Appeal decision

Appeal No. 2015- 14545

Osaka, Japan
Appellant PANASONIC INTELLECTUAL PROPERTY MANAGEMENT CORPORATION

Osaka, Japan
Patent Attorney KAMATA, Kenji

Osaka, Japan
Patent Attorney MAEDA, Hiroo

The case of appeal against the examiner's decision of refusal of Japanese Patent Application No. 2012-521321 "OPTICAL REFLECTING DEVICE" [international publication No. WO2011/161943 published on December 29, 2011] has resulted in the following decision:

Conclusion

The appeal of the case was groundless.

Reason

1 History of the procedures

June 21, 2011	International patent application (Internal priority claim on June 24, 2010)
October 13, 2011	Written amendment pursuant to Article 19(1) of the Patent Cooperation Treaty (Copy submitted on November 9, 2012)
March 17, 2014	Written amendment
November 25, 2014	Notice of reasons for refusal (Dispatched on December 2, 2014)
December 25, 2014	Written opinion
May 29, 2015	The examiner's decision of refusal (Transmitted on June 2, 2015)

August 3, 2015 The appeal of the case

2 Reasons for refusal stated in the examiner's decision

The reasons for refusal stated in the examiner's decision include reasons (1), (2) below.

(1) Since the amendment made on March 17, 2014 (hereinafter referred to as "the Amendment") was not made within a scope of matters described in the description, the scope of claims, or drawings originally attached in the application (hereinafter referred to as "the original description, etc."), the Amendment does not meet the requirement stipulated in Article 17-2(3) of the Patent Act.

(2) Since the invention relating to Claim 1 is not what is described in the detailed description of the invention, the invention does not meet the requirement stipulated in Article 36(6)1 of the Patent Act.

3 The Amendment and the invention

The Amendment amends the full text of the scope of claims and paragraph 0008 of the description to (1), (2) described below. The invention relating to Claim 1 of the application (hereinafter, referred to as "the Invention") is specified by the matters described in Claim 1 after the Amendment. (Note by the body: Underlines are added to amended places by the appellant.)

(1) The full text of the scope of claims

"[Claim 1]

An optical reflecting device comprising:

a fixed frame;

a pair of first oscillation parts of which one-side ends are connected to an inside of the fixed frame;

a pivotable movable frame connected to and held by the other-side ends of the pair of first oscillation parts;

a pair of second oscillation parts of which one-side ends are connected to an inside of the movable frame and which are disposed to be substantially perpendicular to the pair of first oscillation parts; and

a pivotable mirror part connected to and held by the other-side ends of the pair of second oscillation parts,

wherein the first oscillation parts or the second oscillation parts have a meandering shape in which a plurality of straight portions and a plurality of folded portions are

formed, and a stepped structure portion greater in thickness than the straight portions is provided in part of the folded portions.
[Claim 2]
The optical reflecting device according to claim 1,
wherein on the assumption that h1 is a thickness of the straight portion, h2 is a thickness of the stepped structure portion, and W1 is a width of the straight portion, h1+h2<W1 is satisfied.
[Claim 3]
The optical reflecting device according to claim 1 or claim 2,
wherein the stepped structure portion includes a central point (bisector point) of the folded portion.
[Claim 4]
The optical reflecting device according to claim 3,
wherein at least part of the stepped structure portion is made of a material different from that of the straight portion.
[Claim 5]
The optical reflecting device according to claim 4,
wherein the stepped structure portion is formed by evaporation, sputtering, or dipping".

(2) Paragraph 0008 of the description
"[0008]
An optical reflecting device according to the present invention includes a fixed frame, a pair of first oscillation parts, a movable frame, a pair of second oscillation parts, and a mirror part. One-side ends of the first oscillation parts are connected to the inside of the fixed frame. The movable frame is connected to and held by the other-side ends of the pair of first oscillation parts to be pivotable. One-side ends of the pair of second oscillation parts are connected to the inside of the movable frame and the pair of second oscillation parts are disposed to be substantially perpendicular to the pair of first oscillation parts. The mirror part is connected to and held by the other-side ends of the pair of second oscillation parts to be pivotable. The first oscillation parts or the second oscillation parts have a meandering shape in which a plurality of straight portions and a plurality of folded portions are formed, and a stepped structure portion is provided in part of the folded portion."

4 Judgment by the body
(1) On Article 17-2 (3) of the Patent Act

A The original description, etc. has a description below (Note by the body: Underlines are added by the body. And so on.).

(A) "What is claimed is:

[Claim 1]

An optical reflecting device comprising:

a fixed frame;

a pair of first oscillation parts of which one-side ends are connected to an inside of the fixed frame;

a pivotable movable frame connected to and held by the other-side ends of the pair of first oscillation parts;

a pair of second oscillation parts of which one-side ends are connected to an inside of the movable frame and which are disposed to be substantially perpendicular to the pair of first oscillation parts; and

a pivotable mirror part connected to and held by the other-side ends of the pair of second oscillation parts,

wherein the second oscillation parts have a meandering shape in which a plurality of straight portions and a plurality of folded portions are formed, and a stepped structure portion is provided in part of the folded portions.

[Claim 2]

The optical reflecting device according to claim 1,

wherein the first oscillation parts have a meandering shape in which a plurality of straight portions and a plurality of folded portions are formed, and a stepped structure portion is provided in part of the folded portions of the first oscillation parts. ..."

(B) "BACKGROUND ART

[0002]

A conventional optical reflecting device 1 is shown in FIG. 10. As shown in FIG. 10, the conventional optical reflecting device 1 includes a fixed frame 2, a pair of first oscillation parts 3 and 4, a movable frame 5, a pair of second oscillation parts 6 and 7, and a mirror part 8. One-side ends of the pair of first oscillation parts 3 and 4 are connected to the inside of the fixed frame 2. The movable frame 5 is connected to and held by the other-side ends of the pair of first oscillation parts 3 and 4. One-side ends of the pair of second oscillation parts 6 and 7 are connected to the inside of the movable frame 5 and are disposed to be substantially perpendicular to the pair of first oscillation parts 3 and 4. The mirror part 8 is connected to and held by the other-side ends of the pair of second oscillation parts 6 and 7 to be pivotable. The movable frame 5 is

pivoted around the X axis (X1 axis) which passes through the substantial center of the mirror part 8 and along the pair of first oscillation parts 3 and 4. The mirror part 8 is pivoted around the Y axis (Y1 axis) which passes through its center and along the pair of second oscillation parts 6 and 7. Thus, the optical reflecting device 1 scans a light flux (light spot) radiated and reflected from the mirror part 8 in the X and Y axis directions and projects an image onto a screen.

[0003]

FIG. 11 is an enlarged perspective view illustrating the second oscillation part 7. As shown in FIG. 11, the second oscillation part 7 has a so-called meandering shape in which a beam is folded a plurality of times. The second oscillation part 7 includes a plurality of straight portions 9a, and a plurality of folded portions 9b formed by folding the plurality of straight portions 9a.

[0004]

A driving element such as a piezoelectric body is formed in each of the plurality of straight portions 9a. In the second oscillation part 7, as shown in FIG. 12, large displacement of the mirror part 8 is realized by driving the driving elements so that the phases of the driving elements are opposite to each other and by displacing and bending straight portions 9a in directions indicated by the arrows so that the amount of displacement accumulates according to the number of straight portions 9a.

[0005]

For example, the optical reflecting device of the application is disclosed in, for example, Patent Literature 1.

[0006]

To improve the resolution of a projected image, the scanning speed of a light flux (light spot) needs to be increased by increasing a driving frequency while maintaining the amount of displacement of each oscillation part. In this case, however, there is a problem that stress is focused on the folded portions of each oscillation part and thus crack or the like easily occurs."

(C) "SUMMARY

[0008]

An optical reflecting device according to the present invention includes a fixed frame, a pair of first oscillation parts, a movable frame, a pair of second oscillation parts, and a mirror part. One-side ends of the first oscillation parts are connected to the inside of the fixed frame. The movable frame is connected to and held by the other-side ends of the pair of first oscillation parts to be pivotable. One-side ends of

the pair of second oscillation parts are connected to the inside of the movable frame and the pair of second oscillation parts are disposed to be substantially perpendicular to the pair of first oscillation parts. The mirror part is connected to and held by the other-side ends of the pair of second oscillation parts to be pivotable. The second oscillation parts have a meandering shape in which a plurality of straight portions and a plurality of folded portions are formed, and a stepped structure portion is provided in part of the folded portion.

[0009]

In the optical reflecting device according to the present invention, since the mechanical strength of the folded portions of each oscillation part can be improved, the mirror part can be driven at a large pivotal angle (amount of displacement) and at a high frequency."

(D) "DESCRIPTION OF EMBODIMENTS

[0011]

(First Exemplary Embodiment)

Hereinafter, an optical reflecting device according to a first embodiment of the present invention will be described with reference to the drawings.

[0012]

FIG. 1 is a perspective view illustrating the optical reflecting device according to the first embodiment of the present invention. As shown in FIG. 1, an optical reflecting device 10 according to this embodiment includes a fixed frame 11, a pair of first oscillation parts 12a and 12b, a movable frame 13, a pair of second oscillation parts 14a and 14b, and a mirror part 15. One-side ends of one pair of first oscillation parts 12a and 12b are connected to and held by the inside of fixed frame 11. The movable frame 13 is connected to and held by the other-side ends of the pair of first oscillation parts 12a and 12b to be pivotable around an S2 axis. One-side ends of the pair of second oscillation parts 14a and 14b are connected to and held by the inside of the movable frame 13. The second oscillation parts 14a and 14b are disposed to be substantially perpendicular to first oscillation parts 12a and 12b. The mirror part 15 is connected to and held by the other-side ends of the pair of second oscillation parts 14a and 14b to be pivotable around an S1 axis.

[0013]

The fixed frame 11 according to this embodiment has a rectangular shape and a uniformly continuous shape surrounding the four sides of mirror part 15 and movable frame 13. However, the fixed frame 11 may have a circular or triangular shape or have

a shape with one side open, as necessary. The same applies to movable frame 13.

[0014]

The pair of first oscillation parts 12a and 12b are symmetric with respect to the Y axis (S1 axis) passing through the center of the mirror part 15. The connection positions at which the first oscillation parts 12a and 12b are connected to the movable frame 13 and the connection positions at which the first oscillation parts 12a and 12b are connected to the fixed frame 11 are diagonally opposite to each other. That is, the connection positions at which first oscillation parts 12a and 12b are connected to the fixed frame 11 are diagonally opposite to the connection portions at which the first oscillation parts 12a and 12b are connected to the movable frame 13. In this configuration, the pivotal axis along which the movable frame 13 is actually pivoted can match the S2 axis. As a result, the inertia moment can be minimized when the movable frame 13 is driven, and thus a driving efficiency can be improved.

[0015]

Likewise, the pair of second oscillation parts 14a and 14b are symmetric with respect to the X axis (S2 axis) passing through the center of the mirror part 15. Therefore, the intersection point between the S1 axis and the S2 axis is preferably located at the center of the mirror part 15.

[0016]

FIG. 2 is an enlarged perspective view illustrating the vicinity of the mirror part of the optical reflecting device according to the first embodiment of the present invention. FIG. 2 is the enlarged perspective view illustrating the mirror part 15 in addition to the movable frame 13. The pair of second oscillation parts 14a and 14b each have a meandering shape formed of a plurality of straight portions 16 (portions inside dotted lines in the drawing) and folded portions 17 having curvature and formed by folding ends of the plurality of straight portions 16. Thus, since the second oscillation parts 14a and 14b have such a meandering shape, the second oscillation parts 14a and 14b can be actually lengthened. Therefore, by combining the amounts of displacement of the straight portions 16, the amount of rotation of the mirror part 15 can be increased.

[0017]

In this embodiment, the folded portions 17 have curvature. However, for example, the ends of parallel straight portions 16 may be connected to each other as straight lines parallel to the Y axis. Here, the second oscillation parts 14a and 14b driving the mirror part 15 will be described in detail.

...

[0024]

Next, the folded portions 17, which are the main feature of the present invention, will be described in detail below.

[0025]

FIG. 4 is a partial sectional perspective view illustrating the second oscillation part of the optical reflecting device according to the first embodiment of the present invention. FIG. 4 shows the configuration of the folded portion 17 and straight portions 16 connected to folded portion 17. As shown in FIG. 4, the folded portion 17 is configured to be thicker than the straight portions 16 by providing a stepped structure portion 24 below the folded portion 17. At this time, when the thickness h1 of the straight portions 16 is less than the width W1 of the straight portion 16, the thickness h2 of stepped structure portion 24 preferably satisfies the following relation.

[0026]

$h1+h2<W1$

This is because when the total thickness of the folded portion 17 and the stepped structure portion 24 is greater than the width W1 of the straight portion 16, a resonant frequency of the second oscillation parts 14a and 14b may decrease, as compared to a conventional configuration in which the stepped structure portion 24 is not provided.

[0027]

The stepped structure portion 24 is provided on the entire lower surface of the folded portion 17 in this embodiment, but may be provided in part of the lower surface of the folded portion 17. When the stepped structure portion 24 is provided in part of the lower surface of the folded portion 17, the stepped structure portion 24 is configured to be symmetric with respect to the central line (bisector: B-BB) of the folded portion 17, as in FIG. 5, which is a front view when viewed in an A direction of FIG. 4.

[0028]

Thus, the mechanical strength of the folded portion 17 can be configured to be symmetric with respect to the bisector B-BB, and the folded portion 17 is not twisted due to the displacement of the straight portions 16a and 16b. Consequently, a deviation in the pivotal axis of the mirror part 15 can be reduced. Further, even when stress is focused on the folded portions 17 of the second oscillation parts 14a and 14b, damage to the second oscillation parts 14a and 14b can be prevented.

...

[0033]

Thus, the stepped structure portion 24 according to the present invention contributes to improvement in the mechanical strength of the folded portions 17 of the

second oscillation parts 14a and 14b. The same advantage can be obtained when the thickness of the folded portion 17 is greater than the thickness of the straight portion 16 or when only the folded portion 17 is made of another material with higher strength than the straight portion 16.

[0034]

The second oscillation parts 14a and 14b have been exemplified, but the same applies to the first oscillation parts 12a and 12b. Hereinafter, the first oscillation parts 12a and 12b will be described. FIG. 6 is a perspective view illustrating the detailed configuration of the first oscillation parts of the optical reflecting device according to the first embodiment of the present invention. The pair of first oscillation parts 12a and 12b each have a meandering shape formed of a plurality of straight portions 25 (portions inside dotted lines in the drawing) and folded portions 26 having curvature and formed by folding the ends of the plurality of the straight portions 25. Thus, since the first oscillation parts 12a and 12b have such a meandering shape, the first oscillation parts 12a and 12b can be actually lengthened. Therefore, by combining the amounts of displacement of the straight portions 25, the amount of rotation of the movable frame 13 can be increased. Since the configuration and the operation principle of the pair of first oscillation parts 12a and 12b are the same as those of the second oscillation parts 14a and 14b, the detailed description thereof will not be repeated.

[0035]

FIG. 7 is a partial sectional perspective view illustrating the first oscillation part of the optical reflecting device according to the first embodiment of the present invention. FIG. 7 shows the configuration of the folded portion 26 and the straight portions 25 connected to the folded portion 26. As shown in FIG. 7, the folded portion 26 is configured to be thicker than the straight portion 25 by providing a stepped structure portion 27 below the folded portion 26. At this time, a relation among the thickness h3 of the straight portion 25, the width W2 of the straight portion 25, and the thickness h4 of the stepped structure portion 27 preferably satisfies the following relation, as in the second oscillation parts 14a and 14b.

[0036]

$h3+h4<W2$

In this embodiment, the stepped structure portion 27 is provided on the entire lower surface of the folded portion 26, but may be provided in part of the lower surface of the folded portion 26. When the stepped structure portion 27 is provided in part of the lower surface of the folded portion 26, the stepped structure portion 27 is configured to be symmetric with respect to the central line (bisector: B-BB) of the folded portion

26, as in FIG. 8 which is a front view when viewed in an A direction of FIG. 7.

[0037]

Thus, since the mechanical strength of the folded portion 26 can be configured to be symmetric with respect to the bisector B-BB, the folded portion 26 is not twisted due to the displacement of the straight portions 25a and 25b. Since a deviation in the pivotal axis of the movable frame 13 can be reduced, a deviation in the pivotal axis of the mirror part 15 can be consequently reduced. Further, since the driving frequency is low in the first oscillation parts 12a and 12b operating at a low speed, the displacement of the first oscillation parts 12a and 12b is larger than that of the second oscillation parts 14a and 14b operating at a high speed. Therefore, stress may be focused on the folded portions 26, and thus the oscillation parts may be damaged in the worst case, as in the second oscillation parts 14a and 14b. Accordingly, by providing the stepped structure portion 27, the same advantage as that of the second oscillation parts 14a and 14b can be obtained.

[0038]

Finally, an operation of a display apparatus using the optical reflecting device 10 according to this embodiment will be described.

...

[0044]

In this embodiment, the stepped structure portions 24 and 27 contributing to the increase in the thickness compared to the straight portions 16 and 25 are provided respectively on the folded portions 17 and 26 in the meandering shape of the second oscillation parts 14a and 14b and the first oscillation parts 12a and 12b. Therefore, stress occurring inside the folded portions 17 and 26 can be distributed. As a result, the pivotal angle about the S1 axis of the mirror part 15 further increases, as compared to a configuration in which the stepped structure portions 24 and 27 are not provided. In the second oscillation parts 14a and 14b according to this embodiment, the thickness h1 is set to 100 μm, the thickness h2 is set to 50 μm, and the width W1 is set to 170 μm. Therefore, as the measurement result, the pivotal angle about the S1 axis can be increased by about 20%, compared to the conventional configuration. Likewise, in the first oscillation parts 12a and 12b, the thickness h3 is set to 100 μm, the thickness h4 is set to 50 μm, and the width W2 is set to 170 μm. Therefore, as the measurement result, the pivotal angle about the S2 axis can be increased by about 20%, as compared to the conventional configuration.

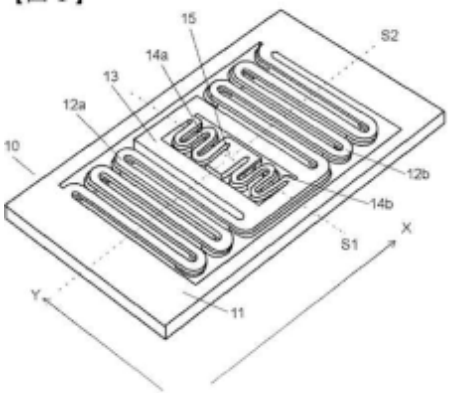
[0045]

In this embodiment, the case in which the stepped structure portions 24 and 27

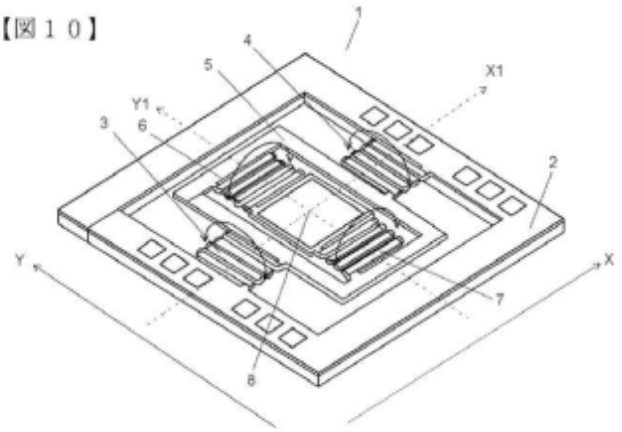
are provided in the oscillation parts including the second oscillation parts 14a and 14b and the first oscillation parts 12a and 12b has been described. However, the stepped structure portion 24 may be provided only in the second oscillation parts 14a and 14b. Thus, since the configuration of the oscillation parts can be simplified, the productivity of the optical reflecting device can be improved."

(E) FIG. 1 (A perspective view of an optical reflecting device according to the embodiment 1 of the invention) and FIG. 10 (A perspective view of the conventional optical reflecting device) are as follows.

【図１】



【図１０】



【図１】 [FIG. 1]
【図１０】 [FIG. 10]

B According to the description of A above, the following matters are disclosed in the original description, etc.
(A) According to the description of BACKGROUND ART of A (B) above, it is understandable that the conventional optical reflecting device comprises:

a fixed frame, a pair of first oscillation parts, a movable frame, a pair of second oscillation parts, and a mirror part, wherein

one-side ends of the pair of first oscillation parts are connected to an inside of the fixed frame,

the movable frame is connected to and held by the other-side ends of the pair of first oscillation parts,

one-side ends of the pair of second oscillation parts are connected to an inside of the movable frame and are disposed to be substantially perpendicular to the pair of first oscillation parts,

the mirror part is connected to and held by the other-side ends of the pair of second oscillation parts and is pivotable, and

the second oscillation parts have a so-called meandering shape in which a beam is folded a plurality of times and consist of a plurality of straight portions and a plurality of folded portions formed by folding the plurality of straight portions, and the conventional optical reflecting device has the problem in which stress is focused on the folded portions of each oscillation part and thus crack or the like easily occurs.

Here, in view that it is not specified that the first oscillation parts have folded portions, it can be understood that the folded portions of the oscillation parts on which stress is focused are the folded portions of the second oscillation parts. This understanding is consistent with the solution of (B) below.

(B) According to the description of the scope of claims in A (A) and SUMMARY in A(C) above, it can be understood that by providing a part of the folded portion of a meandering shape of the second oscillating portions with a stepped structure portion, mechanical strength of the folded portions of the oscillation parts is enhanced and the above-mentioned problem is solved.

(C) According to the description of the embodiment of the invention of A (D) described above, an optical reflecting device is so configured that

the second oscillation parts have a meandering shape in which a plurality of straight portions and a plurality of folded portions, having curvature and formed by folding ends of the plurality of straight portions, are formed, and a stepped structure portion is provided in a lower part of the folded portions so as to make the folded portions thicker than the straight portions.

the first oscillation parts also have a meandering shape in which a stepped structure portion is provided in a lower part of the folded portions so as to make the folded portions thicker than the straight portions.

Furthermore, it is described in [0045] that, although the above-described embodiment is an example in which both oscillation parts of the first oscillation parts and the second oscillation parts are provided with stepped structure portions, it may be the case that only the second oscillation parts is provided with stepped structure portions.

(D) According to the description above, it can be said that, in the original description, etc., in the conventional optical reflecting device, there are described an optical

reflecting device in which a stepped structure portion is provided in part of the folded portions of a meandering shape of the second oscillation parts so as to enhance the mechanical strength, and an optical reflecting device in which stepped structure portions are provided in part of the folded portions of a meandering shape of both of the second oscillation parts and the first oscillation parts so as to enhance the mechanical strength. In other words, it can be said that in the original description, etc., in the conventional optical reflecting device, there is described an optical reflecting device in which a stepped structure is provided at least at the folded portions of a meandering shape of the second oscillation parts.

C On the other hand, in the Amendment, as pointed out in 3 above, in Claim 1 and paragraph [0008] after the Amendment, there is included an optical reflecting device in which when a stepped structure is provided at a part of the folded portions of a meandering shape of the first oscillation parts, it does not matter whether a stepped structure is provided at a part of the folded portions of a meandering shape of the second oscillation parts.

However, in the original description, etc., as examined in B above, although an optical reflecting device in which a stepped structure is provided at a part of the folded portions of a meandering shape of at least the second oscillation parts is described, there is not described an optical reflecting device in which it does not matter whether a stepped structure is provided at a part of the folded portions of a meandering shape of the second oscillation parts. In view of the point that this is to solve the problem in which stress is focused on the folded portions of each second oscillation part and thus crack or the like easily occurs, there is no suggestion of an optical reflecting device in which it does not matter whether a stepped structure is provided at a part of the folded portions of a meandering shape of the second oscillation parts. Therefore, it cannot be said that the Amendment does not introduce a new technical matter in relation to technical matters derived by synthesizing all descriptions of the original description, etc.

Therefore, it cannot be said that the Amendment is made within the scope of the matters described in the original description, etc., and the Amendment does not meet the requirement stipulated in Article 17-2(3) of the Patent Act.

(2) On Article 36(6)1 of the Patent Act

A While the description of the application is substantially the original description amended by the Amendment (Note by the body: Although the amendment dated October 13, 2011, pursuant to Article 19(1) of the Patent Cooperation Treaty amended

the full text of the scope of claims, the Amendment amended once again the full text of the scope of claims), in the original description, the matters summarized in 4(1)A(B) through (D) are described, the Amendment is as summarized in 3 above.

Therefore, in the description of the application, as examined in (1) B (A), it is described that, the conventional optical reflecting device comprises:

a fixed frame, a pair of first oscillation parts, a movable frame, a pair of second oscillation parts, and a mirror part, wherein

one-side ends of the pair of first oscillation parts are connected to an inside of the fixed frame,

the movable frame is connected to and held by the other-side ends of the pair of first oscillation parts,

one-side ends of the pair of second oscillation parts are connected to an inside of the movable frame and are disposed to be substantially perpendicular to the pair of first oscillation parts,

the mirror part is connected to and held by the other-side ends of the pair of second oscillation parts and is pivotable, and

the second oscillation parts have a so-called meandering shape in which a beam is folded a plurality of times and consist of a plurality of straight portions and a plurality of folded portions formed by folding the plurality of straight portions, and it is also described that the conventional optical reflecting device has the problem in which stress is focused on the folded portions of each oscillation part and thus crack or the like easily occurs.

As solution means for the above-described problem, in paragraph [0008] of the description amended by the Amendment, it is described that
"the first oscillation parts or the second oscillation parts have a meandering shape in which a plurality of straight portions and a plurality of folded portions are formed, and a stepped structure portion is provided in part of the folded portions".

Here, as means for solving the above-described problem of the second oscillation parts in which a crack or the like easily occurs, "the second oscillation parts have a meandering shape in which a plurality of straight portions and a plurality of folded portions are formed, and a stepped structure portion is provided in part of the folded portions" is something that a person skilled in the art can technically understand. However, "the first oscillation parts ... are made to be of a meandering shape consisting of a plurality of straight portions and folded portions and a stepped structure is provided in part of the folded portions" is not something that a person skilled in the art can technically understand as means for solving the above-described problem, since crack

occurring portions (folded portions of the second oscillation parts) and portions (folded portions of the first oscillation parts) provided with a stepped structure portion are different.

Therefore, it is recognized that, in the description of the application, it is substantially described as means for solving the above-described conventional problem that "the second oscillation parts are made to be of a meandering shape consisting of a plurality of straight portions and folded portions and a stepped structure is provided in part of the folded portions".

B On the other hand, the Invention, as summarized in 3(1) described above, has matters specifying the invention, "the first oscillation parts or the second oscillation parts have a meandering shape in which a plurality of straight portions and a plurality of folded portions are formed, and a stepped structure portion formed by making the folded portions thicker than the straight portions is provided in part of the folded portions". According to the matters specifying the invention, the Invention includes an invention of an optical reflecting device in which, when the first oscillation parts "have a meandering shape in which a plurality of straight portions and a plurality of folded portions are formed, and a stepped structure portion formed by making the folded portions thicker than the straight portions is provided in part of the folded portions", it does not matter whether the second oscillation parts "have a meandering shape in which a plurality of straight portions and a plurality of folded portions are formed, and a stepped structure portion formed by making the folded portions thicker than the straight portions is provided in part of the folded portions".

C On the basis of A, B described above, examination will be made. Of the Invention, since the means for solving the problem of the invention is not reflected to the invention of the optical reflecting device in which the second oscillation parts does not "have a meandering shape in which a plurality of straight portions and a plurality of folded portions are formed, and a stepped structure portion formed by making the folded portions thicker than the straight portions is not provided in part of the folded portions", a patent is sought by exceeding a scope described in the detailed description of the invention. Therefore, since the Invention is not what is described in the detailed description of the invention, the description of the scope of claims of the application does not meet the requirement stipulated in Article 36(6)1 of the Patent Act.

5. Closing

As described above, since the Amendment does not meet the requirement stipulated in Article 17bis (3) of the Patent Act and the application does not meet the requirement stipulated in Article 36(6)1 of the Patent Act, the application shall be refused.

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

August 25, 2016

Chief administrative judge: KAWAHARA, Hideo
Administrative judge: KOMATSU, Tetsuzo
Administrative judge: ONDA, Haruka