

Appeal Decision

Appeal No.2020-13284

Appellant CARPYZ SAS

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The case of the appeal against the examiner's decision of refusal of Japanese Patent Application No. 2017-536004 "Method for designing and building wheel including turbine and impeller" (International publication No. WO2016/110364 published on July 14, 2016, and National Publication of International Patent Application No. 2018-514677 published on June 7, 2018), has resulted in the following appeal decision.

Conclusion

The appeal of the case was groundless.

Reasons

I History of the procedures

The present application was filed on December 2, 2015 as an International Patent Application (priority claim under the Paris Convention: received on January 9, 2015 in FR), the notice of reasons for refusal was notified on July 19, 2007 (the dispatch date: August 2, 2007), the written opinion and the written amendment were submitted on October 21, 2019, the examiner's decision of refusal was issued on March 11, 2020 (the dispatch date: March 19, 2020), the appeal against the examiner's decision of refusal was requested on September 24, 2020, the notice of reasons for refusal was issued by the body on March 9, 2021 (the dispatch date: March 17, 2021), and the written opinion was submitted on September 13, 2021.

II Present application

The inventions according to Claims 1 to 10 of the present application are specified by the matters recited in Claims 1 to 10 in the scope of claims amended by the written amendment submitted on October 21, 2019. The invention according to Claim 1 of the present application (hereinafter referred to as "the present invention") is as follows:

"[Claim 1]

Method for designing and building a wheel including a turbine and an impeller with blades that are hollow along the entire length thereof and that lead into peripheral circular chambers that operate as a fueled engine (THRA), wherein

for each of the turbine, the impeller, and the engine (THRA), evolving sections of inner channels of the impeller blades are built along with strips, the impeller blades are hollow along the entire length thereof and are located on profiles of neutral axes of the strips that are mostly portions of circles,

the evolving sections are built for an inlet to the turbine and for inlets to the hollow blades of the impeller and their arrival at the chambers, and are individually configured by initially giving values to the basic geometric elements and are traced according to specific geometric arrangements on circular plates of differing diameters which are then arranged at different levels of the wheel and are placed at an angle on the same axis independently to one another,

the geometric arrangement of the basic geometric elements of each circular plate is obtained by being inscribed within a circle (C1) from the center (o) of which extends a spoke (R) with a given numerical value that meets the circle (C1) at a preferential point of intersection (A),

the circle (C1) is the surface of revolution swept by the leading edge of the blades during the rotation of the wheel,

another numerical value is given to the chord of the arc that is the portion of the circle of the neutral axis of the blade in question, one of the ends of this chord starting from the preferential point of intersection (A) and the other (E) being located inside the circle on an axis that starts from the preferential point of intersection (A) and forms an angle of 45° with the spoke (R),

the position chosen for this axis on the right or the left of the spoke determines the desired direction of rotation of the wheel (1 or 2), and there is placed on the spoke towards the center another point (B) located at a numerical value which is that of the spoke of the circle that surrounds the wheel (C1) minus a numerical value that is the square root of the sum of the squares of two $1/2$ chords (Pythagoras),

a straight line with a numerical value identical to that of the chord extends from point (B) such that its midpoint aligns with the midpoint of the chord (M) that is perpendicular thereto and generates a point at its other end (D),

the point (B) located on the spoke serves as a center with a numerical value equal to that of the straight line (A B) of the portion of the circle that stretches between both ends of the chord that is the arc thereof and that is the desired circular profile of the strip,

the point (D) located on the other end of the portion of the straight line that intersects

the chord at its midpoint serves as the center for tracing the portion of circle that stretches between the two ends of the chord (A and E) which is also the arc thereof and which is the other desired symmetrical circular profile of the strip,

other centers of circles located on the perpendicular straight line (B D) and that have diameter values greater than or less than the points B and D allow the same to join or not the ends of the straight line (A E) and to generate portions of circles with flatter or more curved profiles (PL1, PL2) but which can also benefit from this method,

the portion of the circle (PL2) is not connected to points A and E,

the profiles built using this method and with the same numerical values on each side of the spoke are symmetrical,

the mixing of the strip profiles obtained with this method allows, by changing the parameters, building evolving blades with specific characteristics,

the numerical values of the profiles of the neutral axes built using this method are mathematically quantifiable, and

one same wheel may use different turbine strip profiles and profiles of hollow impeller blade strips that are defined using the same method but with different profiles on the same wheel."

III Reasons for refusal notified by the body

The contents of reasons for refusal notified by the body on March 9, 2021 (hereinafter referred to as "reasons for refusal by the body ") are as follows:

Reason 1: (Clarity) The present application does not meet the requirements stipulated in Article 36, Paragraph 6, Item 2 of the Patent Act in the following respects with regard to the recitation of the scope of claims.

Reason 2: (Enablement requirements) The present application does not meet the requirements stipulated in Article 36, Paragraph 4, Item 1 of the Patent Act in the following respects with regard to the description of the detailed explanation of the invention.

Reason 3: (Ministerial ordinance requirements) The present application does not meet the requirements stipulated in Article 36, Paragraph 4, Item 1 of the Patent Act in the following respects with regard to the description of the detailed explanation of the invention.

Description

- Regarding Reason 1 (Clarity)

It is admitted that the inventions claimed in the Claims 1 to 10 are inventions of "a method for designing and building a wheel", but the overall Japanese expressions used in the recitation of Claims 1 to 10 are inappropriate, the meaning is unclear, the form of the assumed wheel and what part of the wheel is designed and built is unclear, and accordingly the specific method for designing and building a wheel cannot be understood.

For example,

- Claim 1 recites "a method for designing and building a wheel including a turbine and an impeller with blades that are hollow along the entire length thereof and that lead to peripheral circular chambers operating as a fueling engine (THRA)". However, the relation between "turbine", "fueling engine (THRA)", "peripheral circular chambers", "blades", "impeller" and "wheel" is unclear, and the form of the assumed wheel and what (which part) of the assumed wheel the method is designed and built are unclear.

- Claim 1 recites that "evolving sections of inner channels of the impeller blades are built along with strips, the impeller blade are hollow along the entire length thereof and located on profiles of neutral axes of the strips that are mostly portions of circles", but the form of the assumed impeller blades is unclear, the meaning of "evolving sections of inner channels", "strips", and "neutral axes of the strips" is unclear. It is also unclear which form of impeller blades the description "the impeller blades are hollow along the entire length thereof" means. It is not clear whether it literally means "empty inside" (not solid). The term "hollow" is used in U.S. Patent No. 10697299, which is the U.S. family of the present application. The term "hollow" has the meaning of "empty inside" as well as "concave". Also, the French Patent Application Publication No. 2987655, which is disclosed in the statement of the present application as the prior art, states on page 1, line 4 "pales creuses des helices" (the body translation: concave blades of propeller). Hence, it is necessary to confirm the word "hollow".

- Claim 1 recites that "the evolving sections are built for an inlet to the turbine and for inlets to the hollow blades of the impeller and their arrival at the chambers, and are individually configured by initially giving values to basic geometric elements and are traced according to specific geometric arrangements on circular plates of differing diameters which are then arranged at different levels of the wheel and are placed at an

angle on the same axis independently to one another", but as pointed out above, since the relation between "turbine", "(peripheral circular) chambers", "blades" and "impeller" and the meaning of "the evolving sections" are unclear, the meaning of "the evolving sections are built for an inlet to the turbine and for inlets to the hollow blades of the impeller and their arrival at the chambers" cannot be understood. Moreover, the expression used in the recitation "the evolving sections are built for an inlet to the turbine and for inlets to the hollow blades of the impeller and their arrival at the chambers, and are individually configured by initially giving values to basic geometric elements and are traced according to specific geometric arrangements on circular plates of differing diameters which are then arranged at different levels of the wheel and are placed at an angle on the same axis independently to one another" is not appropriate from the Japanese language point of view and the meaning of "basic geometric elements", "values", "individually configured", "specific geometric arrangement", and "arranged at different levels of the wheel" is not clear.

•Claim 1 recites that "the profiles built using this method and with the same numerical values on each side of the spoke are symmetrical, the mixing of the strip profiles obtained with this method allows, by changing the parameters, building evolving blades with specific characteristics, the numerical values of the profiles of the neutral axes built using this method are mathematically quantifiable, and one same wheel may use different turbine strip profiles and different profiles of hollow impeller blade strips that are defined using the same method but with different profiles on the same wheel". The expressions used in the aforementioned recitation is not appropriate from the Japanese language point of view and the meaning of "numerical values" in "profiles with the same numerical values" and what exactly the other words such as "parameters" refer to are also unclear. Moreover, the distinction between the two different Japanese words denoting "same" in English and the Japanese word denoting "different" in English cannot be understood.

Thus, the inventions claimed in Claims 1 to 10 are not clear.

●Reason 2 (Enablement requirements)

It is admitted that the inventions claimed in Claims 1 to 10 are inventions of "a method for designing and building a wheel". However, even considering the description of Patent Documents 1 and 2 disclosed as the prior art in the statement of the present application, the entire description of the detailed explanation of the invention, and

common technical knowledge, the form of the assumed wheel, what (which part) of the wheel is designed and built, and the specific details of design and building are unclear. Therefore, the contents of the method for designing and building a wheel cannot be grasped, and a person skilled in the art cannot use the method.

In particular, Claim 1 recites "the geometric arrangement of the basic geometric elements of each circular plate is obtained by being inscribed within a circle (C1) from the center (o) of which extends a spoke (R) with a given numerical value that meets the circle (C1) at a preferential point of intersection (A), ... the portion of the circle (PL2) is not connected to points A and E". Although some parts of this recitation are unclear, if we consider the description of the paragraphs [0007] to [0011] and the illustration in Fig. 1, in general, it can be barely understood that various (strip) profiles are obtained by drawing circles centered on various positions on the perpendicular line (B D) of the midpoint M of the chord (A E), which intersects at an angle of 45° at the preferred intersection point (A) between the spoke (R) and circle (C1).

However, the form of the assumed wheel is unclear, and it is unclear for which part of the wheel the profile is obtained.

Moreover, Claim 1 recites "the profiles built using this method and with the same numerical values on each side of the spoke are symmetrical, the mixing of the strip profiles obtained with this method allows, by changing the parameters, building evolving blades with specific characteristics, the numerical values of the profiles of the neutral axes built using this method are mathematically quantifiable, and one same wheel may use different turbine strip profiles and different profiles of hollow impeller blade strips that are defined using the same method but with different profiles on the same wheel". However, this statement is not understood even considering the detailed explanation of the invention, and thus it is not understood how exactly the profiles are used for building the blades.

Therefore, the detailed explanation of the invention in the present application is not clear and sufficient to enable a person ordinarily skilled in the art of the invention to work the inventions claimed in claims 1 to 10.

●Reason 3 (Ministerial ordinance requirements)

The detailed explanation of the invention in the present application includes, as the background,

"[0001]

The improvement of the axial thrust of impellers has long been studied and the recent

applications for Patents in France; in particular, those published under numbers Fr 2,987,655 from October 7, 2012 and Fr 2,987,656 from October 15, 2012 show a new principle that consists in allowing the fluid in through a wheel and making it cross the impeller blades that are hollow, thus benefiting from the centrifugal force and ending in a peripheral circular chamber provided with a circular opening that ejects the fluid downwards from the wheel, thus creating a reaction force from the resistance on the neighboring boundary layers of fluid. The addition of the three principles allows notably increasing the axial thrust as much as it can be increased in a large amount by an energetic fluid introduced through the shaft into the engine such as compressed air or hydrogen as with rockets.

[0002]

The small-scale samples built do not allow the industrialization of these products and several years of work would have been necessary to discover a method that would allow these products to be constructed on-screen with such complex shapes in more logical and technical manner and to keep developing them more easily. Computers receiving files nowadays allow the large-scale manufacture anywhere in the world of identical products designed in any country."

The detailed explanation of the invention includes, as the problem to be solved by the invention,

"[0004]

We have not found in any of the prior art in the world any products equivalent to the one described herein."

However, from these descriptions, even with reference to the descriptions in the prior art, it is not clear what the general forms of the assumed wheel, impeller blade, etc. are, and the Japanese language is also not clear (for example, the meaning of "allowing the fluid in through a wheel and making it cross the impeller blades that are hollow, thus benefiting from the centrifugal force", "ending in a peripheral circular chamber provided with a circular opening that ejects the fluid downwards from the wheel" and "creating a reaction force from the resistance on the neighboring boundary layers of fluid" is unclear, and it is unclear what it means by "new principle"), and thus it is not possible to grasp the problem to be solved by the invention from this description.

The detailed explanation of the invention includes, as the means for solving the problem,

"[0005]

The method for designing and building wheels, turbines, impellers, and fueled engines, in which the impeller blades are hollow along their length and lead into a peripheral chamber provided with a circular opening, causes the neutral axes of the strips of the

hollow impeller blades to be each built individually on-screen, on sections of wheels placed with different diameters, using digitized geometric elements with fundamental basic values that are provided at the start by the designer for the construction of the wheel."

However, as stated above, the general forms of the assumed wheel, impeller blades, etc. are not clear, and the Japanese language is also not clear (for example, the meaning of "the impeller blades are hollow along their length and lead into a peripheral chamber provided with a circular opening" and "each built individually on-screen, on sections of wheels placed with different diameters" is unclear), and thus it is not possible to grasp the means for solving the problem from this description.

Moreover, even by looking at the entire specification, the problem to be solved by the invention and the means for solving the problem cannot be grasped, and the technical significance of the invention cannot be understood, and thus it cannot be said that matters necessary for a person skilled in the art to understand the technical significance of the invention are described.

Therefore, the detailed explanation of the invention in the present application with respect to the inventions claimed in claims 1 to 10 is not in accordance with the ordinance of the Ministry of Economy, Trade and Industry.

IV Appellant's allegation

The appellant, without submitting a procedural amendment, alleges in the written opinion that:

<Reason 1>

In this notification of reasons for refusal, with respect to the method of designing and building a wheel described in the present application, in particular, with respect to the relation between "turbine", "fueled engine (THRA)", and "peripheral circular chamber", the form of the assumed wheel and the specific method for designing and building a wheel are considered to be unclear. In response to the above reason for refusal, based on the description in the specification, the appellant submits the following explanation to demonstrate the clarity of the claims claimed in the present application.

During the international phase, in order to facilitate the understanding of the composition of the present application, claim 1 of the present application was amended in response to the international survey report to clearly state that for each of "THRA",

"turbine" and "impeller", the method described in this claim relates to building evolving sections of inner channels of the impeller blades that are hollow along the entire length. Here, it is claimed that the invention according to claim 1 of the present application relates to a method for designing and building a wheel including a turbine ("Turbine" in French), and an impeller ("Helice" in French) and provides blades that are hollow along the entire length that leads into peripheral circular chambers that operates as a fueled engine ("Reacteur Alimentable" in French). It is understood from the above statement that THRA, one of the components of claim 1 of the present application, is defined as described above. In addition, each component is clearly defined by the computer aided design and manufacturing (CADM).

- Wheel: A circular component that rotates around a center or axis. There is no specific shape for the wheel since computers can now make an infinite number of different ones.
- Turbine: A circular component fed by fluid in the center of the wheel, projected by centrifugal force through conduits around the wheel.
- Impeller: A device for propulsion, traction, or lift, including blades or airfoils disposed on the crown.
- Blades: Impeller components affecting the shape of the twisted airfoils.
- Hollow along the entire length: The inside of the blade is empty from the inlet to the center and to the outlet of the maximum diameter.
- Peripheral circular chambers: Rounded space around the wheel.
- Engine: A device that generates fluid jets that affect the neighboring boundary layers of fluid.
- Fueled: Fluid can be supplied.

In addition, the details of the aforementioned components have been described in the patent documents cited in the present application specification (Fr 2987655, Fr 2987656 and International Publication No. 2008/012425). Also, Publication of French Patent Application No. 2987657, filed by the applicant on October 15, 2012 particularly describes the shape of the THRA wheel.

With respect to the clarity of the impeller blade configuration, the following is an explanation of the features "evolving sections of inner channels", "strips", "neutral axes of strips", "the impeller blades are hollow along the entire length", and the meaning of "hollow".

It can be said that the invention according to claim 1 of the present application is remarkable that, the turbine, the impeller and the engine in claim 1, which are mainly portions of circles are built for in inlet to the turbine and for inlets to the hollow blades of the impeller and their arrivals at the chambers, and are individually configured by initially giving values to the basic geometrical elements and are traced according to specific geometrical arrangements on circular plates of differing diameters which are then arranged at different levels of the wheel and are placed at an angle on the same axis independently to one another.

In all cases, the profiles built using the method in claim 1 and with the same numerical values on each side of the radius are symmetrical, and the mixing of the profiles of the blades obtained with this method allows the blades to be built by regenerating the parameters. The numerical values of the neutral axes built using this method are mathematically quantifiable, and the same wheel can use different turbine blade profiles and different hollow impeller blade profiles defined in the same method but with different profiles on the same wheel.

With respect to the requirement for clarity regarding the relation between "turbine", "peripheral circular chamber", "blade", "impeller", and "individually configured by initially giving values on the same axis", this is clearly defined by the embodiments in the present application specification that describe that the invention contains multiple wheels stacked on top of one another in order to create a combined turbine/impeller/engine. The process of obtaining such a configuration by making several successive pieces and then joining them to obtain a homogeneous part (e.g., for aircraft wings) has long been used by design firms and is well known to those skilled in the art, and thus, it can be said that the method of stacking several wheels on top of one another has been described in the present application specification clearly enough to be carried out by a person skilled in the art.

Moreover, regarding the requirement of clarity, WO2008/012425 thoroughly recites the commonly known five-parameter arithmetic principle pertaining to "numerical values" and "parameters" in claim 1 of the present application, and therefore, the relevant principle is precisely understandable for a person skilled in the art. This principle enables the manufacturing of THRA wheels as specified in the present application by using five parameters concerning 1) leading edge, 2) trailing edge, 3) body, 4) length, and 5) arch.

As an example of the use of this principle, WO2014/067823 describes a turbine that

directs fluid tangentially by means of all channels around a fixed hollow wheel. Processes using the above principle can be used to build turbine assemblies that can recover energy from moving fluids, such as wind turbines, using a minimum capture surface and a maximum obtaining yield.

Thus, these five parameters can easily generate on-demand, infinite, highly complex helical blades, and are precisely understandable for a person skilled in the art.

As explained above, the appellant believes that the points that were considered unclear in the notification of reasons for refusal are clear from the description in the specification of the present application and that the said reasons for refusal are therefore resolved.

<Reasons 2 and 3>

Enablement requirements and ministerial ordinance requirements were pointed out in the notification of reasons for refusal, and the response to the same is as follows:

First of all, a person skilled in the art can easily understand that the fluid enters in a centrifugal impeller through the center, is transported through regular channels, and is then projected externally around the impeller. However, in the present invention, the fluid goes through the inside of the impeller blades and is transported up to their maximum diameter in a circular chamber, which does not exist in the configuration of the conventional technology. The plate level is in accordance with its function and is specified on the screen of CADM software used by the wheel designer.

Moreover, although the wheel has a very complex shape, it can be designed with computer aid design and manufacturing (CADM) and specifically constructed with a 3D additive machine. According to this invention, the profiles built using the aforementioned method and with the same numerical values on each side of the radius are symmetrical, and the mixing of the profiles of blades obtained by this method specifically allows building evolving blades by changing the parameters. The numerical values of neutral fiber profiles built using this method are mathematically quantifiable, and the same wheel can use different turbine blade profiles and blade profiles of different hollow impellers that are defined with the same method but with different profiles on the same wheel.

The present patent application relates to the construction of the inner channels of the blades of the impeller of the wheel with the help of evolving strips that are intrados and

extrados of the blades along the entire length. To obtain the desired profiles, mathematical values are given to the portions of the circle that make up the majority of them. The shape of the wheel is on demand, different depending on the desires of the designer: flat, curved, convex, hollow, etc.

The software package for the present invention shows on the screen the schematic wheel THRA subject to permanent updating, and displays all its components independent of one another, though they are associated mathematically. Each component is assigned with a value by default and can be flexibly modified to create an infinite number of new wheels simply with a few clicks.

Some mathematical values that should be corrected are associated to the inner channel section of each blade of the impeller used by the turbo fluid. The software package based on the present invention is new, and the setting of the inner channel of the impeller blade in the portion of the circle written on the plate placed at different heights along its entire length is also inevitable.

Furthermore, the purpose of the invention according to claim 1 of the present application is to provide a method for designing and building THRA wheels to build products with highly complex geometries on the screen with a more logical and technical approach. Additional machines that receive the issued files enable the industrialization of these products and the mass production of identical products.

The method is based on the characteristics of claim 1, the profiles of the neutral axes of the blades that are mostly portions of circles are individually configured by initially giving values to the basic geometric elements for the inlets to the turbine and the hollow blades of the impeller and their arrival at the chambers and traced according to specific geometrical arrangements on circular plates of differing diameters. Then the several levels of the wheel are angled on the same axis independently to each other.

According to the present application, the profiles built using this method in all cases and with the same numerical values on both sides of the radius are symmetrical, and the mixing of the profiles of blades obtained by this method is possible by appropriately changing the parameters of construction. The numerical values of the neutral axes built by this method are mathematically quantifiable, and the same wheel can use different turbine blade profiles and different hollow impeller blade profiles defined in the same method but with different profiles on the same wheel.

The appellant further attaches, as an additive explanation, a diagram showing better illustration of the invention according to the present application and an explanation

thereof (hereinafter referred to as the "supplemental explanation". Contents omitted).

V Judgment by the body

1. Reason 1 (Clarity)

(1) The written opinion states that "each component is explicitly defined by computer aided design and manufacturing (CADM) as well as the definitions of terms including "wheel", "turbine", "impeller", "blade", "hollow along the entire length", "peripheral circular chamber", "engine", and "oil-fueled". The written opinion further states that "the details of aforementioned configurations have been described in the patent documents cited in the present application (French Patent Application Publication No. 2987655, French Patent Application Publication No. 2987656, and International Publication No. 2008/012425) Also, Publication of French Patent Application No. 2987657, filed by the applicant on October 15, 2012, particularly describes the shape of the THRA wheel". Despite the given definitions and references, the relation between "turbine", "oil-fueled engine (THRA)", "peripheral circular chamber", "blade", "impeller", and "wheel", stated in the invention of the present application, as well as the form of the wheel is incomprehensible. Particularly in case of "blade" and "impeller", the written opinion states "impeller: a device for propulsion, traction, or lift, including blades or airfoils disposed on the crown" and "blades: impeller components affecting the shape of the twisted airfoils". These definitions lack the clarity in the specific meanings of "disposed on the crown" and "affecting the shape of the twisted airfoils" and fail to explain the relation between "blade" and "impeller".

(2) In claim 1, the meanings of terms "evolving sections of inner channels", "strips" and "neutral axes of the strips" in the recitation of "evolving sections of inner channels of the impeller blades are built along with strips, the impeller blades are hollow along the entire length thereof and are located on profiles of neutral axes of the strips that are mostly portions of circles", the meaning of "the evolving sections are built for an inlet to the turbine and for inlets to the hollow blades of the impeller and their arrival at the chambers", and the meanings of terms "basic geometric elements", "values", "individually configured", "specific geometric arrangements", and "different levels of the wheel" in the recitation of "individually configured by initially giving values to the basic geometric elements and are traced according to specific geometric arrangements on circular plates of differing diameters which are then arranged at different levels of the wheel and are placed at an angle on the same axis independently to one another" are not explained precisely, and hence lack clarity in the meanings.

(3) The written opinion states that "regarding the requirement of clarity, WO2008/012425 thoroughly recites the commonly known five-parameter arithmetic principle pertaining to 'numerical values' and 'parameters' in claim 1 of the present application, and therefore, the relevant principle is precisely understandable for a person skilled in the art. This principle enables the manufacturing of THRA wheels as specified in the present application by using five parameters concerning 1) leading edge, 2) trailing edge, 3) body, 4) length, and 5) arch. ... (omitted) ... These five parameters can easily generate on-demand, infinite, highly complex helical blades, and are precisely understandable for a person skilled in the art." However, there is no explanation which specific part (what) in the wheel assumed in the present application is associated with the five parameters concerning leading edge, trailing edge, body, length, and arch. Thus, the meaning of recitation in claim 1 that "the profiles built using this method and with the same numerical values on each side of the spoke are symmetrical, the mixing of the strip profiles obtained with this method allows, by changing the parameters, building evolving blades with specific characteristics, the numerical values of the profiles of the neutral axes built using this method are mathematically quantifiable, and one same wheel may use different turbine strip profiles and profiles of hollow impeller blade strips that are defined using the same method but with different profiles on the same wheel" remains unclear.

Therefore, despite considering the statement in the written opinion, the invention in the present application remains unclear, because the form of the wheel assumed in the application and what (shape of which part) of the wheel is designed and built are consistently unclear, and so are a few other descriptions in the invention in the present application.

2. Reason 2 (Enablement requirements)

(1) As stated in the aforementioned "Reason 1 (Clarity)", despite considering the statement in the written opinion, the invention in the present application remains unclear, because the form of wheel assumed in the application and what (shape of which part) of the wheel is designed and built are consistently unclear, and so are a few other descriptions in the invention in the present application. The detailed explanation of the invention does not describe the extent to which a person skilled in the art can work the invention.

(2) The appellant states that "A person skilled in the art can easily understand that the fluid enters in a centrifugal impeller through the center, is transported through regular channels, and is then projected externally around the impeller. However, in the present invention, the fluid goes through the inside of the impeller blades and is transported up to their maximum diameter in a circular chamber, which does not exist in the configuration of the conventional technology. The plate level is in accordance with its function and is specified on the screen of CADM software used by the wheel designer." (Underlining was assigned by the body.) However, if the invention in the present application assumes that the configuration "does not exist in the conventional technology", it is required to explain more about this configuration that "does not exist in the conventional technology" rather than merely citing references disclosing the conventional technology. The lack of explanation results in failure in understanding the form of the wheel and the design and construction thereof.

Thus, the specific relation between the terms and descriptions in the detailed explanation of the invention and the wheel to be designed and built in the present application is incomprehensible. Hence, the description of the detailed explanation of the invention in the present application is not clear or sufficient to enable a person skilled in the art of the invention to work the invention.

3. Reason 3 (Ministerial ordinance requirements)

The problem to be solved by the invention cannot be grasped despite considering the statement in the written opinion.

Further, as stated in the aforementioned "Reason 1 (Clarity)" and "Reason 2 (Enablement requirements)", the form of wheel assumed in the application and what (shape of which part) of the wheel is designed and built are unclear. Thus, the solution to problems cannot be grasped, and the technical significance of the invention cannot be understood.

Thus, the detailed explanation of the invention in the present application is not described in accordance with the Ordinance of the Ministry of Economy, Trade and Industry.

4. Supplementary Explanation

(1) In the drawings on pages 4 to 6 of the written opinion, regarding arrows indicating the air flow, only arrows indicating the rotation direction are shown.

Whereas, according to the statement on page 3, lines 6 and 7 of the written opinion that "in the present invention, the fluid goes through the inside of the impeller blades and is transported up to their maximum diameter in a circular chamber" and the statement on page 6, lines 2 and 3 that "the wheel draws air in at the front center of the wheel, at the center of the propeller blade inlet, and directs it through the hollow blades from end to end into the peripheral chamber surrounding the wheel", it is interpreted that fluid (air) also has a radial flow component, and statements related to the air flow are not consistent between the drawing and the description, making it difficult to understand how the air flows.

Thus, it is difficult to understand what the "inlet" in the present application and the "inlet" and "outlet" in the detailed explanation of the invention refer to, and it is difficult to understand the form of wheel assumed in the present application.

(2) Page 6, line 8 of the written opinion states that "the wheel is primarily a propeller", and page 6, line 12 states that "the wheel is also a turbine that provides thrust". Whereas the invention of the present application (at the beginning of claim 1) recites it as "turbine", which fails to comprehend whether the wheel in the invention is a turbine or a propeller.

Provisionally, if the wheel has both functions, air flow when it functions as a turbine and air flow when it functions as a propeller are incomprehensible, and so is the form of the wheel assumed in the present application.

(3) The written opinion does not explain the correspondence between parts of the drawings on pages 4 to 6 and portions ("peripheral circular chambers", "blades", "impeller", "evolving sections of inner channels", "strips" and "strip neutral axes", "inlet", "outlet") in the invention of the present application or the detailed explanation of the invention.

Thus, reasons 1 to 3 are not resolved by taking the supplemental explanation into consideration.

VI Conclusion

As discussed above, the scope of claims recited in the present application does not meet the requirements stipulated in Article 36, Paragraph 6, Item 2 of the Patent Act because the invention of the present application is not clear.

Further, the detailed explanation of the invention in the present application does not

describe the invention clearly and sufficiently to enable a person skilled in the art to practice the invention, as required by Ordinance of the Ministry of Economy, Trade and Industry, and therefore, does not meet the requirements stipulated in Article 36, Paragraph 4, Item 1 of the Patent Act.

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

November 24, 2021

Chief administrative judge: YAMAMOTO, Shimpei

Administrative judge: SUZUKI, Mitsuru

Administrative judge: HOSHINA, Masayuki