges (27, 28),"

by the amendment of Apr. 12, 2019, the matters specifying inventions of Claims 1 and 2 became those described in the Detailed Description of the Invention.

Therefore, this reason for refusal was dissolved.

No. 6 Judgment on Examiner's decision

1 Cited Documents, Cited Invention, and the like

(1) Cited Document 1

In Japanese Unexamined Patent Application Publication No. 2010-180864 (hereinafter, referred to as "Cited Document 1"), which was cited in the reasons for refusal stated in the Examiner's decision, and which was distributed or available to the public through electric communication lines before the priority date for the present application, there are described the following matters relating to "Variable Nozzle Unit" together with drawings (refer to FIG. 1 to FIG. 3, in particular). (Underlines have been given by the body for the purpose of helping understanding, and the same applies hereafter.)

A "[0001]

The present invention relates to a variable nozzle unit mounted on a variable

nozzle turbocharger."

B "[0022]

Hereinafter, an embodiment in which the present invention is applied to a variable nozzle turbocharger provided in an engine for an automobile will be described with reference to FIG. 1 to FIG. 9.

As shown in FIG. 1, an upstream portion of an intake passage 2 in an engine 1 and a downstream portion of an exhaust passage 3 are respectively connected to a turbocharger 4. The turbocharger 4 includes a compressor wheel 5 for delivering air to the downstream side of the intake passage 2, and a turbine wheel 6 rotating on the basis of the flow of the exhaust gas passing through the exhaust passage 3. When the turbine wheel 6 rotates, the compressor wheel 5 rotates integrally with the turbine wheel 6, thereby increasing an intake air amount of the engine 1 and improving an output of the engine 1.

[0023]

In the turbocharger 4, a variable nozzle unit 7 is mounted on an exhaust path 8 for blowing exhaust gas to the turbine wheel 6. The variable nozzle unit 7 is driven by an actuator 9 to increase or decrease an exhaust flow area of the exhaust path 8, thereby varying a flow rate of exhaust gas blown to the turbine wheel 6. Thus, by changing the flow rate of the exhaust gas blown to the turbine wheel 6, the rotational speed of the turbocharger 4 is changed, and the boost pressure (intake pressure) of the engine 1 is adjusted. Specifically, when the exhaust gas flow area of the exhaust path 8 is decreased, the flow rate of the exhaust gas blown to the turbine wheel 6 becomes large, the rotational speed of the turbocharger 4 increases, and the boost pressure of the engine 1 increases. Further, when the exhaust flow area of the exhaust passage 8 is increased, the flow speed of the exhaust gas blown to the turbine wheel 6 becomes small, the rotational speed of the turbocharger 4 decreases, and the boost pressure of the engine 1 decreases."

C "[0024]

Next, a detailed structure of the variable nozzle unit 7 will be described with reference to FIGS. 2 and 3.

As shown in FIG. 2, the variable nozzle unit 7 includes a plurality of variable nozzles 11 which are assembled to a ring-shaped main plate 10 at regular intervals in the circumferential direction, and a plate-like unison ring 12 which is provided on the same axial line as the center line of the main plate 10 is engaged with the plurality of variable

nozzles 11. Further, the unison ring 12 is supported so as to be rotatable about the axis by a plurality of (4 in this example) flanged rollers 13 assembled to the main plate 10 so as to be in contact with a plurality of positions in the circumferential direction on the inner peripheral surface thereof. Then, by rotating the unison ring 12 about the axis, a plurality of variable nozzles 11 engaged with the unison ring 12 are synchronously opened and closed, so that an exhaust gas flow area of the exhaust path 8 (FIG. 1) in the turbocharger 4 is variable.

[0025]

A plurality of cutout portions (notches) 14, 15, 16a, 16b, 17 are formed on an inner peripheral surface of the unison ring 12. Of these notches, each of the notches 14, 15, 16a, 17 has a positional relationship similar to the positional relationship of the plurality of flanged rollers 13 with respect to each other in the rotation direction of the unison ring 12. Then, each of the notches 14, 15, 16a is formed into an arc shape having a curvature larger than an outer shape of the flanged roller 13 with a collar with respect to an inner peripheral surface of the unison ring 12, and the notch 17 is formed so as to be capable of avoiding interference between the flanged roller 13 and the unison ring 12 when the unison ring 12 is assembled."

D "[0026]

In addition, the notch 16b is one into which an engaging pin 18 used for engaging the unison ring 12 with the actuator 9 (FIG. 1) is inserted, and the notch 17 is one into which a stopper 19 that is fixed to the main plate 10 is inserted so as to restrict the rotation of the unison ring 12 within a predetermined range. Accordingly, when the actuator 9 is driven, a force caused by the driving acts on the unison ring 12 via the engaging pin 18, and the unison ring 12 rotates as described above. Further, the rotation of the unison ring 12 is restricted to a predetermined range corresponding to the length of the notch 17 in the rotation direction by the inner surface of the notch 17 abutting against the stopper 19."

E "[0027]

FIG. 3 is a cross-sectional view of the variable nozzle unit 7 of FIG. 2 as viewed from the direction of arrow A-A. As can be seen from FIG. 3, the unison ring 12 is provided in parallel to the main plate 10 in the thickness direction, and is supported on the main plate 10 by the flanged roller 13 in this state. The flanged roller 13 is rotatable around a head pin 20 passing through the flanged roller 13, and is fixed by press-fitting the head pin 20 into the hole 21 of the main plate 10 from the left side in

the drawing of the plate 10."

F "[0029]

A plurality of variable nozzles 11 (only one of which is shown in FIG. 3) provided on the main plate 10 are provided with a nozzle pin 23 which is positioned inside the inner peripheral surface of the unison ring 12 assembled to the main plate 10 and penetrates the hole 32 of the main plate 10 in the thickness direction of the plate 10. At one end of the nozzle pin 23, a nozzle vane 24 located on one side (right side in the drawing) of the thickness direction of the main plate 10 is fixed, and at the other end, an arm 25 located on the other side (left side in the drawing) of the thickness direction of the main plate 10 is fixed. The arm 25 protrudes from the nozzle pin 23 toward an inner peripheral surface of the unison ring 12 provided on the other side in the thickness direction of the main plate 10, and is inserted into a concave portion 26 formed on an inner peripheral surface thereof and engages with the concave portion 26.

[0030]

Thus, when the unison ring 12 rotates around its centerline, arms 25 engaged in each recess 26 of the unison ring 12 are pushed in the rotating direction of the unison ring 12. As a result, each arm 25 causes the nozzle pin 23 to rotate around its axis, and as the nozzle pin 23 rotates, each nozzle vane 24 rotates simultaneously and in the same direction around the nozzle pin 23. Based on the rotation of the nozzle vanes 24 that are adjacent to each other, the nozzle vanes 24 open and close, and the size of the gap between the nozzle vanes 24; i.e., the exhaust gas flow area of the exhaust path 8 (FIG. 1) for blowing exhaust gas to the turbine wheel 6, varies based on the opening and closing operations, so that the flow rate of the exhaust gas is variable."

G It is obvious that the turbocharger shown in FIG. 1 includes a turbine.

H As viewed from the described matters of above B and the illustrated contents in FIG. 1, it can be said that the turbine wheel 6 is surrounded by the exhaust path 8.

I As viewed from the described matters of above C and E and the illustrated contents in FIG. 2 and FIG. 3, it can be seen that the unison ring 12 surrounds the main plate 10.

As viewed from the described matters of the above-mentioned A to I and the illustrated contents of the drawings, it is recognized that the following invention (hereinafter, referred to as "Cited Invention") is described in Cited Document 1.

"A turbocharger 4 comprising:

a turbine, wherein a turbine wheel 6 is surrounded by an exhaust path 8; and

a variable nozzle unit 7, which is mounted on an exhaust path 8 and includes a multiplicity of nozzle vanes 24 fixed to a main plate 10 by way of rotatable nozzle pins 23, wherein the nozzle pin 23 is fixed to an arm 25, and a portion of the arm 25 that protrudes toward an inner peripheral surface of a unison ring 12 and is inserted into a recess 26 formed on the inner peripheral surface engages into the recess 26 of the unison ring 12 which surrounds the main plate 10 on the outside in a diameter direction, and accordingly rotation of the unison ring 12 pivots the nozzle vanes 24,

the arm 25 being inserted into the recess 26 of the unison ring 12 to be engaged so as to mount the unison ring 12 to the main plate 10 in the radial direction, wherein

a stopper 19 is fixed to the main plate 10, and rotation of the unison ring 12 is regulated by the stopper 19 abutting against an inner surface of the notch 17 of the unison ring 12."

(2) Cited Document 2

In Japanese Unexamined Patent Application Publication No. H10-37754 (hereinafter, referred to as "Cited Document 2"), which was cited in the reasons for refusal stated in the Examiner's decision and which was distributed or available to the public through electric communication lines before the priority date for the present application, the following matters relating to "Variable Nozzle Turbocharger" are described along with drawings (in particular, refer to FIG. 1 and FIGS. 3 to 5).

A "[0001]

[Field of the Invention] The present invention relates to a turbocharger having an opening variable nozzle. (hereinafter, referred to as a variable nozzle turbocharger) "

B "[0010]

A variable nozzle turbocharger according to an embodiment of the present invention further includes: a guide 23 made of a hole (i.e., one penetrating through in a thickness direction of the unison ring 13, and, in the illustrated example shows the case of a hole) or a groove (one not penetrating through in the thickness direction of the unison ring 13) formed in the unison ring 13 and extending in an arc shape with the rotation center of the unison ring (which is also the center of the ring) as the center of

the arc; and a stopper 24 which is fixed to a nozzle plate 12 that is a stationary member of the turbocharger and the bearing housing 11 and which has at least 1 pin extending between the nozzle plate 12 and the bearing housing 11. The stopper 24 is contained in the guide 23 and passes, for example, through the guide 23. A plurality of sets of stoppers 24 and guides 23 are provided in a circumferential direction of the unison ring 13 (e.g., three sets or more). While the stopper 24 is fixed to the stationary member and remains stationary, the guide 23 moves relative to the stopper 24, and, at that time, a side of the hole or the groove of the guide 23 slidably contacts with the stopper 24 (including the case where there is a small clearance between the hole or groove side of the guide 23 and the stopper 24 allowing sliding between the guide and the stop). A relationship between the length and the position of the arc of the guide 23, and the position of the stopper 24 is set in advance so that, when the stopper 24 collides with one end 23a of the arcuate guide 23 in the longitudinal direction, a fully opened position of the nozzle vane 17 (see FIG. 4) is realized, and, when the arcuate guide 23 collides with the other end 23b of the arcuate guide 23 in the longitudinal direction, a fully closed position of the nozzle vane 17 (see FIG. 5) is realized."

As viewed from the described matters of the above-mentioned A and B and the illustrated contents of the drawings, it is recognized that the following matter is described in Cited Document 2 (hereinafter, referred to as "Matter described in Cited Document 2").

"That, in a variable nozzle turbocharger, a plurality of stoppers 24 are fixed to the nozzle plate 12 at predetermined angle intervals, and the stoppers 24 are positioned so as to stop rotation of the unison ring 13 by colliding with the other end 23b of the guide 23 in the longitudinal direction formed on the unison ring 13 at the fully closed position of an opening variable nozzle."

(3) Cited Document 3

In International Publication No. WO 2011/066130 (hereinafter, referred to as "Cited Document 3"), which was cited in the reasons for refusal stated in the Examiner's decision, and was distributed or became available to the public through electric communication lines before the priority date for the present application, the following matters are described together with drawings (refer to FIG. 1 and FIG. 2, in particular) relating to "TURBOCHARGER".

A "The invention relates to a turbocharger according to the preamble of Claim 1." (page 1, line 5)

B "Figure 2 shows a partial view of a first embodiment of the guide grate 18 according to the invention on an enlarged scale. As a representative for all of the guide blades of said guide grate 18 there is illustrated a blade lever which is denoted by reference symbol 20 and which, at one end, has a fastening ring 21 with a recess 22 in which one end of the blade shaft 8 is fixed. A lever head 23 of the blade lever 20 is arranged in an engagement recess 24 of the adjusting ring 5 and is therefore in engagement with the adjusting ring 5. As can also be seen from figure 2, for this purpose, the lever head 23 is provided with a first contact limb 35 and a second contact limb 36 which fit into the engagement recess 24 of the adjusting ring 5. The blade lever 20 may be produced by means of punching and subsequent forming. By means of the shaping of the two contact limbs, it is ensured firstly that as large a contact surface with the engagement recesses 24 as possible is generated and secondly that the contact surface of the contact limbs is not adversely affected by the punching process. Alternatively, a MIM production process may also be used.

The blade bearing ring 6 is provided, on its radially outer side 40, with depressions 41 between two adjacent engagement recesses 24. Furthermore, the blade bearing ring 6 has an encircling annular wall 38 which is elevated in relation to the annular body 32 and which is provided, correspondingly to the blade spacing, with contact regions 39 for the fastening ring 21 of each blade lever 20, which contact regions 39 are matched to the size and shape of the fastening ring 21.

The adjusting ring 5 is mounted in the blade bearing ring 6 by means of a plain bearing arrangement 28 (see Figure 3). As illustrated in Figure 2, the blade bearing ring 6 also has fixed to it a first stop 25, which defines a minimum stop of an adjustment of the adjusting ring 5 in relation to the blade bearing ring 6, and a second stop 26, which defines a maximum stop of an adjustment of the adjusting ring 5 in relation to the blade bearing ring 6. The assembly of the blade bearing ring 6 and adjusting ring 5 takes place here, in which the adjusting ring 5 is placed between the depressions 41 of the blade bearing ring 6 and is subsequently (in the manner of a bayonet connection) rotated into the sliding surfaces of said depressions 41 by means of a rotation by half of one blade spacing, such that as a result of the engagement of the guide lugs 30 into the guide slots 29, a radial plain bearing arrangement with an axial stop at both sides is formed. After the fastening rings 21 of the blade levers 20 have been welded to the blade shafts

21 (it is recognized as an error of "8"), the first stop 25 and the second stop 26 are pressed into the blade bearing ring 6. As a result of the angle of rotation which is restricted by the stops 25 and 26, the adjusting ring 5 and blade bearing ring 6 can thereafter no longer be separated or pulled apart." (page 2, line 14 to page 3, line 13)

As viewed from the described matters of the above-mentioned A and B and the illustrated contents of the drawings, it is recognized that the following matter is described in Cited Document 3 (hereinafter, referred to as "Described matter in Cited Document 3").

"That, in a turbocharger, the two stops 25 and 26 are fixed to the blade bearing ring 6 at predetermined angle intervals, and each of the stops 25 and 26 is positioned so as to stop rotation of the adjusting ring 5 by contacting with the adjusting ring 5 at the minimum stop position of the guide grate 18."

2 Comparison / judgment

(1) Invention 1

When Invention 1 and Cited Invention are compared, "the turbocharger 4" in the latter corresponds to "exhaust-gas turbocharger" in the former as viewed from its function, constitution, and technical significance, and, in a similar fashion, "the exhaust path 8" corresponds to "inflow duct", "the turbine wheel 6" to "turbine wheel", "the variable nozzle unit 7" to "VTG cartridge", "rotation" to "rotation", "the nozzle pin 23" to "vane shaft", "the main plate 10" to "vane bearing ring", "the nozzle vane 24" to "vane", "the arm 25" to "vane lever", "radially outer side" to "outside", "the unison ring 12" to "adjusting ring", "the recess 26" to "groove", and "accordingly" to "whereby".

Therefore, that "a variable nozzle unit 7, which is mounted on an exhaust path 8" of the latter corresponds to that "a VTG cartridge, which is arranged in the inflow duct" of the former, and, in a similar fashion, "a multiplicity of nozzle vanes 24 fixed to a main plate 10 by way of rotatable nozzle pins 23" correspond to "a multiplicity of vanes mounted in a vane bearing ring by way of rotatable vane shafts", "the nozzle pin 23 is fixed to an arm 25" to "the rotatable vane shafts are connected to vane levers", and "the recess 26 of the unison ring 12" to "associated grooves in an adjusting ring".

"A portion of the arm 25 that protrudes toward an inner peripheral surface of a unison ring 12 and is inserted into a recess 26 formed on the inner peripheral surface" of the latter corresponds to "lever head" of the former.

The matter of "the arm 25 being inserted into the recess 26 of the unison ring 12 to be engaged so as to mount the unison ring 12 to the main plate 10 in the radial direction" of the latter corresponds to "a radial bearing formed by the vane levers so as to attach the adjusting ring to the vane bearing ring in the radial direction" of the former, taking paragraph [0019] of the description of the present application into consideration.

The matter of "a stopper 19 is fixed to the main plate 10, and rotation of the unison ring 12 is regulated by the stopper 19 abutting against an inner surface of the notch 17 of the unison ring 12" of the latter and the matter of "two min-flow stops are arranged in the vane bearing ring at an angle interval with respect to each other capable of being selected, and each of the min-flow stops is positioned so as to contact with the adjusting ring at the position of lowest possible exhaust gas throughput of the VTG cartridge to stop rotation of the adjusting ring" of the former are identical to the extent that "a stopper is arranged in a vane bearing ring, and the stopper is positioned so as to contact with an adjusting ring at a position to stop rotation of the adjusting ring".

Therefore, the corresponding feature and the different feature between these are as follows.

[Corresponding Feature]

"An exhaust-gas turbocharger comprising:

a turbine including a turbine wheel surrounded by an inflow duct; and

a VTG cartridge, which is arranged in the inflow duct and includes a multiplicity of vanes mounted in a vane bearing ring by way of rotatable vane shafts, wherein the rotatable vane shafts are connected to vane levers having lever heads engaging into associated grooves in an adjusting ring which surrounds the vane bearing ring on the outside, whereby rotation of the adjusting ring pivots the vanes, the exhaust-gas turbocharger including

a radial bearing formed by the vane levers so as to attach the adjusting ring to the vane bearing ring in the radial direction, wherein

a stopper is arranged in a vane bearing ring, and the stopper is positioned so as to contact with the adjusting ring at a position to stop rotation of the adjusting ring."

[Different Feature]

Regarding the point that a stopper is arranged in a vane bearing ring, and the

stopper is positioned so as to contact with the adjusting ring at a position to stop rotation of the adjusting ring, in Invention 1, "two min-flow stops" are arranged in the vane bearing ring "at a selective angle interval with respect to each other ", and "each of the min-flow stops" is positioned so as to contact with the adjusting ring "at the position of minimum exhaust gas throughput of the VTG cartridge" to stop rotation of the adjusting ring, whereas, in Cited Invention, a stopper 19 is fixed to the main plate 10, and rotation of the unison ring 12 is regulated by the stopper 19 abutting against an inner surface of the notch 17 of the unison ring 12.

The above-mentioned different feature is examined.

Regarding Matter described in Cited Document 2

The matter described in Cited Document 2 is "that, in a variable nozzle turbocharger, a plurality of stoppers 24 are fixed to the nozzle plate 12 at predetermined angle intervals, and the stoppers 24 are positioned so as to stop rotation of the unison ring 13 by colliding with the other end 23b of the guide 23 in the longitudinal direction formed on the unison ring 13 at the fully closed position of an opening variable nozzle."

Then, when Invention 1 and the Matter described in Cited Document 2 are compared, "variable nozzle turbocharger" of the latter corresponds to "exhaust-gas turbocharger" of the former as viewed from its function, constitution, and technical significance, and, in a similar fashion, "the nozzle plate 12" corresponds to "vane bearing ring", "fixed" to "arranged", and "opening variable nozzle" to "VTG cartridge".

"The other end 23b of the guide 23 in the longitudinal direction formed on the unison ring 13" of the latter is included in "adjusting ring" of the former.

"A plurality of stoppers 24" of the latter and "two min-flow stops" of the former are identical to the extent of being "a plurality of stoppers", and, in a similar fashion, "the fully closed position" and "the position of minimum exhaust gas throughput" are identical to the extent of being "a predetermined position in the closing side", and "predetermined angle interval" and "a selective angle interval with respect to each other" are identical to the extent of being a "predetermined angle interval".

Then, it can be said that the Matter described in Cited Document 2 is as follows.

"That, in an exhaust-gas turbocharger, a plurality of stoppers are arranged in a vane bearing ring at predetermined angle intervals, and each stopper is positioned so as

to contact with an adjusting ring at a predetermined position in the closing side of the VTG cartridge to stop rotation of the adjusting ring."

In view of the above, the Matter described in Cited Document 2 does not include at least the matter that "two min-flow" stops are arranged in a vane bearing ring "at a selective angle interval with respect to each other capable", and "each of the min-flow" stops is positioned so as to contact with the adjusting ring at the position of "minimum exhaust gas throughput" of the VTG cartridge" to stop rotation of the adjusting ring in the matter specifying the invention of Invention 1 concerning the aforementioned different feature.

Regarding Matter described in Cited Document 3

The Matter described in Cited Document 3 is "that, in a turbocharger, the two stops 25 and 26 are fixed to the blade bearing ring 6 at predetermined angle intervals, and each of the stops 25 and 26 is positioned so as to stop rotation of the adjusting ring 5 by contacting with the adjusting ring 5 at the minimum stop position of the guide grate 18."

Then, when Invention 1 and the Described Matter in Cited Document 3 are compared, "turbocharger" of the latter corresponds to "exhaust-gas turbocharger" of the former as viewed from its function, constitution, and technical significance, and, in a similar fashion, "the blade bearing ring 6" corresponds to "vane bearing ring", "fixed" to "arranged", and "the guide grate 18" to "VTG cartridge".

"Two stops 25 and 26" of the latter and "two min-flow stops" of the former are identical to the extent of being "two stops", and, in a similar fashion, "predetermined angle interval" and "a selective angle interval with respect to each other" are identical to the extent of being "predetermined angle interval", and "the minimum stop position" and "the position of minimum exhaust gas throughput" are identical to the extent of "minimum position".

Then, it can be said that the Described Matter in Cited Document 3 is as follows.

"That, in an exhaust-gas turbocharger, two stops are arranged in a vane bearing ring at a predetermined angle interval, and each of the stops is positioned so as to contact with an adjusting ring at the minimum position of a VTG cartridge to stop rotation of the adjusting ring."

In view of the above, the Described Matter in Cited Document 3 does not include at least the matter that "two min-flow" stops are arranged in a vane bearing ring "at a selective angle interval with respect to each other capable", and "each of the min-flow" stops is positioned so as to contact with the adjusting ring at the position of "minimum exhaust gas throughput" of the VTG cartridge to stop rotation of the adjusting ring, which is the matter specifying the invention of Invention 1 concerning the aforementioned different feature.

Then, even if the Matter described in Cited Document 2 and the Matter described in Cited Document 3 which do not include the matter specifying the invention of Invention 1 concerning different feature are applied to Cited Invention, the matter specifying Invention 1 concerning the aforementioned different feature cannot be reached.

Further, the matter specifying Invention 1 concerning the different feature was not a well-known technology in advance of the priority date of the present application.

Then, even if the Cited Invention, the Matter described in Cited Document 2, and the Matter described in Cited Document 3 are put together, it cannot be said that the matter specifying Invention 1 concerning the aforementioned different feature could be easily made by a person ordinarily skilled in the art.

Therefore, it cannot be said that Invention 1 would have been easily invented by a person skilled in the art based on the Cited Invention, the Matter described in Cited Document 2, and the Matter described in Cited Document 3.

(2) Regarding Invention 2 to Invention 4

For the reason that Claims 2 to 4 in the Scope of Claims of the present application are ones that are described citing the statements of Claim 1 directly or indirectly without replacing the statements of Claim 1 with other statements, Invention 2 to the Invention 4 are ones that include all the matters specifying Invention 1.

Therefore, it cannot be said that Invention 2 to Invention 4 are ones that would have been easily invented by a person skilled in the art based on the Cited Invention, the Matter described in Cited Document 2, and the Matter described in Cited Document 3, for a reason similar to that for Invention 1.

(3) Regarding Invention 5

When Invention 5 and the Cited Invention are compared, they have a same

different feature as the aforementioned different feature, and are identical in the remaining feature.

As examined regarding the aforementioned different feature, the Matter described in Cited Document 2 and the Matter described in Cited Document 3 do not include the matter specifying Invention 5 concerning the different feature.

Then, even if the Matter described in Cited Document 2 and the Matter described in Cited Document 3, which do not include the matter specifying of Invention 5 concerning the different feature, are applied to the Cited Invention, the matter specifying Invention 5 concerning the aforementioned different feature cannot be reached.

Then, even if the Cited Invention, the Matter described in Cited Document 2, and the Matter described in Cited Document 3 are put together, it cannot be said that the matter specifying Invention 5 concerning the aforementioned different feature can be easily made by a person ordinarily skilled in the art.

Therefore, it cannot be said that Invention 5 would have been easily invented by a person skilled in the art based on the Cited Invention, the Matter described in Cited Document 2, and the Matter described in Cited Document 3.

(4) Regarding Invention 6

For the reason that Claim 6 in the Scope of Claims of the present application was described citing the statements of Claim 5 directly and without replacing the statements of Claim 5 with other statements, Invention 6 includes all the matters specifying the invention of Invention 5.

Therefore, for a reason similar to that for Invention 5, it cannot be said that Invention 6 would have been easily invented by a person skilled in the art based on the Cited Invention, the Matter described in Cited Document 2, and the Matter described in Cited Document 3.

3. Summary

As described above, Inventions 1 to 6 would not have been easily invented by a person skilled in the art based on the inventions described in Cited Documents 1 to 3 of the Examiner's decision.

Therefore, the Examiner's decision cannot be maintained.

No. 7 Closing

As above, the present application cannot be rejected for the reason notified by the body and the reasons of the Examiner's decision.

In addition, beyond that, no reasons for refusal were found.

Therefore, the appeal decision shall be made as described in the conclusion.

August 6, 2019

Chief administrative judge: KANAZAWA, Toshio

Administrative judge: SAITO, Koshiro

Administrative judge: MIZUNO, Haruhiko