Appeal decision

Appeal No. 2017-15477

Appellant	The Boeing Company			
Patent Attorney PROPERTY LAW	SONODA	&	KOBAYASHI	INTELLECTUAL

The case of appeal against the examiner's decision of refusal of Japanese Patent Application No. 2013-1463, entitled "ULTRASONIC MODELING FOR INSPECTION OF COMPOSITE MATERIAL IRREGULARITIES", [the application published on Aug. 8, 2013, Japanese Unexamined Patent Application Publication No. 2013-152227] has resulted in the following appeal decision:

Conclusion

The appeal of the case was groundless.

Reason

No. 1 History of the procedures

The present application is an application filed on Jan. 9, 2013 (priority claim under the Paris Convention of Jan. 20, 2012, United States), reasons for refusal were notified as of Oct. 31, 2016, a written opinion was submitted on Apr. 10, 2017 and, at the same time, an amendment was made, and a decision of refusal was issued as of Jun. 28 of the same year. In response to this, an appeal against an examiner's decision of refusal was submitted on Oct. 18 of the same year, and, simultaneously, a written amendment was submitted. After that, reasons for refusal (hereinafter, referred to as "Reasons for refusal 1 by the body") were notified by the body as of Jul. 24, 2018, and a written opinion was submitted. However, regarding reasons for refusal that had not been resolved among the reasons for refusal 1 by the body, once again (refer to "response record" for the first response on Nov. 13, 2018, which is hereinafter referred to as "Response record") reasons for refusal (hereinafter, referred to as "Response record") reasons for refusal (hereinafter, referred to as "Response record") were notified as of Nov. 29, 2018 by the body, and, a written opinion was submitted and an amendment were submitted on Dec. 26 of the same year.

No. 2 The Invention

It is recognized that the inventions according to Claims 1-8 of the present application are specified by the matters described in Claims 1-8 of the scope of claims amended by the amendment made on Dec. 26, 2018 (hereinafter, referred to as "The Amendment"), and the invention according to Claim 1 (hereinafter, referred to as "The Invention") among these is as follows.

"[Claim 1]

A method for use in inspecting a composite structure (200) that is a lamination laying-up structure of a composite material made by laminating a fiber-rich layer and resin layer, the method comprising:

defining at least one irregularity (270, 450) parameter including a maximum

height of a wrinkle, and a width of a wrinkle;

conducting a first simulated inspection of a virtual model, by a modeling module constituted so as to transmit at least one wave simulation of ultrasound toward the virtual model, to provide a first waveform data set associated with the at least one irregularity (270, 450) parameter, the first waveform data set being of a reflection signal of the ultrasound of the virtual model, wherein the first simulated inspection is conducted using a first evaluation setting including at least a type of a stimulation source, a beam width of the stimulation source, a distance between the at least one stimulation mechanism and the composite structure, and a distance between the at least one stimulation mechanism and a sensor;

producing a first virtual image (572) based on the first waveform data set;

determining whether a quality of the first virtual image (572) satisfies a predetermined threshold that enables the inspection of the composite structure related to the irregularity including the wrinkle;

using the first evaluation setting to perform physical inspection of the ultrasound of the composite structure by the stimulation mechanism of the ultrasound when the quality of the first virtual image satisfies the predetermined threshold, wherein the stimulation mechanism uses the first evaluation setting to transmit at least one physical wave toward the composite structure in order to detect irregularities within the composite structure;

identifying the first evaluation setting as a desired evaluation setting for use in inspecting the composite structure (200);

providing data associated with the stimulation mechanism through a user interface, wherein the data include at least a type of a stimulation source, a beam width of the stimulation source, a distance between the at least one stimulation mechanism and the composite structure, and a distance between the at least one stimulation mechanism and a sensor;

defining another evaluation setting associated with the stimulation mechanism as a re-defined second evaluation setting re-defined using finite element analysis;

conducting a second simulated inspection, by a model created based on the irregularity parameter using the re-defined second evaluation setting, to provide a second waveform data set associated with the at least one irregularity (270, 450) parameter, the second waveform data set being of the reflection signal of the ultrasound of the virtual model, wherein the second simulated inspection is conducted using the re-defined second evaluation setting that is different from the first evaluation setting when the quality of the first virtual image (572) does not satisfy the predetermined threshold;

producing a second virtual image (572) based on the second waveform data set;

determining that a quality of the second virtual image (572) satisfies a predetermined threshold that enables inspection of the composite structure related to irregularities including a wrinkle;

defining another evaluation setting associated with the stimulation mechanism as a second evaluation setting, and identifying the second evaluation setting as a desired evaluation setting for use in inspecting the composite structure (200); and

using the second evaluation setting to perform physical inspection of the composite structure by a stimulation mechanism when it is determined that a quality of the second virtual image satisfies the predetermined threshold, wherein the stimulation mechanism uses the second evaluation setting to transmit at least one physical wave toward the composite structure so as to physically inspect the composite structure for the purpose of detecting irregularities including the wrinkle within the composite structure."

No. 3 Regarding Reasons for refusal 2 by the body

The reasons for refusal notified by the body as of Nov. 29, 2018 are as follows. 1. (Clarity) Regarding this application, the statements of the scope of claims do not meet the requirements stipulated in Patent Act Article 36(6)(ii), in the following points.

2. (Support requirements) Regarding this application, the statements of the scope of claims do not meet the requirements stipulated in Article 36(6)(i) of the Patent Act, in the following points.

3. (Enablement requirements) Regarding this application, the statement of the detailed description of the invention do not meet the requirements stipulated in Article 36(4)(i) of the Patent Act, in the following points.

1 Regarding reason 1 (Clarity)

Reason 1 points out the following matters, saying that, with respect to the matters indicated in the notice of reasons for refusal by the body as of Jul. 24, 2018, matters that were not solved by the written amendment and the written opinion submitted on Oct. 29, 2018 are pointed out once again.

(1) Omitted

(2) Omitted

(3) Although it is described in Claim 1 as "determining whether a quality of the first image (572) satisfies a predetermined threshold that enables the inspection of the composite structure related to the irregularity including a wrinkle" and "using the first evaluation setting to perform physical inspection of the ultrasound of the composite structure by the stimulation mechanism of the ultrasound when the quality of the first image satisfies the predetermined threshold", it is unclear what value indicating "the quality of the first image" is determined to satisfy what value (threshold). On this point, the same applies to Claim 5.

Meanwhile, this does not satisfy Enablement requirements, either, in the point of the following reason 3(1)

(4) Regarding the second evaluation setting in Claim 1

Although it is specified as "<u>defining another evaluation setting</u> associated with the stimulation mechanism <u>as a second evaluation setting</u>; conducting a second simulated inspection to provide a second waveform data set associated with at least one <u>irregularity (270, 450) parameter</u>, wherein the second simulated inspection is <u>conducted</u> <u>using a second evaluation setting that is different from the first evaluation setting when</u> the quality of the first image (572) does not satisfy the predetermined threshold; producing a second image (572) based on the second waveform data set; determining that a quality of the second image (572) satisfies a predetermined threshold that enables inspection of the composite structure related to irregularities including a wrinkle; <u>defining another evaluation setting</u> associated with the stimulation mechanism <u>as a</u> <u>second evaluation setting</u>, and identifying the second evaluation setting as a desired evaluation setting for use in inspecting the composite structure (200); and using the second evaluation setting to perform physical inspection of the composite structure by a stimulation mechanism when it is determined that a quality of the second image satisfies the predetermined threshold, wherein the stimulation mechanism uses the second evaluation setting to transmit at least one physical wave toward the composite structure so as to physically inspect the composite structure for the purpose of detecting irregularities including a wrinkle within the composite structure", the relation between "first evaluation setting" and "second evaluation setting" is unclear.

In other words, it is understood, from the statement of "to provide a second waveform data set associated with at least one irregularity (270, 450) parameter, when the quality of the first image (572) does not satisfy the predetermined threshold", that the step "770" in the following FIG. 8 is being specified, whereas, from the statements of "defining another evaluation setting as a second evaluation setting" and "the second simulated inspection is conducted using a second evaluation setting that is different from the first evaluation setting", it is also understood that evaluation setting different from that of FIG. 8 (for example, re-starting from definition of an irregularity parameter and the like) is performed, and thus it is unclear which one of the former and the latter the specification intended.





不規則性パラメータを規定する Define irregularity parameter モデルを生成する Generate model モデルを検査する Inspect model 画像を生成する Produce image 画像の品質は所定の閾値を満たすか? Quality of image satisfy predetermined threshold? 所望の評価設定として評価設定を確認する Identify evaluation quality as defined evaluation setting 評価設定を再規定する Re-define evaluation setting

(5) Although this is related also to the above-mentioned (4), it is described in Claim 1 as "using the first evaluation setting ... when the quality of the first image satisfies the predetermined threshold; the second simulated inspection to provide a second waveform data set is conducted using a second evaluation setting, when the quality of the first virtual image (572) does not satisfy the predetermined threshold; using the second evaluation setting when it is determined that a quality of the second image satisfies the predetermined threshold". However, such statements result in the consequence that the above step "770" in FIG. 8 is not repeated, and thus it cannot be said that the invention is specified sufficiently from technical perspective.

Furthermore, regarding the matter that "<u>the second simulated inspection to</u> <u>provide a second waveform data set</u> is conducted using a second evaluation setting, when the quality of the first image (572) does not satisfy the predetermined threshold", it can be also considered, from this specifying matter, that the step "770" in the abovementioned FIG. 8 returns to the step "730 (Inspect model)". However, in reality, it returns to the step "720 (Generate model)" in FIG. 8, and thus relation between the two is unclear. Regarding this point, Claim 5 is the same as mentioned above.

In addition, regarding this, it cannot be said that the enablement requirement is satisfied in a point of the following reason 3(2).

(6) Summary

Therefore, the statement of Claim 5 and those of Claims 6-8 that refer to Claim 5 do not meet the requirement stipulated in Patent Act Article 36(6)(ii) in the point of the above-mentioned (1), and, similarly, the statements of Claim 1, Claim 5, and Claims 2-4 and 6-8, which refer to Claim 1 or 5, do not meet the requirement in the points of the above-mentioned (2)-(5).

In particular, regarding the above-mentioned (3)-(5), there is no substantive explanation at all in the written opinion.

2 Regarding reason 2 (Support requirements) Omitted

3 Regarding reason 3 (Enablement requirements)

Reason 3 points out the following matters once again after having confirmed (refer to "Response record") whether the appellant has intention to explain with respect to the matters pointed out in the notice of the reasons for refusal by the body as of Jul. 24, 2018, because there was no substantive explanation at all in the written opinion submitted on Oct. 29, 2018.

(1) While being related also to the matters pointed out in the above-mentioned reason 1 (3), regarding "determining whether a quality of the first image (572) satisfies a predetermined threshold that enables the inspection of the composite structure related to the irregularity including a wrinkle" and "using the first evaluation setting to perform physical inspection of the ultrasound of the composite structure by the stimulation mechanism of the ultrasound when the quality of the first image satisfies the predetermined threshold" in Claim 1, the same texts of the contents as the above statements are just repeated in the detailed description of the invention.

For example, although there are statements that

"[0028]

In the exemplary embodiment, imaging module 570 produces an image based on the waveform set, and determines whether a quality of the image satisfies a predetermined threshold. FIG. 6 is a screenshot of a virtual image 572 of composite structure 200 produced by imaging module 570. If the quality of the image satisfies the predetermined threshold, in the exemplary embodiment, evaluating module 580 identifies the predefined evaluation setting as a desired evaluation setting for use in inspecting composite structure 200. If the quality of the image does not satisfy the predetermined threshold, in the exemplary embodiment, evaluating module 580 iteratively repeats the process using a finite element analysis until at least one desired evaluation setting is identified.", there is no statement at all about by what value "a quality of the image" is expressed. Since it is unclear by what value "a quality of the image" is expressed, quality cannot be compared with a value that is a "threshold", and it is also unclear what degree of value is made to be a threshold. Regarding this point, Claim 5 is the same as mentioned above.

Therefore, the detailed description of the invention is not description described clearly and sufficiently to the extent that a person skilled in the art can carry out the inventions according to Claims 1 and 5 in the above-mentioned point.

(2) While being related also to the matters pointed out in the above-mentioned reason 1 (5), regarding "the second simulated inspection to provide a second waveform data set is conducted using a second evaluation setting, when the quality of the first virtual image (572) does not satisfy the predetermined threshold", the above-mentioned step "770" in FIG. 8 returns to step "720 (Gererate model)", and it is described in the detailed description of the invention that "If the quality of the virtual image does not satisfy the predetermined threshold, in the exemplary embodiment, another evaluation setting associated with the stimulating mechanism is defined 770 by computer system 500 and/or the user, and another model is generated 720 based on the irregularity parameters using the redefined evaluation setting." ([0032]). However, when a quality of a virtual image does not satisfy a predetermined threshold, a model is recreated without carrying out model inspection after changing transmission conditions and the like of ultrasound in ultrasound simulation, this results in the consequence that ultrasound simulation is performed again using the new model, and determination of transmission conditions and the like for a model is not performed. On this point, Claim 5 is the same as mentioned above.

Therefore, it is not deemed that the detailed description of the invention is described clearly and sufficiently to the extent that the inventions according to Claims 1 and 5 are capable of being carried out by a person skilled in the art in the above-mentioned point.

(3) Regarding "defining at least one irregularity (270, 450) parameter" of Claim 1, it is unclear how, such value (parameter) is obtained in advance, on the occasion of performing simulation according to a modeling module. Although it is described, in the detailed description of the invention, that "at least one irregularity parameter is defined 710 by computer system 500 and/or a user. In the exemplary embodiment, the irregularity parameters may include an irregularity thickness 290, an irregularity width 300, an irregularity length, an irregularity location, and/or an irregularity shape."

([0031]), it is unclear how to obtain a thickness, width, length, position, and/or shape of an irregularity in advance by the computer system 500 and/or a user. If a suitable value of an irregularity parameter due to a certain level of standard derived from results of inspections in the past according to a material to be used, a manufacturing method, a size, and the like, or due to experience of a user (skilled person) is not inputted, an evaluation setting will not become suitable. On this point, Claim 5 is the same as mentioned above. Therefore, it is not deemed that the detailed description of the inventions is described clearly and sufficiently to the extent the inventions according to Claims 1 and 5 are capable of being carried out by a person skilled in the art, in the above-mentioned point.

(4) Summary

It cannot be said that the detailed description of the invention is described clearly and sufficiently to the extent that the inventions according to Claims 1 and 5 and Claims 2-4 and 6-8 that refer those are capable of being carried out by a person skilled in the art. Therefor it does not meet the requirement stipulated in Article 36(4)(i) of the Patent Act.

No. 4 Judgment by the body

1 In the light of the case, reason 3 (enablement requirements) of the Reasons for refusal 2 by the body will be examined, first.

(1) Regarding reason 3 (1)

A Statements of the specification of the present application

Relating to "determining whether a quality of the first image (572) satisfies a predetermined threshold that enables the inspection of the composite structure related to the irregularity including a wrinkle" and "using the first evaluation setting to perform physical inspection of the ultrasound of the composite structure by the stimulation mechanism of the ultrasound when the quality of the first image satisfies the predetermined threshold" of The Invention, there are the following statements in the specification of the present application besides paragraph [0028] cited in the abovementioned No. 3 (1).

"[0010]

.... If the quality of the first image satisfies a predetermined threshold, the first evaluation setting is identified as a desired evaluation setting. As such, the first evaluation setting may be used to physically inspect the composite structure for irregularities, such as wrinkles."

B Judgment

Regarding "a quality of the image" of The Invention, it is not described, in the detailed description of the invention including [0028] and [0010], by what value it is expressed. Since it is unclear by what value "a quality of the image" is expressed, the quality cannot be compared with a value that is called "threshold". Furthermore, it is also not described in the detailed description of the invention what degree of value should be made to be a threshold, and thus it is unclear. Therefore, it is not deemed that the detailed description of the invention is described clearly and sufficiently to the extent that The Invention is capable of being carried out by a person skilled in the art.

C The appellant's allegation

The appellant alleges, in the written opinion submitted on Dec. 26, 2018 (hereinafter, referred to as "Written opinion"), that

"(4) Regarding reason 3 of the reasons for refusal

Regarding reasons 3 (1)-(3), as described in paragraph [0010] and paragraph [0028] of the specification at the time of application, a value that indicates a quality of an image differs according to an irregularity of a model created based on an irregularity parameter, and, as shown in FIG. 6, the quality is a quality that is determined by whether the first simulated inspection using the first evaluation setting, which indicates an irregularity and is generated based on the first waveform data set that enables inspection of a wrinkle, is the first image.", and, in addition, alleges, in the same Written opinion that, as explanation for reason 1 (3) associated with reason 3 (1),

"Regarding reason 1 (3), it is described in paragraph [0010] of the specification at the time of application, "When a quality of the first image satisfies a predetermined threshold, the first evaluation setting is identified as a desired evaluation setting. Bv this, a composite structure can be physically inspected regarding irregularities such as a wrinkle by using the first evaluation setting.", and, in addition, there are statements, in paragraph [0028] that "In this exemplary embodiment, the image taking module 570 generates an image based on a waveform set, and determines whether the quality of the image satisfies a predetermined threshold. FIG. 6 is a screenshot of the virtual image 572 of the composite structure 200 generated by the image taking module 570.". That is, when inspection can be performed regarding an irregularity such as a wrinkle by the first evaluation setting, this means that a quality of the first image satisfies a predetermined threshold. Accordingly, the quality is a quality that is determined by whether the first simulated inspection using the first evaluation setting, which indicates an irregularity and is generated based on the first waveform data set that enables inspection of a wrinkle, is the first image. Therefore, we consider that the contents of the invention are clear.".

However, in the above Written opinion, it is not made clear by which value "a quality of an image" is expressed, and thus the quality cannot be compared with a value that is called "threshold", and, therefore, "determining whether a quality of the first image (572) satisfies a predetermined threshold" of The Invention is not possible, and, moreover, "when the quality of the first image satisfies the predetermined threshold" of The Invention cannot be determined. Consequently, it is not deemed that the detailed description of the invention is described clearly and sufficiently to the extent that The Invention is capable of being carried out by a person skilled in the art.

Therefore, reason 3 (1) of the Reasons for refusal 2 by the body is not resolved by the allegation according to the Written opinion by the appellant.

D Summary

Therefore, the matters pointed out in reason 3 (1) of the Reasons for refusal 2 by the body are not resolved even when referring to the allegation of the Written opinion, and it is not deemed that the detailed description of the invention is described clearly and sufficiently to the extent that The Invention is capable of being carried out by a person skilled in the art. Accordingly, it does not meet the requirement stipulated in Article 36(4)(i) of the Patent Act.

(2) Regarding reason 3 (2)

A By The Amendment, the specifying matter of The Invention pointed out in No. 3 reason 3 (2) mentioned above was amended to "defining another evaluation setting associated with the stimulation mechanism as a <u>re-defined</u> second evaluation setting re-<u>defined using finite element analysis;</u> conducting a second simulated inspection, by <u>a</u> <u>model created based on the irregularity parameter using the re-defined second</u> <u>evaluation setting</u>, to provide a second waveform data set associated with the at least one irregularity (270, 450) parameter, the second waveform data set being of the reflection signal of the ultrasound of the virtual model, wherein the second simulated inspection is conducted using the re-defined second evaluation setting that is different from the first evaluation setting when the quality of the first virtual image (572) does not satisfy the predetermined threshold" (the underlines indicate the amended portions).

B Statements in the specification of the present application

Relating to the specifying matter of The Invention described in the above A, there are the following statements in the specification of the present application. Note that the following [0028], [0031], and [0032] are cited again because these were summed up only partially in the above-mentioned the No. 3, 3. "[0023]

In the exemplary embodiment, memory device 510 includes one or more devices (not shown) that enable information such as executable instructions and/or other data to be selectively stored and retrieved. In the exemplary embodiment, such data may include, but is not limited to, properties of composite materials, properties of ultrasonic waves, modeling data, imaging data, calibration curves, operational data, and/or control algorithms. In the exemplary embodiment, computer system 500 is configured to automatically <u>implement</u> a parametric <u>finite element analysis to determine a desired evaluation setting for use in inspecting</u> composite structure 200 and/or irregularity 270."

In the exemplary embodiment, imaging module 570 produces an image based on the waveform set, and determines whether a quality of the image satisfies a predetermined threshold. FIG. 6 is a screenshot of a virtual image 572 of composite structure 200 produced by imaging module 570. If the quality of the image satisfies the predetermined threshold, in the exemplary embodiment, evaluating module 580 identifies the predefined evaluation setting as a desired evaluation setting for use in inspecting composite structure 200. If the quality of the image does not satisfy the predetermined threshold, in the exemplary embodiment, evaluating module 580 iteratively repeats the process using a finite element analysis until at least one desired evaluation setting is identified."

"[0031]

FIG. 8 is a flowchart of an exemplary method 700 that may be implemented by computer system 500 to inspect composite structure 200 and/or irregularity 270. During operation, in the exemplary embodiment, at least one irregularity parameter is defined 710 by computer system 500 and/or a user. In the exemplary embodiment, the irregularity parameters may include an irregularity thickness 290, an irregularity width 300, an irregularity length, an irregularity location, and/or an irregularity shape. In the exemplary embodiment, a model is generated 720 based on the irregularity parameters, and the model is inspected 730 to provide a waveform data set associated with the irregularity parameter and/or the model. More specifically, in the exemplary embodiment, the model is inspected 730 using an evaluation setting associated with an ultrasonic testing (UT) source or stimulating mechanism defined by computer system 500 and/or the user.

[0032]

In the exemplary embodiment, an imaging algorithm is applied to produce 740 a virtual image based on the waveform set, and it is determined 750 whether a quality of the virtual image satisfies a predetermined threshold. If the quality of the virtual image satisfies the predetermined threshold, in the exemplary embodiment, the evaluation setting is identified 760 as a desired evaluation setting for use in inspecting composite structure 200. If the quality of the virtual image does not satisfy the predetermined threshold, in the exemplary embodiment, another evaluation setting associated with the stimulating mechanism is defined 770 by computer system 500 and/or the user, and another model is generated 720 based on the irregularity parameters using the redefined evaluation setting. For example, in the exemplary embodiment, the evaluation setting may be re-defined using a finite element analysis. Alternatively, the methods and systems to function as described herein. In the exemplary embodiment, method 700 is iteratively repeated until at least one desired evaluation setting is identified 760."

C Judgment

(A) Regarding evaluation setting

"The first evaluation setting" of The Invention is specified as a setting that: "includes at least a type of a stimulation source, a beam width of the stimulation source, a distance between the at least one stimulation mechanism and the composite structure, and a distance between the at least one stimulation mechanism and a sensor" that is "used" on the occasion of "conducting" "the first simulated inspection" "to transmit at least one wave simulation of ultrasound toward the virtual model, to provide a first waveform data set, the first waveform data set being of a reflection signal of the ultrasound"; is "used" "to perform physical inspection of the ultrasound of the composite structure by the stimulation mechanism of the ultrasound"; and is "identified as a desired evaluation setting for use in inspecting the composite structure (200)", and

"the second evaluation setting" of The Invention is specified as a setting that: is "another evaluation setting associated with the stimulation mechanism, and is a redefined evaluation setting that is re-defined using finite element analysis"; is "used" on the occasion of "conducting" "a second simulated inspection to provide a second waveform data set, the second waveform data set being of the reflection signal of the ultrasound"; is "the re-defined evaluation setting that is different from the first evaluation setting"; is "identified as a desired evaluation setting for use in inspecting the composite structure (200)"; is "used" "to perform physical inspection of the composite structure"; and is "used" "to transmit at least one physical wave toward the composite structure so as to physically inspect the composite structure".

From these specifying matters, "the first evaluation setting" and "the second evaluation setting" indicate setting of a type of a stimulation source, a beam width of the stimulation source, a distance between a stimulation mechanism and a composite structure, a distance between the stimulation mechanism and a sensor and the like, in the stimulation mechanism of ultrasound for inspecting a model.

(B) Regarding finite element analysis

By The Amendment, it has been specified that "second evaluation setting" is a setting that is "re-defined using finite element analysis". However, , it is not described how a type of a stimulation source, a beam width of a stimulation source, a distance between a stimulation mechanism and a composite structure, a distance between the stimulation mechanism and a sensor, and the like are redefined using finite element analysis by performing finite element analysis in what way and on what element, in the specification of the present application cited in the above B.

(C) Regarding creation of model, and inspection of model

By The Amendment, it is specified as "by a model generated based on the irregularity parameter using the re-defined second evaluation setting", and, also in the specification of the present application cited in the above B, there is the statement that "another model is created based on the irregularity parameter using the redefined evaluation setting 720".

However, "the second evaluation setting" indicates, as described in the above (A), setting of a type of a stimulation source, a beam width of the stimulation source, a distance between a stimulation mechanism and a composite structure, a distance between the stimulation mechanism and a sensor and the like, in the stimulation mechanism of ultrasound for inspecting a model, and, on this point, it is described, also in the specification of the present application cited in the above B, that "in the inspection of the model 730, the computer 500 to be defined by a user and/or an evaluation setting associated with a stimulation mechanism or with an ultrasound test (UT) source are used."

Therefore, although "generation of a model" is based on an irregularity parameter, it is not creation in which a model is created by elements such as "a type of a stimulation source, a beam width of the stimulation source, a distance between a stimulation mechanism and a composite structure, a distance between the stimulation mechanism and a sensor and the like, in the stimulation mechanism of ultrasound" for inspecting the generated model, and, therefore, if a model is created once again by changing the irregularity parameter, "a type of a stimulation source, a beam width of the stimulation source, a distance between a stimulation mechanism and a composite structure, a distance between the stimulation mechanism and a sensor, and the like, in the stimulation mechanism of ultrasound" for inspecting the model created once again will also differ.

Therefore, this results in the consequence that of failing to resolve the deficiency related to the indication that " when a quality of a virtual image does not satisfy a predetermined threshold, a model is re-created without carrying out model inspection after changing transmission conditions and the like of ultrasound in ultrasound simulation, this results in the consequence that ultrasound simulation is performed again using the new model, and determination of transmission conditions and the like for a model is not performed" pointed out in the above-mentioned No. 3 reason 3 (2), and it is not deemed that the detailed description of the invention is described clearly and sufficiently to the extent that The Invention is capable of being carried out by a person skilled in the art.

D Appellant's allegation

In "(4) Regarding reason 3 of the reasons for refusal" of the Written opinion, the appellant has not explained at all about reason 3 (2). In addition, in the Written opinion, the appellant alleges, as explanation for reason 1 (5) related to reason 3 (2), that "Regarding reason 1 (5), it is described, in paragraph [0031] of the specification at the time of application, that 'in the inspection of the model 730, the computer 500 to be defined by a user and/or an evaluation setting associated with a stimulation mechanism or with an ultrasound test (UT) source are used.', and also, in paragraph [0032], that 'by the computer system 500 and/or a user, another evaluation setting associated with a stimulation mechanism is defined in step 770, and, using the re-defined evaluation setting, another model is created based on the irregularity parameter 720.' In other words, it is obvious that, there are shown, in FIG. 8, inspection of a model using an evaluation setting 730, creation of another model based on an irregularity parameter using redefined evaluation setting 720, and re-definition of another evaluation setting 770. Then, since the amendment to revise Claims 1 and 5 to 'conducting a second simulated inspection, by a model created based on the irregularity parameter using the re-defined second evaluation setting, to provide a second waveform data set associated with the at least one irregularity (270, 450) parameter, the second waveform data set being of the reflection signal of the ultrasound of the virtual model, wherein the second simulated inspection is conducted using the re-defined second evaluation setting that is different from the first evaluation setting when the quality of the first virtual image (572) does not satisfy the predetermined threshold;' has been made as mentioned above, we consider that the contents of the invention have been made clear.".

However, in the Written opinion, there is no explanation regarding relation between "inspection of a model 730", "creation of a model 720" and "re-definition of an evaluation setting 770" in response to the matter of "if, when a quality of a virtual image does not satisfy a predetermined threshold, a model is re-created without carrying out model inspection after changing transmission conditions and the like of ultrasound in ultrasound simulation, this results in the consequence that ultrasound simulation is performed again using the new model, and determination of transmission conditions and the like for a model is not performed" pointed out in the above-mentioned No. 3 reason 3 (2). Therefore, reason 3 (2) of the Reasons for refusal 2 by the body is not resolved by the allegation of the Written opinion by the appellant.

E Summary

Accordingly, the matter pointed out in reason 3 (2) of the Reasons for refusal 2 by the body is not resolved even referring to the allegation of the Written opinion, and thus the detailed description of the invention does not meet the requirement stipulated in Article 36(4)(i) of the Patent Act because it is not deemed that it is described clearly and sufficiently to the extent that The Invention is capable of being carried out by a person skilled in the art.

(3) Regarding reason 3 (3)

A Statements of the specification of the present application

Regarding "defining at least one irregularity (270, 450) parameter" of The Invention, how to obtain such value (parameter) in advance on the occasion of

conducting simulation according to a modeling module is only described in the detailed description of the invention as "at least one irregularity parameter is determined by the computer system 500 and/or a user 710. In this exemplary embodiment, an irregularity parameter includes an irregularity thickness 290, an irregularity width 300, an irregularity length, an irregularity position, and/or an irregularity shape." ([0031]).

B Judgment

It is not described how to obtain a thickness, a width, a length, a position, and/or a shape of an irregularity in advance by the computer system 500 and/or a user, and thus it is unclear whether there is a certain level of standard derived from results of inspections in the past depending on a material to be used, a manufacturing method, a size, and the like, or it is due to experience of a user (skilled person), and thus it is not clear how to obtain a value of an irregularity parameter in advance.

Therefore, it is not deemed that the detailed description of the invention is described clearly and sufficiently to the extent that The Invention is capable of being carried out by a person skilled in the art.

C The appellant's allegation

The appellant persists in alleging, in the Written opinion, that "(4) Regarding reason 3 of the reasons for refusal

.... In addition, a thickness, width, length, position, and/or shape of an irregularity can be determined in advance by a computer and/or a user, and it can be understood by a person skilled in the art that a value for an irregularity parameter is arranged in such a way that it differs due to an irregularity of a model created based on the irregularity parameter, and, therefore, we think that the invention according to new Claim 1 can be carried out by a person skilled in the art.", and thus, the matter "whether there is a certain level of standard derived from results of inspections in the past depending on a material to be used, a manufacturing method, a size, and the like, or it is due to experience of a user (skilled person)" pointed out in reason 3 (3) of the Reasons for refusal 2 by the body is not explained.

Therefore, reason 3 (3) of the Reasons for refusal 2 by the body is not resolved by the allegation according to the Written opinion by the appellant.

D Summary

Accordingly, the matter pointed out in reason 3 (3) of the Reasons for refusal 2 by the body is not resolved even referring to the allegation of the Written opinion, and it is not deemed that the detailed description of the invention is described clearly and sufficiently to the extent that The Invention is capable of being carried out by a person skilled in the art. Therefore, it does not meet the requirement stipulated in Article 36(4)(i) of the Patent Act.

2 Regarding reason 1 (clarity)

(1) Regarding reason 1 (3)

Regarding the matter that, in "determining whether a quality of the first image (572) satisfies a predetermined threshold that enables the inspection of the composite structure related to the irregularity including a wrinkle" and "using the first evaluation setting to perform physical inspection of the ultrasound of the composite structure by

the stimulation mechanism of the ultrasound when the quality of the first image satisfies the predetermined threshold" of The Invention, it is unclear, as pointed out in reason 1 (3) of the Reasons for refusal 2 by the body, how to determine what value indicating "the quality of the first image" satisfies what value (threshold); this was not amended by The Amendment, and is still unclear. Therefore, on this point, as described in the above 1 (1), it does not become clear even referring to the specification of the present application and the allegation according to the Written opinion by the appellant.

Therefore, the statement of Claim 1 of the present application is unclear in the above point, and it does not meet the requirement stipulated in Patent Act Article 36(6)(ii).

(2) Regarding reason 1 (4)

The matter pointed out in the above-mentioned No. 3 reason 1 (4) has been amended by The Amendment to

"defining another evaluation setting associated with the stimulation mechanism as <u>a re-defined</u> second evaluation setting <u>re-defined using finite element analysis</u>; conducting a second simulated inspection, by <u>a model created based on the irregularity parameter</u> <u>using the re-defined second evaluation setting</u>, to provide a second waveform data set associated with the at least one irregularity (270, 450) parameter, the second waveform data set being of the reflection signal of the ultrasound of the virtual model, wherein the second simulated inspection is conducted using the re-defined second evaluation setting that is different from the first evaluation setting when the quality of the first virtual image (572) does not satisfy the predetermined threshold" (the underlines indicate the amended portions).

However, as mentioned in the above 1 (2), while "the second evaluation setting" is a setting for setting of a type of a stimulation source, a beam width of the stimulation source, a distance between a stimulation mechanism and a composite structure, a distance between the stimulation mechanism and a sensor, and the like, in the stimulation mechanism of ultrasound for inspecting a model, it is specified as "a model created based on the irregularity parameter using the re-defined second evaluation setting". Therefore, it is not deemed that it is clear whether "second evaluation setting" is a setting for inspecting a model, or for creating a model. In addition, also regarding "re-defining using finite element analysis", it cannot be said that it is clear as to what element finite element analysis is applied on the occasion of conducting "second evaluation setting".

Therefore, the statement of Claim 1 of the present application is unclear in the above point, and thus it does not meet the requirement stipulated in Patent Act Article 36(6)(ii).

(3) Regarding reason 1 (5)

Since the matter pointed out in the above-mentioned No. 3 reason 1 (5) as "result in the consequence that the above step "770" in FIG. 8 is not repeated, and thus it is not deemed that the invention is specified sufficiently from technical perspective ." was not amended by The Amendment, and also there is no explanation at all in the Written opinion, still it is not deemed that it is clear whether it is carried out only once, or it is repeated a plurality of times (until "a quality of the virtual image (572) satisfies a predetermined threshold that enables to inspect the composite structure related to

irregularities including a wrinkle", after "producing a second virtual image (572)" "based on a waveform data set").

In addition, regarding the indication that "it can be also said, from the specifying matter in question, that the step "770" in the above-mentioned FIG. 8 returns to the step "730 (Inspect model)". However, in reality, it returns to the step "720 (Generate model)" in FIG. 8, and thus relation between the both is unclear.", it is specified by The Amendment as "by a model generated based on the irregularity parameter using the re-defined second evaluation setting" as has been described in the above (2). On the other hand, as described in the above-mentioned 1 (2) C (A), it is specified that "the second evaluation setting" of The Invention is a setting that is "another evaluation setting associated with the stimulation mechanism, and is a redefined evaluation setting that is re-defined using finite element analysis", is a setting that is "used" on the occasion of "conducting" "a second simulated inspection to provide a second waveform data set, the second waveform data set being of the reflection signal of the ultrasound", is "the re-defined evaluation setting that is different from the first evaluation setting", is a setting that is "identified as a desired evaluation setting for use in inspecting the composite structure (200)", is a setting that is "used" "to perform physical inspection of the composite structure", and is a setting that is "used" "to transmit at least one physical wave toward the composite structure so as to physically inspect the composite structure", and, from these specifying matters, "the second evaluation setting" is a setting for inspecting a model.

Therefore, still it cannot be said that it is technically clear whether the processing returns to the step "730 (Inspect model)", or returns to the step "720 (Create model)", by "the second evaluation setting".

Accordingly, the statement of Claim 1 of the present application is unclear in the above point, and does not meet the requirement stipulated in Patent Act Article 36(6)(ii).

No. 5 Closing

From the above, the statement of Claim 1 of the present application is unclear, and, it is not deemed that the detailed description of the invention is described clearly and sufficiently to the extent that The Invention is capable of being carried out by a person skilled in the art, and, therefore, in the present application, the statement of the scope of claims does not meet the requirement stipulated in Article 36(6)(ii) of the Patent Act, and, the statement of the detailed description of the invention does not meet the requirement stipulated in Article 36(4)(i) of the Patent Act, and thus the application should be rejected.

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

Feb. 7, 2019

Chief administrative judge: ITO, Masaya Administrative judge: MISAKI, Hitoshi Administrative judge: WATADO, Masayoshi