Appeal decision

Appeal No. 2019-2309

Appellant Asphericon GmbH

Patent Attorney Minori Patent Profession Corporation

The case of appeal against the examiner's decision of refusal of Japanese Patent Application No. 2015-94725, entitled "METHOD AND DEVICE FOR MEASURING DECENTRATION AND TILT OF SURFACES OF OPTICAL ELEMENT" [the application published on Dec. 10, 2015: Japanese Unexamined Patent Application Publication No. 2015-222252], 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 in foreign language whose application date was May 7, 2015 (Heisei 27) (priority claim under the Paris Convention received by the foreign receiving office on May 8, 2014, Federal Republic of Germany), and its history of procedures is as follows.

Jul. 3, 2015 : Submission of a translation

As of Feb. 19, 2018: A notification of reasons for refusal

May 30, 2018 : Submission of a written opinion and a written amendment

As of Oct. 19, 2018: A decision of refusal (hereinafter, referred to as "Examiner's decision")

(date of delivery of a copy of the original of the examiner's decision: Oct. 24, 2018)

Feb. 20, 2019 : Submission of a written request for appeal

No. 2 The Invention

The inventions according to Claims 1-11 of the present application (hereinafter,

individually referred to as "Invention 1" to "Invention 11", and these are generally referred to as "the Invention") are specified by the matters recited in Claims 1-11 of the Scope of Claims amended by the written amendment submitted on May 30, 2018, as follows.

"[Claim 1]

A method for measuring a decentration (D) and a tilt (V) of surfaces of an optical element (1), the method comprising:

registering at least all optically used partial surfaces and frame-relevant partial surfaces (1.1 to 1.5) of a surface of the optical element (1) and reference faces of the optical element (1) over a whole area of the optical element (1) and referenced to one another in a common coordinate system;

calculating, in each case, a surface form deviation of the partial surfaces (1.1 to 1.5) and the reference faces relative to an associated intended surface stored for the optical element (1);

determining a location of the partial surfaces (1.1 to 1.5) and the reference faces in the common coordinate system from the respective surface form deviations; and

calculating at least one tilt (V) and at least one decentration (D) from the location as a function of a form of the respective partial surfaces and the reference faces in the common coordinate system.

[Claim 2]

The method as claimed in Claim 1,

wherein at least one defined pattern is projected onto the partial surfaces (1.1 to 1.5) and the reference faces of the optical element (1) for registering the at least one defined pattern,

wherein the partial surfaces (1.1 to 1.5), the reference faces, and the at least one projected pattern are registered optically, and

wherein the shaping of the partial surfaces (1.1 to 1.5) and the reference faces is calculated based on a deviation of the at least one defined pattern from an intended pattern which results from a shaping of the partial surfaces and the reference faces.

[Claim 3]

The method as claimed in Claim 2, wherein the registration of all the partial surfaces (1.1 to 1.5) and the reference faces is carried out simultaneously.

[Claim 4]

The method as claimed in any one of Claims 1 to 3,

wherein at least one distance measurement sensor is moved linearly along a

movement axis over the partial surfaces (1.1 to 1.5) and the reference faces so as to register the partial surfaces (1.1 to 1.5) and the reference faces of the optical element (1) and a distance is determined between the corresponding partial surface (1.1 to 1.5) or reference face and the distance measurement sensor, and

wherein the optical element (1) is substantially simultaneously rotated about an axis of rotation extending substantially perpendicular to the movement axis of the distance measurement sensor in such a way that a spiral whole-area scan of the corresponding partial surface (1.1 to 1.5) and reference face is carried out.

[Claim 5]

The method as claimed in Claim 4,

wherein the at least one distance measurement sensor is aligned such that, at each measuring point, the optical axis of the sensor respectively extends perpendicular to the reference face and partial surface (1.1 to 1.5) to be measured.

[Claim 6]

A device (2) for measuring a decentration (D) and tilt (V) of faces of an optical element (1), the device comprising:

at least one measurement unit (2.1, 2.2) for registering at least all optically used partial surfaces and frame-relevant partial surfaces of a surface of the optical element (1) and reference faces of the optical element (1); and

at least one evaluation unit (2.3) for referencing the partial surfaces (1.1 to 1.5) and the reference faces in a common coordinate system for comparing the registered partial surfaces (1.1 to 1.5) and the reference faces with a respectively associated intended surface and for calculating a surface form deviation of the partial surfaces (1.1 to 1.5) and the reference faces, in each case relative to the associated intended surface stored for the optical element (1),

wherein a location of the partial surfaces (1.1 to 1.5) and the reference faces in the common coordinate system is respectively capable of being calculated from each surface form deviation, and

wherein at least one tilt (V) and at least one decentration (D) are capable of being calculated from the location as a function of a form of the respective partial surface (1.1 to 1.5) and reference face in the common coordinate system.

[Claim 7]

The device (2) as claimed in Claim 6, further comprising:

at least one projection unit (2.1.3, 2.2.3) projecting at least one defined pattern onto the partial surfaces (1.1 to 1.5) and the reference faces;

at least one optical registration unit (2.1.1, 2.1.2, 2.2.1, 2.2.2) registering the

partial surfaces (1.1 to 1.5) and the reference faces and the at least one pattern; and

an evaluation unit (2.3) calculating a shaping of the partial surfaces (1.1 to 1.5) and the reference faces from a deviation of the at least one defined pattern from an intended pattern resulting from the shaping of the partial surfaces (1.1 to 1.5) and the reference faces.

[Claim 8]

The device as claimed in Claim 6 or 7,

wherein provision is made for a receptacle unit (2.5) for receiving the optical element (1),

wherein two measurement units (2.1, 2.2) are provided and in each case comprise at least one projection unit (2.1.3, 2.2.3) projecting at least one defined pattern onto the partial surfaces (1.1 to 1.5) and the reference faces and

at least two optical registration units (2.1.1, 2.1.2, 2.2.1, 2.2.2) registering the partial surfaces (1.1 to 1.5) and the reference faces and the at least one pattern,

wherein an evaluation unit (2.3) is provided so as to calculate a shaping of the partial surfaces (1.1 to 1.5) and the reference faces from a deviation of the at least one defined pattern from an intended pattern resulting from the shaping of the partial surfaces (1.1 to 1.5) and the reference faces,

wherein one of the projection units (2.1.3, 2.2.3) is arranged above the receptacle unit (2.5) and one of the projection units (2.1.3, 2.2.3) is arranged below the receptacle unit (2.5),

wherein at least one of the optical registration units (2.1.1, 2.1.2, 2.2.1, 2.2.2) is arranged above the receptacle unit (2.5), and at least one of the optical registration units (2.1.1, 2.1.2, 2.2.1, 2.2.2) is arranged below the receptacle unit (2.5), and

wherein the optical registration units (2.1.1, 2.1.2, 2.2.1, 2.2.2) are arranged such that the partial surfaces (1.1 to 1.5) and the reference faces are optically registrable at the same time.

[Claim 9]

The device (2) as claimed in Claim 7 or 8,

wherein the at least one optical registration unit (2.1.1, 2.1.2, 2.2.1, 2.2.2) is a stereo camera, and

wherein the evaluation unit (2.3) is configured for a stereoscopic evaluation of image data registered by the stereo camera.

[Claim 10]

The device (2) as claimed in any one of Claims 6 to 9,

wherein the measurement unit (2.1, 2.2) comprises at least one distance

measurement sensor for registering the partial surfaces (1.1 to 1.5) and the reference faces of the optical element (1), and

wherein the distance measurement sensor is linearly movable over the partial surfaces (1.1 to 1.5) and the reference faces along a movement axis and determines a distance between the corresponding partial surface (1.1 to 1.5) or reference face and the distance measurement sensor.

[Claim 11]

The device (2) as claimed in Claim 10, wherein the distance measurement sensor is a light wave-based interferometer."

No. 3 Reasons for refusal stated in the examiner's decision

An outline of reasons for refusal stated in the examiner's decision is as follows.

Reason 1. (Clarity)

Although there is a statement, in Claims 1 and 6 of the present application, as "the reference faces of the optical element (1)", there is no description, regarding "the reference faces", to stipulate what kind of faces they are, and thus, only by expression as "the reference faces", it cannot be grasped specifically what kind of faces they are (such as these are "reference" of what, and whether these are faces provided in the optical element (1) itself or faces provided in another element and the like) even if the Detailed Description of the Invention is taken into consideration, and thus it is unclear.

Therefore, since it cannot be said that the Invention is clear, the statements of the Scope of Claims of the present application do not meet the requirement stipulated in Article 36(6)(ii) of the Patent Act.

Reason 2. (Novelty)

Since Inventions 1, 4-6, 8, and 10-11 are inventions described in the following Cited Document 1, these fall under Article 29(1)(iii) of the Patent Act, and the appellant should not be granted a patent for these.

Reason 3. (Inventive step)

Since Inventions 1, 4-6, 8, and 10-11 are ones that could have been invented with ease by a person ordinarily skilled in the art in the technical field of the Invention prior to the filing of the application based on the inventions described in the following Cited Document 1, the appellant should not be granted a patent for these in accordance

with the provisions of Article 29(2) of the Patent Act.

Since Inventions 2-3, 7, and 9 are ones that could have been invented with ease by a person ordinarily skilled in the art in the technical field of the Invention prior to the filing of the application based on the inventions described in the following Cited Documents 1 and 2, the appellant should not be granted a patent for these in accordance with the provisions of Article 29(2) of the Patent Act.

Note

Cited Document 1: Japanese Unexamined Patent Application Publication No. H11-051624

Cited Document 2: Japanese Unexamined Patent Application Publication No. 2009-244226

No. 4 Judgment by the body on Reason 1

1 Regarding the statements of Claim 1

(1) The constitution of Invention 1

Invention 1 is an invention of "A method for measuring a decentration (D) and a tilt (V) of surfaces of an optical element (1)", and the constitution thereof is separately described into the following A-D. The underlines were given by the body.

A "registering at least all optically used partial surfaces and frame-relevant partial surfaces (1.1 to 1.5) of a surface of the optical element (1) and reference faces of the optical element (1) over a whole area of the optical element (1) and referenced to one another in a common coordinate system;"

B "calculating, in each case, a surface form deviation of the partial surfaces (1.1 to 1.5) and the reference faces relative to an associated intended surface stored for the optical element (1);"

C "determining a location of the partial surfaces (1.1 to 1.5) and the reference faces in the common coordinate system from the respective surface form deviations;"

D "calculating at least one tilt (V) and at least one decentration (D) from the location as a function of a form of the respective partial surfaces (1.1 to 1.5) and the

reference faces in the common coordinate system"

(2) Regarding "the reference faces of the optical element (1)"

Although, in the above-mentioned constitutions A-D of Invention 1, there is a matter specifying the invention as "reference faces of the optical element (1)" and "the reference faces" (hereinafter, these are generally referred to as simply "the reference face"), it is not clearly described in Claim 1 which portion is indicated by "the reference face". Therefore, in order to identify which portion is indicated by "the reference face" of Invention 1, examination will be conducted below while also referring to the statements of the description and the drawings of the present application.

A When the statement "at least all optically used partial surfaces and frame-relevant partial surfaces (1.1 to 1.5) of a surface of the optical element (1) and reference faces of the optical element (1)" of the above-mentioned constitution A is interpreted literally, it can be understood that "the optical element (1)" has "at least all optically used partial surfaces and frame-relevant partial surfaces (1.1 to 1.5) of a surface of the optical element (1)" (hereinafter, simply referred to as "the Partial surfaces (1.1 to 1.5)") and "the reference face".

When the statements of the foreign language document attached to the application of the present application are confirmed just in case, in "1." of "PATENT CLAIMS" thereof, it is described that "at least all optically used and frame-relevant partial surfaces (1.1 to 1.5) of a surface of the optical element (1) and the reference faces of the optical element (1)", and, in addition, when confirming the statements of the priority certificate of the present application, it is described in "1." of "PATENTSPUECHE" that "zumindest alle optisch genutzten und fassungsrelevanten Teiloberflaechen (1.1 bis 1.5) einer Oberflaeche des optischen Elements (1) und Referenzflaechen des optischen Elements (1)". Therefore, it is not recognized that, in the above-mentioned statements of the constitution A, mistranslation in Japanese terms is included, and, more particularly, the statements of the foreign-language original text as "of the optical element (1)" and "des optischen Elements (1)" mean being included in the optical element (1) or belonging to the optical element (1), and thus it can be said that such understanding as above is reasonable also in the light of the above-mentioned foreign-language original text.

B Based on the understanding described in the above-mentioned A, first, when referring to the statements of the description and the drawings of the present

application regarding which portion of "the optical element (1)" is indicated by "partial surfaces (1.1 to 1.5)", it is described in paragraph [0032] that "FIG. 1 depicts an optical element 1, embodied as an optical lens, with a first optically used partial surface 1.1 embodied as a spherical face, a second optically used partial surface 1.2 embodied as an aspherical face, and three frame-relevant partial surfaces 1.3 to 1.5. Here, a frame-relevant partial surface 1.3 to 1.5 is understood to mean a partial surface 1.3 to 1.5 of the optical element 1 which, during a later use of the optical element 1, is embodied for arranging same in a frame.", and, with reference to the illustrated content of [FIG. 1], since it is understood that the optical element 1 is one for which all of its surfaces are prescribed by the first partial surface 1.1, the second partial surface 1.2, and the frame-relevant partial surfaces 1.3, 1.4, and 1.5, it is interpretated that "partial surfaces (1.1 to 1.5)" indicate the whole surface of the surface of "the optical element (1)".

C Next, when referring to the statements of the description and the drawings of the present application regarding which portion of "the optical element (1)" is indicated by "the reference face", in paragraphs [0038], [0040], [0041], [0044], and [0045], it is described to the effect that "the reference face" is "not shown", and thus the position of "the reference face" cannot be identified only from the illustrated content of the drawings of [FIG. 1] to [FIG. 4] of the present application.

"[FIG. 1]

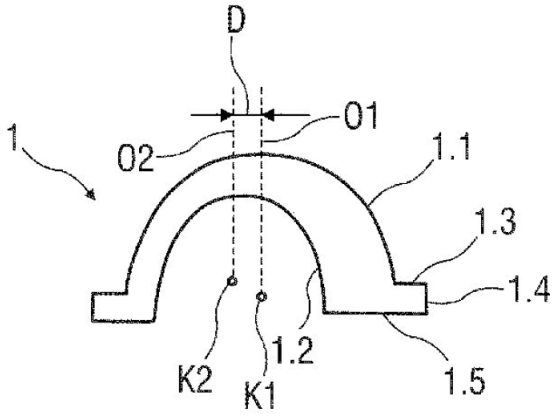

FIG 1

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"[FIG. 2]

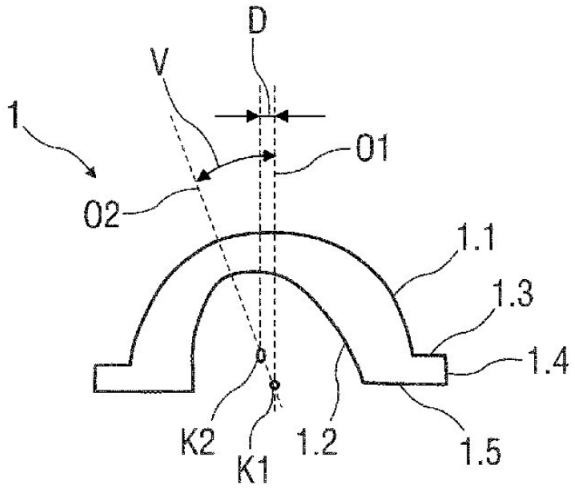

FIG 2

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"[FIG. 3]

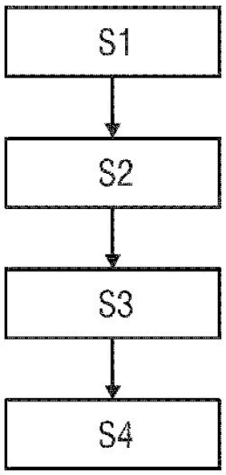

FIG 3

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"[FIG. 4]

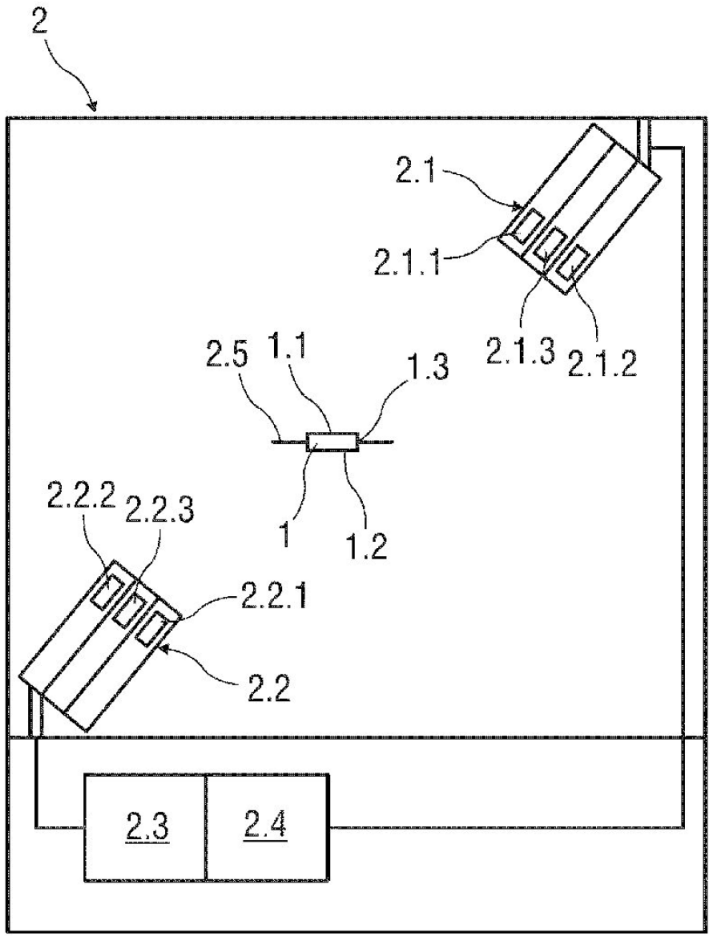

FIG 4

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D Therefore, when focusing attention on other statements of the description related to "the reference face", it is described in paragraph [0040] that "In accordance with a first exemplary embodiment of the method, the partial surfaces 1.1 to 1.5 and the reference faces (not shown here) are, for example, registered by means of a method described in "LUPHOScan - Fast non-contact 3D topology measurement of spheres, aspheres, flats, and freeform; Luphos GmbH, Weberstrase 21, 55130 Mainz, Germany; 05/2013" and/or by means of a device described therein. Here, in particular, a spiral whole-area scan of the corresponding surface is carried out such that a three-dimensional image of the same is registered. In order to realize this, at least one distance measurement sensor is moved linearly along a movement axis over the partial surfaces 1.1 to 1.5 and reference faces (in a manner not depicted in any more detail) for registering

the partial surfaces 1.1 to 1.5 and reference faces of the optical element 1. In addition, a distance between the corresponding partial surface 1.1 to 1.5 or reference face and the distance measurement sensor is calculated. At the same time, the optical element is rotated about an axis of rotation extending substantially perpendicular to the movement axis of the distance measurement sensor in such a way that the spiral whole-area scan of the corresponding partial surface 1.1 to 1.5 and of the reference face is performed." Therefore, it is recognized that "the reference face" is a face to be a measurement target as with "partial surfaces (1.1 to 1.5)", is not a face virtually set into "the optical element (1)", but is a face actually existing in "the optical element (1)".

Then, since, it is described, in the same paragraph, that "In the process, the distance measurement sensor is aligned in such a way that, at each measurement point, the optical axis thereof in each case extends perpendicular to the reference face and partial surface 1.5 to be measured. In the case of the example, the distance measurement sensor is a light wave-based interferometer.", it can be read that "the reference face" and "partial surface 1.5" are faces that are "vertical" to an "optical axis" of "distance measurement sensor"; that is, "the reference face" and "partial surface 1.5" are parallel to each other.

E Then, "the reference face" is a face actually existing in "the optical element (1)", and is a face parallel to "partial surface 1.5", and, with reference to the illustrated content of [FIG. 1], "partial surface 1.3" and "partial surface 1.5" are faces existing in the optical element 1, both can be seen in such a way that they are parallel, and thus it is considered as if "the reference face" of Invention 1 indicates "partial surface 1.3". Regarding this point, also the Appellant alleges in the written opinion submitted on May 30, 2018 that "the specific constitution of the reference face is illustrated in FIG. 1, for example, as the partial surface 1.3."

F However, to interpretate that "the reference face" of Invention 1 indicates "partial surface 1.3" results in the consequence that inconsistency or discrepancy in description is caused as will be described in the following (A)-(C), and thus such interpretation cannot be jusitified.

(A) First, if "the reference face" indicates the "partial surface 1.3", since the latter is clearly indicated as "1.3" in [FIG. 1], it is natural to describe in the description to the effect, for example, that the reference face is the partial surface 1.3. However, as mentioned in the above C, "the reference face" is treated as "not shown" in the description, and thus there is no consistency as description of "the reference face".

(B) In addition, in the above-mentioned constitution A, there are described "Partial surfaces (1.1 to 1.5) and reference faces of the optical element (1)", and, also in the constitutions B-D, there are described "partial surfaces (1.1 to 1.5) and the reference faces", and, therefore, in all of the above-mentioned constitutions A-D, "the reference face" is being treated as a different component from "partial surfaces (1.1 to 1.5)". Then, although "the reference face" is a face included in "the optical element (1)", it is one that does not belong to "partial surfaces (1.1 to 1.5)", and thus it is natural to understand that "partial surfaces (1.1 to 1.5)" and "the reference face" are different portions.

On the one hand, the interpretation that "the reference face" indicates "partial surface 1.3" is premised on the matter that "the reference face" may be a component that is not different from the "partial surfaces (1.1 to 1.5)", and, therefore, such premise is incompatible with the above-mentioned matter.

(C) Referring to the statements of the description relating to this point, in paragraph [0050], it is described that "FIG. 4 shows a possible exemplary embodiment of a device 2 according to the invention for measuring at least one decentration D and at least one tilt V of the partial surfaces 1.1 to 1.3 and reference faces of an optical element 1. Here, the optical element 1 is greatly simplified with two optically used partial surfaces 1.1, 1.2 and one frame-relevant partial surface 1.3. However, the device 2 is embodied for measuring decentrations D and tilts V of any optical element 1 with any number and arrangement of optically used and frame-relevant partial surfaces 1.1 to 1.5 and reference faces.", and thus, even if it is a case in which the optical element 1 is "greatly simplified with two optically used partial surfaces 1.1, 1.2 and one frame-relevant partial surface 1.3", the "partial surface 1.3" and "the reference face" are being discussed separately, and, therefore, it is obvious that the interpretation that "the reference face" indicates the "partial surface 1.3" is unreasonable.

G When the matters examined above are integrated, after all, even if the statements of the description and the drawings of the present application are taking into consideration, it cannot be identified which portion of "the optical element (1)" is indicated by "the reference face" of Invention 1.

(3) Regarding clarity of Invention 1

A In all of the above-mentioned constitutions A-D of Invention 1, "the

reference face" is treated equivalently to the "partial surfaces (1.1 to 1.5)", and, in the same manner as "shape", "surface form deviations" and "location" of "partial surfaces (1.1 to 1.5)" are being prescribed, also regarding "the reference face", its "shape", "surface form deviations", and "location" are being prescribed. Therefore, it can be read from the above-mentioned constitutions A-D that, "for measuring a decentration (D) and a tilt (V) of surfaces of an optical element (1)", not only information obtained on "partial surfaces (1.1 to 1.5)" but also information obtained on "the reference face" must be utilized.

However, as mentioned above, regarding the matter that which portion of "the optical element (1)" is indicated by "the reference face" of Invention 1, it cannot be identified even if the statements of the description and the drawings of the present application are taking into consideration, and, therefore, on the occasion of "measuring a decentration (D) and a tilt (V) of surfaces of an optical element (1)", even a person skilled in the art cannot so much as take aim at which face should be made "the reference face". In addition, as long as the matter of which portion of "the optical element (1)" is indicated by "the reference face" of Invention 1, the scope of Invention 1 cannot be identified either, and, therefore, it cannot be said that a person ordinarily skilled in the art can judge whether or not a certain existent specific measurement method is included in the scope of Invention 1.

B In addition, as described in the above-mentioned (2)B, although "partial surfaces (1.1 to 1.5)" are understood as ones that indicate the whole surface of the surface of "the optical element (1)", assuming that "the reference face" is a face actually existing in "the optical element (1)", "the reference face" would have to be understood as belonging to any of partial surfaces 1.1, 1.2, 1.3, 1.4, and 1.5.

Then, although affirmative supporting statements cannot be found in the description and the drawings of the present application, when trying to examine the case that Invention 1 is interpretated on the body's discretion as one in which any of these partial surfaces 1.1-1.5 is arbitrarily selected to be "the reference face", since "partial surfaces (1.1 to 1.5)" and "the reference face" are treated equivalently in the above constitutions A-D as described in the above-mentioned A, the significance of arbitrarily selecting any of the partial surfaces 1.1-1.5 and positioning it as "the reference face" is unclear.

C Furthermore, departing from the premise that "the reference face" is an actually existing face of "the optical element (1)", when it is interpreted, for example, as

the reference face is a virtual face set into "the optical element (1)", or as, in the first place, it is not a face included in "the optical element (1)" but may be an any face capable of being referred to by "the optical element (1)",how to set "the reference face" should still be more disclosed appropriately. However, as confirmed so far, such disclosure does not exist even referring to the description and the drawings, and thus, even when such interpretation is made, unclarity still remains.

D As mentioned above, regarding the matter of which portion is indicated by "the reference face", no matter how examination is made while referring to the description and the drawings, there is still a lack of clarity in Invention 1.

2 Regarding statements of Claim 6

While Invention 6 is an invention of "a device for measuring a decentration (D) and tilt (V) of faces of an optical element (1)", and, as with Invention 1, there is a matter specifying the invention as "the reference face" in its constitution, Claim 6 does not provide a clear description regarding the matter of which portion is indicated by "the reference face", and thus the content examined in the above-mentioned 1 applies to Invention 6 in a similar fashion.

Therefore, it cannot be said that Invention 6 is clear.

3 Appellant's allegations

(1) Allegations in the written request for appeal

The Appellant alleges, in the written request for appeal, that

"(1) Regarding clarity (Article 36(6)(ii) of the Patent Act)

In the reasons for refusal, it has been indicated that 'the reference face' described in Claims 1 and 6 is unclear.

On this point, a person ordinarily skilled in the art in the technical field of optics considers that the expression 'the reference face' is clear, as indicated, for example, in the following material. For example, in the industry standard ISO 10110-19, 'Drawing methods for optical elements and systems - Part 19: General description of surfaces and components' (the original text is written in English), there is a description regarding Referencing; that is, a reference face ('the reference face' in the original text of the description of the present application). The details are as follows.

'4 Referencing

4.1 General

A general surface is associated with a coordinate system used in a process chain

to define a focal point tolerance, which is called so in, for example, ISO 5459. As shown in FIG. 1, the general surface has three essential coordinate systems.

- Origin of mathematical description;
- Reference coordinate system in the intersection between a reference axis and a surface; and
- Component reference point.

Note: Provided that the origin of mathematical description of a surface exists outside the surface area to be used, use of two different reference axes may be useful; that is, one reference axis for manufacturing (for example, a high-speed-tool servo processing axis), and one reference coordinate system for measurement. Although both of the coordinate systems have geometric meaning, these are not physical ones, and, therefore, are useful in being referred to by a component reference point. Referencing establishes a well-defined reference of a general surface in both of a coordinate system of process machines and measurement devices, and high level assemblies. (Cited from page 2 of ISO 10110-19:2015 in a translated form, and the underlines were added by the applicant)'

In this way, it is clear for a person ordinarily skilled in the art that a reference surface (the same applies to a reference face) is accessible (for the purpose of measurement) during manufacturing (that is, this means a coordinate system of a process machine) and also in an assembled state (that is, this means a high level assembly).

In addition, the term 'reference face (surface)' is absolutely the same as those of publications in the technical field of optics (these are ones by authors having absolutely nothing to do with the applicant). For example, it is also mentioned in an educational material 'Mounting of Optical Components, Mounting of Lenses' by Jim Burge, professor, The University of Arizona.

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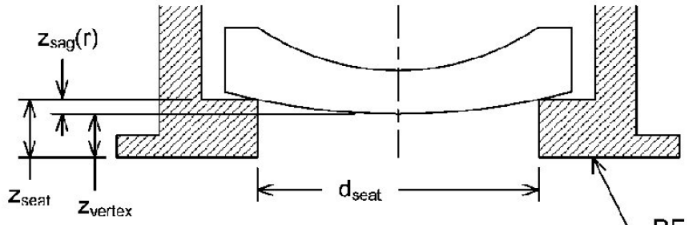
Issues with the sharp corner

- **Provides highest accuracy, and is easy to verify**
- **Potentially large contact stresses**
  - **For most applications, these will not cause any risk**
- **Sharp corners are susceptible to damage or to burrs**
  - **Standard practice of "breaking corners" will result in loss of accuracy**
- **"Sharp" corner with radius > 0.002" can be considered as toroidal seat**



$$z_{vertex} = z_{seat} - z_{sag}(r)$$

$$z_{vertex} = z_{seat} - R_{lens} + \sqrt{R_{lens}^2 - \left(\frac{d_{seat}}{2}\right)^2}$$

J. H. Burge 8

参照表面　　REFERENCE SURFACE

(Cited from https://wp.optics.arizona.edu/optomech/wp-content/uploads/sites/53/2016/08/26-Mounting-of-lenses-1.pdf)

As mentioned above, the reference face is a general term in the technical field to which the Invention belongs, and it is considered that the meaning thereof is clear." (the underlines were given by the body, and the same applies hereafter).

However, even if the term "the reference face" is a term generally used in the technical field to which the Invention belongs as the Appellant alleges, that and the matter of which portion is specifically indicated by "the reference face" of the Invention, are different issues, in addition, precisely because it is a general term, if it is not adequately disclosed which portion is indicated by "the reference face" in the Invention, it will lack clarity.

Further, according to the above-mentioned educational material presented by the Appellant, although it can be read that the portion indicated by an arrow as "REFERENCE SURFACE" is a bottom face of the mount part of an optical component

(lens), as has been mentioned in the above 1(2)A, it is understood as "the reference face" of the Invention is one included in "the optical element (1)", and, therefore, even if it is alleged to the effect that a bottom face of the mount part of the optical component (lens) is the reference surface, it does not make clear which portion is "the reference face" of the Invention.

Accordingly, the above-mentioned allegation of the Appellant cannot be adopted.

(2) Allegation in the written opinion

The Appellant alleges, in the written opinion submitted on May 30, 2018, that "(4) 'Regarding the reference face'

In general technical meaning, a reference face is a face capable of being accessed for the purpose of measurement, both when an optical element has been attached to a frame, and when it is not yet attached. A specific constitution of the reference face is illustrated in FIG. 1 as the partial surface 1.3, for example. When an optically used face and a frame-relevant face are determined as reference faces relating to one common coordinate system, the reference faces become a link, and a measured value performed at a position not attached to the frame can be referred to in the optical element attached to the frame. According to this method, in a state that an optical element is not attached to a frame, there is an advantage that the optical element can be more easily measured.

The technical meaning of 'the reference face' in the Invention is supported by the disclosure, in paragraph [0015], that registration of all the partial surfaces and reference faces is carried out simultaneously, and by the description in paragraph [0016] that the partial surfaces and the reference faces undergo whole surface scan. From these descriptions, it can be understood that the reference face needs to be accessible at a position where an optical element is not being attached to (not being mounted on) a frame. In addition, as further support, in paragraphs [0018]-[0020], it is disclosed that all measurement also including measurement related to the reference face is executed in one working step, and, from paragraphs [0022]-[0023], it can be understood that a device is designed so as to make the partial surfaces and the reference faces be optically registered simultaneously.

On the other hand, definitely, it is not clearly indicated that the reference face is capable of being accessed after an optical element has been attached to a frame. However, the Invention is an invention for measuring decentration and tilt of an optical element, and it is considered that it is clear for a person ordinarily skilled in the art that the purpose of the reference face is to provide reference between a state of being attached

to a frame and a state not being attached to the frame. It is considered that it is obvious for a person ordinarily skilled in the art that, for this purpose, the reference face needs to be accessible also at a position having been attached to a frame. The partial surface 1.3 is one that technically satisfies these requirements."

However, as mentioned in the above 1(2)F, it cannot be understood as "the reference face" indicates the "partial surface 1.3".

Therefore, the above-mentioned allegation of the Appellant cannot be adopted.

No. 5 Closing

As above, since it cannot be said that the Invention is clear, the present application is one in which the statements of the Scope of Claims do not meet the requirement stipulated in Article 36(6)(ii) of the Patent Act, and thus, without examining other reasons, should be rejected.

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

December 19, 2019

Chief administrative judge: KOBAYASHI, Norifumi
Administrative judge: HAMANO, Takashi
Administrative judge: KAJITA, Shinya