Patent Right	Date	March 27, 2023	Court	Intellectual Property High Court, Third Division
	Case number	2022 (Gyo-Ke) 10029		
- A case in which with regard to an opposition decision in which a patent was revoked on the grounds that the patent does not comply with an inventive step, an enablement requirement, a support requirement, and a clarity requirement, the opposition decision was rescinded on the grounds that the patent can be recognized to comply with these requirements.				

Case type: Rescission of Patent Revocation Decision

Result: Granted

References: Article 29, paragraph (2), Article 36, paragraph (4), item (i), and Article 36, paragraph (6), items (i) and (ii) of the Patent Act

Related rights, etc.: Patent No. 6721794

Decision of JPO: Opposition No. 2021-700030

Summary of the Judgment

1. The present case is a suit against an opposition decision in which a patent with regard to an invention titled "ANTI-GLARE FILM" (number of claims: 4) was revoked.

The Plaintiff, who is a patentee, made a correction of the scope of claims during procedures of an opposition to a granted patent. In response, the Japan Patent Office made the opposition decision to allow the correction and to revoke the patent according to Claims 1 to 4. Claim 1 after the correction (Present Invention 1) is "An anti-glare film, comprising an anti-glare layer having a haze value ranging from 60% to 95% inclusive, an internal haze value ranging from 0.5% to 8.0% inclusive, and a standard deviation of luminance distribution of an organic EL display ranging from 0 to 10 inclusive when adjusted so as to obtain image data as a gray scale image with an 8-bit gradation display and an average luminance of 170 gradations in a state where the anti-glare film is mounted on a surface of the organic EL display with a pixel density of 441 ppi." Claims 2 to 4 (Present Inventions 2 to 4, Present Inventions 1 to 4 are collectively referred to as each of the present inventions) directly or indirectly depended from Claim 1. (The haze value refers to a ratio of diffused light to total transmitted light.)

2. The opposition decision revoked the patent on the grounds that the patent after the correction does not comply with an inventive step, an enablement requirement, a support requirement, and a clarity requirement. However, this judgment rescinded the opposition decision on the grounds that the patent after the correction complies

with all of these requirements.

This judgment found that a technical significance of each of the present inventions is to maintain an overall haze value by an external haze value while suppressing an internal haze value, and to ensure color reproducibility while obtaining good anti-glare property, because when the internal haze of the anti-glare film to be mounted on a surface of a display is increased in order to suppress glare and to obtain anti-glare property, color reproducibility is decreased due to light with low wavelength from the display being scattered, etc.

Based on this, regarding an inventive step, this judgment held that even if cited documents are combined, a person ordinarily skilled in the art cannot easily conceive of making the internal haze value a value less than 20%, and that a person ordinarily skilled in the art cannot easily conceive of a structure of Present Invention 1, which is the internal haze value ranging from 0.5% to 8.0% inclusive. Then, this judgment held that the opposition decision is erroneous in determining that Present Invention 1 could have been easily conceived of by a person ordinarily skilled in the art on the basis of cited documents or well-known art.

Regarding the enablement requirement, this judgment held that it can be recognized that a person ordinarily skilled in the art could produce the anti-glare layer according to each of the present inventions by at least a first embodiment without undue trial-and-error, and that it can be recognized that an anti-glare film which can be produced by the first embodiment from the statement in the description can be produced by a second embodiment or a third embodiment as well. Then, this judgment held that the opposition decision is erroneous in determining that each of the present inventions cannot be deemed to be stated in the detailed description of the invention in a manner clear and sufficient to enable a person ordinarily skilled in the art to work the inventions.

Regarding the support requirement, this judgment held that the recitation of the scope of claims complies with the support requirement on the grounds that a person ordinarily skilled in the art can understand from the statement in the description that each of the present inventions can solve its problem and that the anti-glare film according to each of the present inventions can be produced by the first embodiment. Then, this judgment held that the opposition decision is erroneous in determining that each of the present inventions cannot be deemed to be stated in the detailed description of the invention.

Regarding the clarity requirement, this judgment held as follows: the conditions which can be set for measuring the luminance distribution in each of the present

inventions can be deemed to include restrictions of setting the condition such that measurement results for the same anti-glare film do not vary and become constant, and setting the condition such that a deviation from glare a user perceives on a display does not become significant and such that when a user perceives less glare, the standard deviation of the luminance distribution becomes small; it is inferred that a person ordinarily skilled in the art would perform the measurement by setting the conditions within a reasonable range under these restrictions; taking into consideration the statement in the description and the drawings attached to the written application, and based on common general technical knowledge of a person ordinarily skilled in the art at the time of filing the application, the recitation of Claim 1 in the scope of claims of the present patent (Present Invention 1) cannot be deemed to be so unclear that the recitation is unreasonably prejudicial to interests of a third party; the inventions for which the patent in sought is clear; and the recitation of Claims 2 to 4 (Present Inventions 2 to 4) is also clear. Then, this judgment held that the opposition decision is erroneous in determining that each of the present inventions cannot be deemed to be clear.

Judgment rendered on March 27, 2023
2022 (Gyo-Ke) 10029 Case of seeking rescission of patent revocation decision
Date of Conclusion of Oral Argument: January 17, 2023

Judgment

Plaintiff: Daicel Corporation

Defendant: Commissioner of the Japan Patent Office

Main text

1. An opposition decision rendered by the Japan Patent Office (JPO) on Opposition No. 2021-700030 on March 14, 2022 shall be rescinded.

2. The court costs shall be borne by the Defendant.

Facts and reasons

No. 1 Claim

The same as the main text.

No. 2 Outline of the Case

1. History of Procedures, etc. at the JPO

(1) Patent No. 6721794 (title of the invention "ANTI-GLARE FILM"; number of claims: 4; hereinafter referred to as the "Present Patent") is an international application which claims priority based on a patent application (Patent Application No. 2017-151494) filed on August 4, 2017 (hereinafter, the description and the drawings of the Present Patent will be referred to as the "Present Description, etc."). The establishment of the Present Patent was registered on June 22, 2020, and the gazette in which the patent appears was issued on July 15 of the same year (Exhibit Ko 20).

(2) With regard to the Present Patent, an opposition to a granted patent was filed on January 14, 2021 (Exhibit Ko 22). The Japan Patent Office examined this case as Opposition No. 2021-700030 (hereinafter referred to as the "Opposition Procedures of the Present Case") and notified a notice of reasons for revocation dated April 7 of the same year (Exhibit Ko 23). The Plaintiff filed a written opinion dated June 9 of the same year (Exhibit Ko 24). The Japan Patent Office notified a notice of reasons for revocation (advance notice of a decision) dated August 31 of the same year (Exhibit Ko 25). The Plaintiff made a correction by filing a written request for correction dated November 15 of the same year (Hereinafter, a request for correction by filing this written request for correction will be referred to as the "Request for Correction of the Present Case," and the correction by filing the request for correction of the Present

Case will be referred to as the "Correction of the Present Case." Exhibit Ko 21) and also filed a written opinion dated the same date (Exhibit Ko 26). The Patent Opponent filed a written opinion dated December 24 of the same year (Exhibit Ko 27).

In the Correction of the Present Case, the statement "an internal haze value ranging from 0.5% to 15.0% inclusive" in Claim 1 in the Scope of Claims is corrected to read "an internal haze value ranging from 0.5% to 8.0% inclusive." Claims 2 to 4 depend from Claim 1 and were thus corrected in conjunction with Claim 1 to be corrected.

Note that Cited Documents, etc. filed in the opposition procedures of the Present Case are as follows.

Cited Document 1: Unexamined Patent Application Publication No. 2009-244465 (hereinafter referred to as "Cited Document 1"; Exhibit Ko 1, the primarily cited reference)

Cited Document 2: Unexamined Patent Application Publication No. 2015-172837 (hereinafter referred to as "Cited Document 2"; Exhibit Ko 2)

Cited Document 3: Unexamined Patent Application Publication No. 2015-196347 (Exhibit Ko 3)

Cited Document 4: Unexamined Patent Application Publication No. 2014-85371 (hereinafter referred to as "Cited Document 4"; Exhibit Ko 4)

Cited Document 5: Unexamined Patent Application Publication No. 2006-113561 (hereinafter referred to as "Cited Document 5"; Exhibit Ko 5)

Well-known Document A1: Unexamined Patent Application Publication No. 2015-172835 (hereinafter referred to as "Well-known Document A1"; Exhibit Ko 7)

The Japan Patent Office made an opposition decision whose conclusion is that "It shall be allowed to correct the Scope of Claims in Patent No. 6721794 with regard to Claims [1 - 4] after the correction as per the corrected Scope of Claims attached to the written request for correction. The patent according to Claims 1 - 4 in Patent No. 6721794 shall be revoked." on March 14, 2022. (Hereinafter referred to as the "Decision of the Present Case," which is as shown in Attachment 1.) The certified copy of Decision of the Present Case was served on the Plaintiff on the 29th of the same month.

(3) The Plaintiff instituted an action of the Present Case for seeking a rescission of the Decision of the Present Case on April 27, 2022.

2. Scope of Claims

The Scope of Claims after the correction of the Present Case is as follows (Hereinafter, each of the inventions according to Claims 1 to 4 will be referred to as

"Present Invention 1" to "Present Invention 4," corresponding to each claim number, and collectively referred to as "each of the present inventions." Exhibit Ko 21).

(1) Claim 1

An anti-glare film, comprising an anti-glare layer having a haze value ranging from 60% to 95% inclusive, an internal haze value ranging from 0.5% to 8.0% inclusive, and a standard deviation of luminance distribution of an organic EL display ranging from 0 to 10 inclusive when adjusted so as to obtain image data as a gray scale image with an 8-bit gradation display and an average luminance of 170 gradations in a state where the anti-glare film is mounted on a surface of the organic EL display with a pixel density of 441 ppi.

(2) Claim 2

The anti-glare film according to Claim 1, wherein the anti-glare layer comprises a plurality of resin components and has a co-continuous phase structure formed with phase separation of the plurality of resin components.

(3) Claim 3

The anti-glare film according to Claim 1 or 2, wherein

the anti-glare layer comprises a matrix resin and a plurality of microparticles dispersed in the matrix resin, and

a refractive index difference between the microparticles and the matrix resin is a value ranging from 0 to 0.07 inclusive.

(4) Claim 4

The anti-glare film according to Claim 3, wherein a ratio G2/G1 between a weight G1 of the matrix resin in the anti-glare layer and a total weight G2 of the plurality of microparticles contained in the anti-glare layer is a value ranging from 0.07 to 0.20 inclusive.

3. Abstract of Decision of the Present Case

(1) Request for Correction of the Present Case (Decision of the Present Case, No. 2)

The correction of the Present Case shall be allowed.

(2) Outline of Reasons for Revocation (Decision of the Present Case, No. 4)

A. Reason 1 (Inventive Step)

Each of the present inventions could have been easily made by a person ordinarily skilled in the art on the basis of inventions described in Cited Document 1, which is the primarily cited reference, and Cited Documents 2 to 5, which are secondarily cited references or exemplify the well-known art, and was therefore made in violation of the provision of Article 29, paragraph (2) of the Patent Act.

B. Reason 2 (Enablement Requirement)

The Present Patent was granted for a patent application in which the statement of the Detailed Description of the Invention does not comply with the requirement prescribed in Article 36, paragraph (4), item (i) of the Patent Act.

C. Reason 3 (Support Requirement)

The Present Patent was granted for a patent application in which the statement of the Scope of Claims does not comply with the requirement prescribed in Article 36, paragraph (6), item (i) of the Patent Act.

D. Reason 4 (Clarity Requirement)

The Present Patent was granted for a patent application in which the statement of the Scope of Claims does not comply with the requirement prescribed in Article 36, paragraph (6), item (ii) of the Patent Act.

(3) Determination by Panel of Administrative Judges (Decision of the Present Case, No. 5)

A. Reason 1 (Inventive Step)

(A) Invention Described in Cited Document 1 (hereinafter referred to as the "Cited Invention.") (Decision of the Present Case, No. 5, 1(2))

The Cited Invention found by the Decision of the Present Case is as follows.

"An anti-glare hard coat film which is excellent in anti-glare property and image clarity and in which sparkle is effectively prevented as well, wherein the anti-glare hard coat film is obtained by: preparing triacetylcellulose film (thickness: 80 μm) as a transparent plastic film substrate;

preparing an anti-glare hard coat layer-forming material by adding, per 100 parts by weight of the resin solid content of GRANDIC PC-1070 (hard coat resin manufactured by Dainippon Ink and Chemicals, Inc.; solid content: 65% by weight, refractive index: 1.53), 0.5 parts by weight of the solid content of a leveling agent (manufactured by Dainippon Ink and Chemicals, Inc.; trade name "GRANDIC PC-4100"; solid content: 10% by weight), 0.5 parts by weight of IRGACURE 184 (photopolymerization initiator manufactured by Ciba Specialty Chemicals, Inc.), 30 parts by weight of acrylic resin microparticles (manufactured by Sekisui Kasei Co., Ltd.; MBX-8SSTN; size: 8 μm; refractive index: 1.49) as first microparticles which mainly form surface asperities, and 2 parts by weight of silicone microparticles (manufactured by Toshiba Silicone Co., Ltd.; "TOSPEARL 145"; size: 4.5 μm; refractive index: 1.43) as second microparticles which mainly adjust an internal haze thereby to make a mixture, diluting the mixture with ethyl acetate so as to attain a solid content concentration of 50% by weight, and stirring the mixture for 5 minutes using an ultrasonic cleaner;

applying the anti-glare hard coat layer-forming material to the one side of the transparent plastic film substrate by using a bar coater to form a coated film, whose thickness is adjusted at this time so that a thickness of the anti-glare hard coat layer is 25 μm;

then heating it at 100°C for 1 minute thereby to allow the coated film to dry, thereafter subjecting it to ultraviolet irradiation to perform cure treatment of the coated film, thereby to form an anti-glare hard coat layer having a thickness of 25 μm,

wherein a haze value (%) is 60%, anti-glare property is AA, clarity is B, and definition (sparkle) is A at 106 ppi, A at 144 ppi, and B at 212 ppi in accordance with the definitions mentioned below,

wherein the anti-glare hard coat film is to be mounted on a liquid crystal panel with in-plane switching (IPS) mode having an average black luminance (cd) of 0.19 cd in accordance with the definition mentioned below.

(Haze Value)

With regard to a method of measuring a haze, haze was measured using haze meter HR300 (manufactured by MURAKAMI COLOR RESEARCH LABORATORY CO., LTD.) in accordance with haze (cloudiness) in JIS K7136 (Year 2000 edition).

(Anti-glare Property)

(1) A black acrylic plate manufactured by MITSUBISHI RAYON CO., LTD. (2.0 mmt) is affixed to a surface of an anti-glare hard coat film on which an anti-glare hard coat layer is not formed by means of an adhesive thereby to eliminate reflection on the back side.

(2) The anti-glare property of each of the film samples prepared above was visually checked under an office environment where displays are generally used (about 1000 Lx).

Determination Criteria

AA: There is almost no image reflection.

A: There is image reflection, but effect on visibility is small.

B: There is image reflection, but no problem arises in practical use.

C: There is image reflection.

(Clarity)

(1) A polarizing plate having a smooth surface without asperities was mounted on a panel surface of a notebook type PC (manufactured by Sony Corporation, trade name: VAIO VGN-SZ71B/B (13.3 inch, WXGA, 1280×800)). An adhesive was laminated on a surface of an anti-glare hard coat film on which an anti-glare hard coat layer had not been formed, and affixed on the above-mentioned surface of the

polarizing plate, thereby being mounted.

(2) Image clarity was visually checked in a dark place by displaying a general image on the notebook type PC. Determination criteria are as follows.

A: The image blurs, but an effect on visibility is small (the image is clear).

B: There is blurring, but no problem in practical use (no problem in clarity in practical use).

C: There is blurring, and visibility is significantly reduced (unclear and there is a problem in practical use).

(Definition (Sparkle))

(1) A polarizing plate of 185 μm is affixed to a surface of a transparent film substrate on which an anti-glare hard coat layer is not formed, and then this is bonded to a glass substrate.

(2) The degree of sparkle of a film sample prepared on a mask pattern fixed on a light table was evaluated visually. For the mask pattern, those with definition of 106 ppi, 144 ppi, and 212 ppi were prepared and determined sequentially. The definition of the mask pattern which was determined as A based on the following determination criteria was recorded.

Determination Criteria

A: There is almost no sparkle.

B: There is sparkle, but no problem in practical use.

C: There is sparkle.

(Measurement of Average Black Luminance)

Black luminance at a polar angle of 60° was measured in increments of 1° at an azimuth angle of 0° to 360° using "EZContrast160D" manufactured by ELDIM Company, and an average value of the measurement was calculated to determine an average black luminance."

(The statement "Definition (Sparkle)" in paragraph [0123] and [Table 2] of the Present Description, etc. and the statement "Sparkle (Definition)" in paragraph [0096] of the Present Description, etc. were unified into "Definition (Sparkle)" for description herein.)

(B) Present Invention 1

a. Common Feature and Difference from Cited Invention

(a) Common Feature (Decision of the Present Case, No. 5, 1(3)B(A))

"An anti-glare film, comprising an anti-glare layer having a haze value ranging from 60% to 95% inclusive."

(b) Difference (Decision of the Present Case, No. 5, 1(3)B(B))

(i) Difference 1-1

In Present Invention 1, the "anti-glare layer" has "an internal haze value ranging from 0.5% to 8.0% inclusive." In contrast, in the cited invention, the "internal haze value" is unknown.

(ii) Difference 1-2

In Present Invention 1, the "anti-glare layer" has "a standard deviation of luminance distribution of an organic EL display ranging from 0 to 10 inclusive when adjusted so as to obtain image data as a gray scale image with an 8-bit gradation display and an average luminance of 170 gradations in a state where the anti-glare film is mounted on a surface of the organic EL display with a pixel density of 441 ppi." In contrast, in the cited invention, it is unclear whether the "anti-glare layer" is such.

b. Determination (Decision of the Present Case, No. 5, 1(3)C)

(a) Difference 1-1

Cited Document 2 describes an optical sheet which has an anti-glare property having a haze value of 60% with sparkle prevented, and an internal haze of 5 to 30% is preferable. Thus, it is easy to set the internal haze of the cited invention having a haze of 60% to 5%.

(b) Difference 1-2

The invention-defining matter "a standard deviation of luminance distribution of an organic EL display ranging from 0 to 10 inclusive when adjusted so as to obtain image data as a gray scale image with an 8-bit gradation display and an average luminance of 170 gradations in a state where the anti-glare film is mounted on a surface of the organic EL display with a pixel density of 441 ppi" in Present Invention 1 does not clearly define the anti-glare layer (anti-glare film) as a product (The "anti-glare layer" having "a standard deviation of luminance distribution of a display" "ranging from 0 to 10 inclusive" varies depending on imaging conditions when determining the standard deviation of luminance distribution of a display.). Thus, Difference 1-2 does not constitute a substantial difference.

Even if not so, based on Cited Documents 2 to 5 and well-known technical matters, in order that sparkle does not occur even in the combination with a "high definition panel" in the Cited Invention, it would have been easily conceivable for a person ordinarily skilled in the art to constitute the "anti-glare hard coat layer" ("anti-glare layer") so that the standard deviation of the luminance distribution of a display of image data obtained when mounted on a surface of an organic EL display with a pixel density of 441 ppi becomes small."

(C) Present Invention 2

a. Common Feature and Difference from the Cited Invention

(a) Common Feature (Decision of the Present Case, No. 5, 1(4)B(A))

Present Invention 2 and the Cited Invention are common in having the same structure as the common feature of Present Invention 1 and the Cited Invention.

(b) Difference (Decision of the Present Case, No. 5, 1(4)B(B))

Present Invention 2 and the Cited Invention differ in the following Difference 2 in addition to Difference 1-1 and Difference 1-2 mentioned in (B)a(b) above.

Difference 2

In Present Invention 2, the "anti-glare layer" "comprises a plurality of resin components and has a co-continuous phase structure formed with phase separation of the plurality of resin components." In contrast, in the Cited Invention, it is unclear whether the anti-glare layer is such.

b. Determination (Decision of the Present Case, No. 5, 1(4)C)

It would have been easily conceivable to a person ordinarily skilled in the art to make the structure of Present Invention 2 according to Difference 2 by adopting the structure of the well-known anti-glare layer into the anti-glare hard coat layer ("anti-glare layer") of the Cited Invention.

Regarding Difference 1-1 and Difference 1-2, the determination is as mentioned in (B)b above.

Therefore, Present Invention 2 could have been easily made by a person ordinarily skilled in the art on the basis of the Cited Invention, and the technology described in Cited Documents 2 to 5 or well-known technical matters.

(D) Present Invention 3

a. Common Feature and Difference from Cited Invention

(a) Common Feature (Decision of the Present Case, No. 5, 1(5)B(A))

Present Invention 3 and the Cited Invention are common in the following structure.

"An anti-glare film, comprising an anti-glare layer having a haze value ranging from 60% to 95% inclusive, wherein the anti-glare layer comprises a matrix resin and a plurality of microparticles dispersed in the matrix resin."

(b) Difference (Decision of the Present Case, No. 5, 1(5)B(B))

Present Invention 3 and the Cited Invention differ in the following Difference 3 in addition to Difference 1-1 and Difference 1-2 ((B)a(b) mentioned above) and Difference 2 ((C)a(b) mentioned above).

Difference 3

In Present Invention 3, "a refractive index difference between the microparticles and the matrix resin" is "a value ranging from 0 to 0.07 inclusive." In contrast, in the Cited Invention, the refractive index is not such (The refractive index difference is 0.04 for the first microparticles, and 0.1 for the second microparticles.).

b. Determination (Decision of the Present Case, No. 5, 1(5)C)

The refractive index of the "second microparticles which mainly adjust an internal haze" in the Cited Invention is as described in paragraph [0040] of Exhibit Ko 1. Therefore, in the Cited Invention, it would have been easily conceivable to a person ordinarily skilled in the art to make the structure of Present Invention 3 according to Difference 3.

Regarding Difference 1-1 and Difference 1-2, the determination is as mentioned in (B)b above. Regarding Difference 2, the determination is as mentioned in (C)b above.

Therefore, Present Invention 3 could have been easily made by a person ordinarily skilled in the art on the basis of the Cited Invention, and the technology described in Cited Documents 2 to 5 or well-known technical matters.

(E) Present Invention 4

a. Common Feature and Difference from Cited invention

(a) Common Feature (Decision of the Present Case, No. 5, 1(6)B(A))

The common feature of Present Invention 4 and the Cited Invention is the same as the common feature of Present Invention 3 and the Cited Invention.

(b) Difference (Decision of the Present Case, No. 5, 1(6)B(B))

Present Invention 4 and the Cited Invention differ in the following Difference 4 in addition to Difference 1-1 and Difference 1-2 ((B)a(b) mentioned above), Difference 2 ((C)a(b) mentioned above), and Difference 3 ((D)a(b) mentioned above).

Difference 4

In Present Invention 4, "a ratio G2/G1 between a weight G1 of the matrix resin in the anti-glare layer and a total weight G2 of the plurality of microparticles contained in the anti-glare layer is a value ranging from 0.07 to 0.20 inclusive." In contrast, in the Cited Invention, the ratio G2/G1 is not such.

b. Determination (Decision of the Present Case, No. 5, 1(6)C)

In the Cited Invention, making the structure of Present Invention 4 according to Difference 4 is a design matter by a person ordinarily skilled in the art based on statements / suggestions such as those made in paragraphs [0032], [0034], [0036], [0037], [0039], [0040], [0042], and [0053] of Exhibit Ko 1.

Regarding Difference 1-1 and Difference 1-2, the determination is as

mentioned in (B)b above. Regarding Difference 2, the determination is as mentioned in (C)b above. Regarding Difference 3, the determination is as mentioned in (D)b above.

Therefore, Present Invention 4 could have been easily made by a person ordinarily skilled in the art on the basis of the Cited Invention, and the technology described in Cited Documents 2 to 5 or well-known technical matters.

B. Reason 2 (Enablement Requirement) (Decision of the Present Case, No. 5, 2(2)B(D), C(E))

The Detailed Description of the Invention in the Present Description, etc. is not stated to the extent that a person ordinarily skilled in the art can understand by what means the anti-glare layer of the second embodiment and the anti-glare layer of the third embodiment, both of which satisfy the haze value, the internal haze value, and the standard deviation of luminance distribution of a display defined in each of the present inventions, are achieved, taking common general technical knowledge into consideration.

Therefore, it cannot be deemed that the statement of the Detailed Description of the Invention is stated in a manner clear and sufficient to enable a person ordinarily skilled in the art to work the each of the present inventions.

C. Reason 3 (Support Requirement) (Decision of the Present Case, No. 5, 2(3)A to C)

(A) With regard to the matter "a standard deviation of luminance distribution of an organic EL display ranging from 0 to 10 inclusive when adjusted so as to obtain image data as a gray scale image with an 8-bit gradation display and an average luminance of 170 gradations in a state where the anti-glare film is mounted on a surface of the organic EL display with a pixel density of 441 ppi" which defines the invention in terms of action in Claim 1 of the Present Patent, the Detailed Description of the Invention merely states a means of forming an asperity shape of a structure (net-like structure, irregular loop structure) composed of a plurality of long narrow protrusions and indentations located between the adjacent long narrow protrusions on the surface of the anti-glare layer as the first embodiment (paragraphs [0035] and [0036]) and a means of forming an asperity shape formed by microparticles having a relatively uniform particle size and an average particle size set to a value ranging from 0.5 μm to 5.0 μm inclusive on the surface of the anti-glare layer as the second embodiment (paragraphs [0082] to [0084]). Even in light of common technical general knowledge, it cannot be deemed that the content disclosed in the Detailed Description of the Invention can be expanded or generalized to the scope of Present

Invention 1 (to other means which achieve the above-mentioned standard deviation).

Even if the scope of the invention is specified to a means of forming a specific asperity shape on the surface of the anti-glare layer, the Detailed Description of the Invention is not disclosed to the extent that a person ordinarily skilled in the art can understand how the specific asperity shape which achieves the above-mentioned action is among asperity shapes which can be formed by means of blast processing as in the third embodiment, and it cannot be deemed that the Detailed Description of the Invention can be expanded or generalized to the scope.

Therefore, it cannot be deemed that the statement of Claim 1 in the Present Patent complies with the support requirement. The same applies to Claims 2 to 4 in the Present Patent.

(B) The matter "the anti-glare layer having" "a standard deviation of luminance distribution of an organic EL display ranging from 0 to 10 inclusive when adjusted so as to obtain image data as a gray scale image with an 8-bit gradation display and an average luminance of 170 gradations in a state where the anti-glare film is mounted on a surface of the organic EL display with a pixel density of 441 ppi" stated as an invention-defining matter in Claim 1 of the Present Patent is merely a quantitative statement, which can be objectively determined using a measurement apparatus without depending on sensory evaluation, into which the qualitative statement "can suppress sparkle of a display," which is the problem to be solved by Present Invention 1, is rephrased.

Then, it cannot be deemed that Claim 1 in the Scope of Claims in the Present Patent substantially states a means for solving the problem as a product, which can be recognized as being able to solve the problem of Present Invention 1 by a person ordinarily skilled in the art. Thus, it cannot be deemed that the statement of Claim 1 in the Present Patent complies with the support requirement. The same applies to Claims 2 to 4 of the Present Patent.

(C) Therefore, it cannot be deemed that the inventions according to Claims 1 to 4 in the Present Patent are stated in the Detailed Description of the Invention.

D. Reason 4 (Clarity Requirement) (Decision of the Present Case, No. 5, 2(4)E)

With regard to the invention-defining matter "comprising an anti-glare layer having a standard deviation of luminance distribution of an organic EL display ranging from 0 to 10 inclusive when adjusted so as to obtain image data as a gray scale image with an 8-bit gradation display and an average luminance of 170 gradations in a state where the anti-glare film is mounted on a surface of the organic EL display with a pixel density of 441 ppi" of Present Invention 1, it cannot be

understood how to uniquely set an imaging distance between an organic EL display and a means of obtaining image data (imaging device) and an F-number of a lens in the means of obtaining image data (imaging device) when the image data are obtained.

Then, the "anti-glare layer" ("anti-glare film") having "a standard deviation of luminance distribution of a display" "ranging from 0 to 10 inclusive" in Present Invention 1 will vary depending on the imaging distance between the organic EL display and the means of obtaining image data (imaging device) and the F-number of the lens in the means of obtaining image data (imaging device). Alternatively, even the same "anti-glare layer" ("anti-glare film") will sometimes fall within or will sometimes not fall within the scope of Present Invention 1, depending on imaging conditions.

Therefore, it cannot be deemed that Present Invention 1 is clear (or alternatively, Present Invention 1 is so unclear as to impose unforeseen disadvantages on a third party.). The same applies to Present Inventions 2 to 4.

4. Grounds for Rescission

(1) Grounds 1 for Rescission (Error in Determination on Inventive Step - Relevance to Reason 1 for Rescission)

A. Grounds 1-1 for Rescission (Error in Determination on Inventive Step of Present Invention 1)

(A) Grounds 1-1-1 for Rescission (Error in Finding of Difference between Present Invention 1 and Cited Invention)

(B) Grounds 1-1-2 for Rescission (Error in Determination Whether or Not Difference from Cited Invention Would Have Been Easily Conceivable)

B. Grounds 1-2 for Rescission (Error in Determination on Inventive Step of Present Invention 2)

(A) Grounds 1-2-1 for Rescission (Error in Finding of Difference between Present Invention 2 and Cited Invention)

(B) Grounds 1-2-2 for Rescission (Error in Determination Whether or Not Difference Would Have Been Easily Conceivable)

C. Grounds 1-3 for Rescission (Error in Determination on Inventive Step of Present Invention 3)

(A) Grounds 1-3-1 for Rescission (Error in Finding of Difference between Present Invention 3 and Cited Invention)

(B) Grounds 1-3-2 for Rescission (Error in Determination Whether or Not Difference Would Have Been Easily Conceivable)

D. Grounds 1-4 for Rescission (Error in Determination on Inventive Step of Present

Invention 4)

(A) Grounds 1-4-1 for Rescission (Error in Finding of Difference between Present Invention 4 and Cited Invention)

(B) Grounds 1-4-2 for Rescission (Error in Determination Whether or Not Difference Would Have Been Easily Conceivable

(2) Grounds 2 for Rescission (Error in Determination on Enablement Requirement - Relevance to Reason 2 for Rescission)

(3) Grounds 3 for Rescission (Error in Determination on Support Requirement - Relevance to Reason 3 for Rescission)

(4) Grounds 4 for Rescission (Error in Determination on Clarity Requirement - Relevance to Reason 4 for Rescission)

(omitted)

No. 4 Judgment of this court

1. Contents of Each of the Present Inventions

(1) Scope of Claims

The Scope of Claims according to each of the Present Inventions is as stated in No. 2, 2 mentioned above.

(2) Statement of the Present Description, etc.

The Present Description, etc. contain statements as shown in Attachment 2 (Exhibit Ko 20). Note that items such as "Background Art," "Problem to be Solved by the Invention," and "Advantageous Effect of the Invention" in Attachment 2 are given according to arrangement by this judgment and may differ from the position of the items in the Present Description, etc.

(3) Technical Significance of Each of the Present Inventions

According to (1) and (2) mentioned above, technical significance of each of the Present Inventions can be found as follows.

Each of the Present Inventions relates to an anti-glare film which prevents reflection of external light onto a surface of a display (paragraph [0001]). An anti-glare film is, for example, a film having an anti-glare layer in which asperities are formed on a surface by surface roughening, and such a film is mounted on a surface of a display to scatter external light to thereby prevent reflection of the external light onto the surface of the display (paragraph [0002]). When an anti-glare film is mounted on a surface of a display or the like having high definition pixels, light transmitted through the anti-glare film from the display is refracted by asperities on

the surface of the anti-glare layer, or the pixels of the display may appear to be expanded due to a lens effect produced by the asperities on the surface of the anti-glare layer, whereby sparkle on the display may be generated, which may make the image difficult to see (paragraph [0003]). Given this situation, for example, it is known that microparticles with a relatively small particle size are dispersed in an anti-glare layer to form fine asperities on the surface thereof, thereby intending to suppress sparkle of a display (paragraph [0004]). However, in the case where microparticles are merely dispersed in an anti-glare layer, an anti-glare film could be colored such as being tinged with a yellow tone, for example, and color reproducibility of a display through the anti-glare film may be lowered (paragraph [0006]). Therefore, a problem of each of the Present Inventions is to provide an anti-glare film which is not easily colored, has a good anti-glare property, and can suppress sparkle of a display (paragraph [0007]). Each of the Present Inventions is an anti-glare film, comprising an anti-glare layer having a haze value ranging from 60% to 95% inclusive, an internal haze value ranging from 0.5% to 8.0% inclusive, and a standard deviation of luminance distribution of a display ranging from 0 to 10 inclusive (Claim 1, paragraph [0008]), which maintains an overall haze value by an external haze value while suppressing the internal haze value (paragraph [0009]). By constituting the anti-glare layer in this manner, even if the internal haze value of the anti-glare layer is not increased, a good anti-glare property can be obtained, and light with a predetermined wavelength entering the anti-glare film can be prevented from being scattered at a wide angle, to thereby prevent the anti-glare film from being colored (For example, low-wavelength light such as blue light is prevented from being scattered to thereby prevent the anti-glare film from being colored as tinged with yellow.) (paragraph [0010]).

2. Statements in Cited Documents, etc.

(1) Cited Document 1

Cited Document 1 contains a statement as shown in Attachment 3, 1 (Exhibit Ko 1).

(2) Cited Document 2

Cited Document 2 contains a statement as shown in Attachment 3, 2 (Exhibit Ko 2).

(3) Well-known Document A1

Well-known Document A1 contains a statement as shown in Attachment 3, 3 (Exhibit Ko 7).

3. Grounds 1 for Rescission (Error in Determination on Inventive step - Relevance to

Reason 1 for Rescission)

(1) Grounds 1-1 for Rescission (Error in Determination on Inventive Step of Present Invention 1)

A. Grounds 1-1-1 for Rescission (Error in Finding of Difference between Present Invention 1 and Cited Invention)

(A) The Present Description, etc. state the following: even if the internal haze value of the anti-glare layer is not increased, by appropriately roughening the surface of the anti-glare layer to adjust the external haze value, a good anti-glare property can be obtained, and in addition, light entering the anti-glare film can be inhibited from being scattered at a wide angle by microparticles in the anti-glare layer, and light with a predetermined wave length entering the anti-glare film can be prevented from being scattered at a wide angle, to thereby prevent the anti-glare film from being colored (paragraph [0010]); and in order to suppress sparkle, by not only reducing the asperities of the anti-glare layer but also by increasing inclination of the asperities of the anti-glare layer to make the asperities steeper and also by increasing the number of the asperities, the anti-glare property can be improved while suppressing sparkle of the display (paragraph [0078]). The Present Description, etc. state a relationship between sparkle and the asperity shape. However, the Present Description, etc. do not clearly state a relationship between sparkle and the internal haze value. Thus, in each of the Present Inventions, it cannot be deemed that sparkle and the internal haze value are technically indivisible as one.

(B) The Plaintiff asserts the following: three optical characteristics are technically indivisible as one with each other, and among the three optical characteristics, the internal haze value and the value of the standard deviation of luminance distribution pertaining to the degree of sparkle are technically indivisible as one with each other; and the findings by the decision of the Present Case; that is, the difference between Present Invention 1 and the Cited Invention, were divided into Difference 1-1 pertaining to the internal haze value and Difference 1-2 including the value of the standard deviation of the luminance distribution indicating the degree of sparkle, cause a result of misjudging an inventive step, and these findings are erroneous (No. 3, 1(1) [Plaintiff's Assertion] A mentioned above).

In this regard, according to Table 2 in Cited Document 1, when a pixel density is 212 ppi, the evaluation of sparkle is as follows: Example 1 is B (There is sparkle, but no problem in practical use), whereas the evaluation of sparkle for Comparative Example 9, which differs from Example 1 only in the number of added parts of the first microparticles, which mainly forms surface asperities, is C (There is sparkle),

and Example 2, which differs from Example 1 only in the number of added parts of the second microparticles, which mainly adjust an internal haze, is A (There is almost no sparkle). It is assumed that the added amount of the first microparticles and the added amount of the second microparticles relate to sparkle, and it can be deemed to be suggested that there is a relationship between the improvement of sparkle and the second microparticles which mainly adjusts the internal haze. However, Cited Document 1 states that when the weight average particle size of the first microparticles which mainly forms surface asperities is smaller than a predetermined range, a sufficient anti-glare property cannot be obtained and sparkle becomes larger (Cited Document 1, paragraph [0035]), but does not clearly state a relationship between the second microparticles which mainly adjust the internal haze or the internal haze value, and sparkle. Even if the three optical characteristics relate to a shape / structure of the anti-glare layer, there is no sufficient evidence to recognize that the internal value and the standard deviation of the luminance distribution which indicates the degree of sparkle have such a close relationship as deemed to be technically indivisible as one.

Therefore, the Plaintiff's assertion mentioned above is not acceptable.

(C) According to the foregoing, it cannot be recognized that the decision of the Present Case is erroneous in finding that the differences between Present Invention 1 and the Cited Invention were divided into Difference 1-1 and Difference 1-2 (Decision of the Present Case, No. 5, 1(3)B(B)). Grounds 1-1-1 for rescission is unfounded.

B. Grounds 1-1-2 for Rescission (Error in Determination Whether or Not Difference Would Have Been Easily Conceivable)

(A) Cited Document 2 discloses the following: with regard to the prevention of sparkle without resorting to an internal haze which may cause a reduction in resolution, a proportion of surface asperities and a surface haze which generally indicates an area having an angle of inclination of 5 degrees or more are set in a specific range thereby to prevent sparkle and also to prevent a reduction in resolution of ultra high definition display elements (Cited Document 2, paragraph [0008]); and by having a surface haze in a range which is neither too large nor too small, the asperity shape includes asperities with a small angle of inclination and asperities with a large angle of inclination in a mixed manner, and the presence of various angles of inclination in the asperities makes it easier to prevent sparkle (Cited Document 2, paragraph [0025]). As a numerical range of the above-mentioned surface haze in a range which is neither too large nor too small, it is stated that the surface haze is 22 to

40% and that an optical sheet having an intensity ratio of 1.0 to 4.0 inclusive is used. It is also stated that if the surface haze exceeds 40%, the resolution will be reduced (Cited Document 2, paragraph [0026]). In addition, it is stated that the degree of asperities (surface diffusing element) can be more specifically expressed by specifying the surface haze as well as specifying the intensity ratio (Cited Document 2, paragraph [0029]). The surface haze value specifies the asperity shape which is technically indivisible as one with sparkle. Thus, it cannot be construed that the statement of Cited Document 2 suggests that sparkle is adjusted independently of the surface haze value. Then, based on the statement of Cited Document 2 that "the internal haze is preferably 5 to 30%, more preferably 5 to 25%, and even more preferably 10 to 18%. By setting the internal haze to 5% or more, sparkle can be easily prevented through a synergistic effect with surface asperities, and by setting the internal haze to 30% or less, a reduction in resolution of ultra high definition display elements can be prevented." (Cited Document 2, paragraph [0035]), Cited Document 2 cannot be deemed to suggest that the variation is adjusted by adjusting the internal haze value to about 5% independently of the surface haze value.

Further, Cited Document 2 states that the surface haze is 22 to 40% in the optical sheet and the (overall) haze is preferably 25 to 60% (Cited Document 2, paragraph [0035]), whereas the (overall) haze value is 60% in the Cited Invention, and Cited Document 1 states that the anti-glare hard coat film has an (overall) haze value of 60% or more (Cited Document 1, paragraphs [0005] and [0042]). Thus, the (overall) haze values of the Cited Invention and Cited Document 2 are common when the (overall) haze value is 60%. In Present Invention 1, a value obtained by subtracting the internal haze value from the (overall) haze value corresponds to the external haze value (surface haze value) (paragraph [0025]). Thus, with regard to the Cited Invention in which the (overall) haze value is 60%, the internal haze value suggested by Cited Document 2 which states an optical sheet having a surface haze value of 22 to 40% is an internal haze value of 20 to 38% (between 60% - 40% = 20% and 60% - 22% = 38%) which can be obtained when the (overall) haze value is 60%. Then, even if the Cited Invention is combined with Cited Document 2, a person ordinarily skilled in the art cannot easily conceive of setting the internal haze value to less than 20%.

Note that Well-known Document A1 also states that "the internal haze is preferably 5 to 30%." However, on the other hand, Well-known Document A1 also states that "the surface haze is preferably 20 to 50%" (Well-known Document A1, paragraph [0029]). Thus, Well-known Document A1 does not suggest that sparkle is

adjusted independently of the surface haze value.

(B) The Defendant asserts that since preventing reduction in resolution of display elements is a well-known problem in anti-glare films, even in the Cited Invention having a haze value of 60%, there is a motivation for a person ordinarily skilled in the art to set the internal haze value to 5% from the viewpoint of preventing the reduction in resolution of display elements. In addition, the Defendant asserts that a person ordinarily skilled in the art who has read the statement of Cited Document 2 (paragraph [0035]) and Well-known Document A1 (paragraph [0029]) could naturally understand that, pertaining to the optical sheet, sparkle can be prevented through a synergistic effect with surface asperities by setting the internal haze to 5% or more, while a reduction in resolution of ultra high definition display elements can be prevented by setting the internal haze to 30% or less (No. 3, 1(1) [Defendant's Assertion] B(B) mentioned above).

However, as mentioned in (A) above, Cited Document 2 and Well-known Document A1 do not suggest that sparkle is adjusted independently of the surface haze value. Therefore, the Defendant's assertion mentioned above is not acceptable.

(C) As mentioned in (A) above, even if the Cited Invention is combined with Cited Document 2, a person ordinarily skilled in the art cannot easily conceive of setting the internal haze value to less than 20%, and a person ordinarily skilled in the art cannot also easily conceive of a structure according to Difference 1-1 of Present Invention 1 which is the internal haze value ranging from 0.5% to 8.0% inclusive. Other than the above, there is no sufficient evidence to recognize that a person ordinarily skilled in the art could easily conceive of the structure according to Difference 1-1 of Present Invention 1. Then, Present Invention 1 could not have been easily made by a person ordinarily skilled in the art on the basis of the Cited Invention, and the technology described in Cited Documents 2 to 5 or well-known technical matters.

Therefore, the decision of the Present Case is erroneous in determining that Present Invention 1 could have been easily made by a person ordinarily skilled in the art on the basis of the Cited Invention, and the technology described in Cited Documents 2 to 5 or well-known technical matters (Decision of the Present Case, No. 5, 1(3)C(E)). Grounds 1-1-2 for rescission are well founded.

(2) Grounds 1-2 for Rescission (Error in Determination on Inventive step of Present Invention 2), Grounds 1-3 for Rescission (Error in Determination on Inventive Step of Present Invention 3), Grounds 1-4 for Rescission (Error in Determination on Inventive Step of Present Invention 4)

As mentioned in (1)B(C) above, Present Invention 1 could not have been easily made by a person ordinarily skilled in the art on the basis of the Cited Invention, and the technology described in Cited Documents 2 to 5 or well-known technical matters. In addition, since all of Present Inventions 2 to 4 depend from Present Invention 1 and are inventions in which Present Invention 1 is further restricted, Present Inventions 2 to 4 could not also have been easily made by a person ordinarily skilled in the art on the basis of the Cited Invention, and the technology described in Cited Documents 2 to 5 or well-known technical matters.

Therefore, all of the decisions of the Present Case are erroneous in determining that Present Inventions 2 to 4 could have been easily made by a person ordinarily skilled in the art on the basis of the Cited Invention, and the technology described in Cited Documents 2 to 5 or well-known technical matters (Decision of the Present Case, No. 5, 1(4)C(C), (5)C(C), and (6)C(C)). All of Grounds 1-1-2, 1-3-2, and 1-4-2 for Rescission are well founded.

4. Grounds 2 for Rescission (Error in Determination on Enablement Requirement - Relevance to Reason 2 for Rescission)

(1) In order for the Detailed Description of the Invention to comply with the enablement requirement for an invention of a product, it can be construed that the Detailed Description of the Invention is required to contain a statement to the extent that a person ordinarily skilled in the art can make and use the product without requiring undue trial-and-error on the basis of the statement of the Detailed Description of the Invention and the common general technical knowledge at the time of filing the application.

(2) In the Present Case, it is not undisputed by the parties that each of the present inventions can be worked through the anti-glare film according to the first embodiment comprising an anti-glare layer having a narrow protrusion loop structure and having three optical characteristics. However, each of the present inventions is required to comprise an anti-glare layer which satisfies three optical characteristics, but that structure is not defined in the Scope of Claims, and it can be construed that structures other than the long narrow protrusion loop structure are also included in each of the present inventions. Given this situation, it will be determined whether or not the statement of the Present Description, etc. can be deemed to include structures other than the long narrow protrusion loop structure.

First, the Present Description, etc. state in paragraph [0034] that, as [Structure of Anti-glare Layer], "The anti-glare layer 3 of first embodiment has a phase separation structure of a plurality of resin components. As one example, in the anti-

glare layer 3, a plurality of long narrow (string-like or line-like) protrusions are formed on the surface by the phase separation structure of a plurality of resin components. The long narrow protrusions are branched and form a co-continuous phase structure in a dense state." In subsequent paragraph [0035], it is stated that "The anti-glare layer 3 manifests an anti-glare property by the plurality of long narrow protrusions and indentations located between adjacent long narrow protrusions. By providing the anti-glare layer 3 like this, the anti-glare film 1 has excellent balance between the haze value and transmission image clarity (image clarity). The surface of the anti-glare layer 3 has a net-like structure or, in other words, a plurality of irregular loop structures which are continuous or partially missing by forming long narrow protrusions in a roughly net-like shape," which is stated about a long narrow protrusion loop structure, but, as the anti-glare layer of the first embodiment, this statement of paragraph [0035] cannot be found to deny phase separation structures other than the long narrow protrusion loop structure.

Further, the Present Description, etc. state in the first embodiment that, in addition to shapes consisting of only the co-continuous phase structure, an intermediate structure between the co-continuous phase structure and a droplet phase structure (sea-island structure of an independent phase having a shape such as spherical, perfectly spherical, disc-like, or ellipsoidal) can also be formed, depending on the degree of phase separation (paragraph [0072]), and that, by forming fine asperities on the layer surface by phase separation, the haze value of the anti-glare layer can be adjusted even without dispersing microparticles in the anti-glare layer (paragraph [0073]), and the Present Description, etc. can be deemed to suggest that fine asperities which is not limited to the co-continuous phase structure is formed.

Furthermore, the Present Description, etc. state in paragraph [0134] that "In Examples 1 to 6, an anti-glare layer 3 is formed using a phase separation structure as a basic structure." However, it is not stated that all Examples are long narrow protrusion loop structures, and from the photographs which were taken of the surface shape / structure of the anti-glare film of Example 3 in Exhibit Ko 47 (photomicrographs of anti-glare films of Examples 3 and 6), it can be found that an asperity shape which cannot be deemed as a long narrow protrusion loop structure is formed. Thus, it can be found that, as the asperity structure of the first embodiment, an asperity structure other than the long narrow protrusion loop structure can be produced. Moreover, there is no evidence demonstrating that as an anti-glare film in which an asperity structure other than long narrow protrusion loop structures is formed and which has three optical characteristics, only the asperity structure of

Example 3 in Exhibit Ko 47 can be produced.

Thus, the anti-glare layer of the first embodiment includes an asperity structure other than the long narrow protrusion loop structure, and it can be recognized that a person ordinarily skilled in the art could make the anti-glare layer, including such a structure, according to each of the present inventions which satisfies the three optical characteristics without undue trial-and-error at least by the first embodiment.

Therefore, it can be recognized that the Present Description, etc. contain a statement to the extent that a person ordinarily skilled in the art can make and use the product without undue requiring trial-and-error on the basis of the statement of the Detailed Description of the Invention and the common general technical knowledge at the time of filing the application.

(3) In this regard, the Defendant asserts the following: although each of the present inventions includes not only the anti-glare film comprising the first structural anti-glare layer but also the anti-glare film comprising the second structural anti-glare layer and the third structural anti-glare layer, the Present Description, etc. merely show the first structural anti-glare layer as the Examples; and with regard to the second structural anti-glare layer and third structural anti-glare layer, the Present Description, etc. do not specifically state specific production examples and measurement results of three optical characteristics, etc., and do not provide any suggestion on how asperities should be formed; and the structure asserted by the Plaintiff as a structure to obtain the three optical characteristics is a superordinate concept of the first structural anti-glare layer, by which the three optical characteristics cannot immediately obtained; and thus, undue trial-and-error is required in order to produce the second structural anti-glare layer and the third structural anti-glare layer which satisfy a numerical range of parameters of the three optical characteristics (No. 3, 2 [Defendant's Assertion] mentioned above).

However, the Present Description, etc. do not state that an anti-glare film which cannot be produced by the first embodiment is produced by the second embodiment and the third embodiment. On the contrary, the Present Description, etc. state in paragraph [0079] that "Such asperities can be formed in the anti-glare layer by the above-mentioned spinodal decomposition in the first embodiment, but by other methods as well, such asperities can be formed in the anti-glare layer. As in the second embodiment, for example, even in the case where a plurality of microparticles are used to form the asperities on the surface of the anti-glare layer, when forming the anti-glare layer, materials are selected so as to strengthen repulsive interaction between the microparticles and other resins or solvents, which causes moderate

aggregation of the microparticles, and a distributed structure of steep asperities with a high number density can be formed on the anti-glare layer." and indicates that the asperities as in the first embodiment can be formed by other methods and that asperities are formed by the second embodiment as one example. In addition, the Present Description, etc. state in paragraph [0079] that "Hereinafter, the anti-glare layer in other embodiments will be described focusing on differences from the first embodiment," and thereafter, the second embodiment (paragraphs [0080] to [0102]) and the third embodiment (paragraphs [0103] to [0115]) are subsequently described. Thus, it is natural to construe that the third embodiment is one of "other methods" for forming the asperities obtained by the first embodiment. Further, there is no evidence to support existence or aspects of an anti-glare film which each of the present inventions includes and which cannot be produced by methods other than the first embodiment. Then, it can be recognized that an anti-glare film which can be produced by the first embodiment can also be produced by the second embodiment and the third embodiment, and even if some of anti-glare films which can be produced by the first embodiment cannot be produced by the second embodiment and the third embodiment, this does not negate that each of the present inventions can be worked by the first embodiment.

Note that even if some of the second structural anti-glare layer produced by the second embodiment and the third structural anti-glare layer produced by the third embodiment have a shape / structure different from that of the first structural anti-glare layer, and they do not satisfy the three optical characteristics of each of the present inventions, it merely means that they are not embodiments to work each of the present inventions, which does not negate the enablement of each of the present inventions.

According to the foregoing, the Defendant's assertion mentioned above is not acceptable.

(4) Further, the Plaintiff asserts that a person ordinarily skilled in the art can produce the anti-glare films of the second embodiment and the third embodiment comprising the anti-glare layer having the three optical characteristics while producing (reproducing) the anti-glare films of Examples 1 to 6 and checking and confirming whether the anti-glare layer has the shape / structure stated in the Present Description, etc. (paragraphs [0015] and [0078]) (No. 3, 2 [Plaintiff's Assertion] mentioned above).

In this regard, just because the shape / structure of the anti-glare films of Examples 1 to 6 are checked, it cannot be deemed to mean that an anti-glare layer

having a similar shape / structure can be produced by the second embodiment or the third embodiment. Thus, the Plaintiff's assertion mentioned above is not acceptable as is. Even if some of the second structural anti-glare layer produced by the second embodiment and the third structural anti-glare layer produced by the third embodiment have a shape / structure different from that of the first structural anti-glare layer, and they do not satisfy the three optical characteristics of each of the present inventions, it merely means that they are not embodiments to work each of the present inventions, which does not negate the enablement of each of the present inventions, which is as mentioned in (3) above.

(5) According to the foregoing, it can be recognized that the Present Description, etc. contain the statement to the extent that a person ordinarily skilled in the art can make and use the product according to each of the present inventions without requiring undue trial-and-error on the basis of the statement and the common general technical knowledge at the time of filing the application, and it can be recognized that the Present Description, etc. are stated in a manner clear and sufficient to enable a person ordinarily skilled in the art to work each of the present inventions.

Therefore, the decision of the Present Case is erroneous in determining that it cannot be deemed that the Detailed Description of the Invention is stated in a manner clear and sufficient to enable a person ordinarily skilled in the art to work the each of the present inventions (Decision of the Present Case, No. 5, 2(2)B, C). Grounds 2 for rescission are well founded.

5. Grounds 3 for Rescission (Error in Determination on Support Requirement - Relevance to Reason 3 for Rescission)

(1) It can be construed that whether or not the statement of the Scope of Claims complies with the support requirement should be determined by comparing between the statement of the Scope of Claims and the statement of the Detailed Description of the Invention, then examining: whether or not the invention stated in the Scope of Claims is the invention stated in the Detailed Description of the Invention, and falls within the scope where a person ordinarily skilled in the art can recognize that the problem of the invention can be solved by the statement of the Detailed Description of the Invention; or whether or not, even if it is neither stated nor suggested in the Detailed Description of the Invention, the invention stated in the Scope of Claims falls within the scope where a person ordinarily skilled in the art can recognize that the problem of the invention can be solved in light of the common general technical knowledge at the time of filing the application.

(2) A. The statement of the Scope of Claims after the correction of the Present Case

is as mentioned in No. 2, 2 above, and the statement of the Present Description, etc. are as mentioned in 1(2) above.

B. (A) According to the statement of the Present Description, etc., it can be found that a person ordinarily skilled in the art can understand the following matters.

The problem to be solved by each of the present inventions is "to provide an anti-glare film which is not easily colored, has a good anti-glare property, and can suppress sparkle of a display" (paragraph [0007]).

In each of the present inventions, even if the internal haze value of the anti-glare layer is not increased, a good anti-glare property can be obtained by appropriately roughening the surface of the anti-glare layer to adjust the external haze (paragraph [0010]), and if the haze value ranges a value from 60% to 95% inclusive, a good anti-glare property can be obtained (paragraphs [0007] to [0009]). In addition, by not increasing the internal haze, light entering the anti-glare film can be inhibited from being scattered at a wide angle by microparticles in the anti-glare layer, and thus light with a predetermined wavelength entering the anti-glare film can be prevented from being scattered at a wide angle to thereby prevent the anti-glare film from being colored (paragraph [0010]), and when the internal haze value ranges from 0.5% to 15.0% inclusive, the anti-glare film can be prevented from being colored (paragraphs [0007] to [0009]). Further, as a method of suppressing sparkle, by not only reducing the asperities of the anti-glare layer but also increasing inclination of the asperities of the anti-glare layer thereby to make the asperities steeper and also by increasing the number of asperities, the anti-glare property can be improved while suppressing sparkle of a display (paragraph [0078]), and thus, the anti-glare film of an asperity structure having a standard deviation of luminance distribution of a display ranging from 0 to 10 inclusive can suppress sparkle (paragraph [0011]). Therefore, each of the present inventions having the three optical characteristics can solve the above-mentioned problem.

(B) In addition, the anti-glare film having the three optical characteristics can be produced by the first embodiment, as mentioned in 4(2) above.

C. According to the foregoing, with regard to the Present Patent, it can be recognized that by comparing between the statement of the Scope of Claims and the statement of the Detailed Description of the Invention in the Present Description, etc., the invention stated in the Scope of Claims is the invention stated in the Detailed Description of the Invention and falls within the scope where a person ordinarily skilled in the art can recognize that the problem of the invention can be solved by the statement of the Detailed Description of the Invention, and it can be recognized that

the statement of the Scope of Claims complies with the support requirement.

Therefore, the decision of the Present Case is erroneous in determining that it cannot be deemed that each of the present inventions is stated in the Detailed Description of the Invention (Decision of the Present Case, No. 5, 2(3)C). Grounds 3 for rescission are well founded.

6. Grounds 4 for Rescission (Error in Determination on Clarity Requirement - Relevance to Reason 4 for Rescission)

(1) It is reasonable that whether or not an invention for which a patent is sought is clear is determined from the viewpoint of whether or not the statement of the Scope of Claims is so unclear that interests of a third party are unjustly prejudiced, taking into consideration not only the statement of the Scope of Claims but also the statement of the description and the drawings attached to the application and based on the common general technical knowledge of a person ordinarily skilled in the art at the time of filing the application.

(2) A. This will be examined in the Present Case below. The value (sparkle value) of the standard deviation of the luminance distribution of the display where the anti-glare film of each of the present inventions is mounted on the surface may vary depending on a combination and a weight ratio of resin compositions in a solution for raw materials of the anti-glare layer or execution conditions, etc. of a preparation step, a formation step, and a curing step. Thus, in producing the anti-glare film of each of the present inventions, by changing each of the above-mentioned conditions to form an anti-glare layer, and by measuring / understanding in advance the physical properties of the obtained anti-glare layer, an anti-glare film having targeted physical properties can be obtained" (Present Description, etc., paragraph [0067]). Further, in each of the present inventions, as a method of suppressing sparkle, by not only reducing the asperities of the anti-glare layer, but also increasing inclination of the asperities of the anti-glare layer to make the asperities to be steep and also by increasing the number of asperities, an anti-glare property is improved while suppressing sparkle of a display (Present Description, etc., paragraph [0078]). Furthermore, in each of the present inventions, it can be deemed that in setting each of the above-mentioned conditions in order to increase inclination of the asperities of the anti-glare layer thereby to make the asperities steeper and also to increase the number of asperities, by setting each condition so that a standard deviation of luminance distribution of a display becomes a value ranging from 0 to 10 inclusive, an anti-glare film having targeted physical properties is obtained (Present Description, etc., paragraphs [0008] to [0011]). Thus, it can be deemed that the standard deviation of

luminance distribution defines the asperity shape of the anti-glare film.

On the other hand, in the case where the manner of setting measurement conditions is not appropriate in obtaining the above-mentioned standard deviation of luminance distribution of a display, if the standard deviation of the luminance distribution of a display measured using a film comprising the same anti-glare layer may vary, then the standard deviation which is a measurement result may fall within or outside a range of 0 to 10 inclusive even if the film comprising the same anti-glare layer is measured. However, it can be construed that a person ordinarily skilled in the art would attempt to set the measurement conditions so that no variations occur in the measurement results. There is no evidence to demonstrate that it is impossible to set the measurement conditions so that no variations occur in the measurement results in obtaining the standard deviation of the luminance distribution in each of the present inventions. In addition, it is obviously meaningless to perform measurements under such a condition that a deviation from sparkle perceived by display users becomes significant (for example, a condition such that even though it appears sparkle to users, the standard deviation of the luminance distribution becomes small). Further, the Present Description, etc. also consider perception of sparkle by users' eyes in the measurement of the luminance distribution (Present Description, etc. paragraph [0129]). Thus, it cannot be construed at all that a person ordinarily skilled in the art would measure the luminance distribution of each of the present inventions under such a condition that a deviation from sparkle perceived by display users becomes significant.

Then, the conditions which can be set in measuring the luminance distribution in each of the present inventions can be deemed to include restrictions of: setting the condition so that measurement results for the same anti-glare film do not vary and become constant; and setting the condition so that a deviation from sparkle perceived by display users does not become significant and that when users perceive less sparkle, the standard deviation of the luminance distribution becomes small, and it can be inferred that a person ordinarily skilled in the art would perform the measurement by setting the conditions within a reasonable range under these restrictions. In addition, when such conditions are set and the measurement is performed, there is no evidence to demonstrate that the measurement results of the standard deviation of the luminance distribution cause significant differences. Therefore, by specifying the standard deviation of the luminance distribution, each of the present inventions cannot be deemed to be so unclear that interests of a third party are unjustly prejudiced.

B. In this regard, the Defendant asserts the following: there are no measurement

methods and measurement conditions which unambiguously define the measurement values of the three optical characteristics, and even though the value of the standard deviation of the luminance distribution among the three optical characteristics varies depending on the measurement conditions such as an object distance and F-number, such measurement methods and measurement conditions are not clear from the statement of the Detailed Description of the Invention in the Present Description, etc. or from the common general technical knowledge at the time of filing the application of the Present Patent; and even if the standard deviation of the luminance distribution has been standardized as the JIS standard after filing the application of Present Patent, it does not mean that the measurement conditions have been unambiguously fixed as well, and even if the measurement method using S4 is stated in paragraph [0159] of the Present Description, etc., the imaging distance and F-number are not clear, and it cannot be deemed that general measurement methods and measurement conditions according to Present Invention 1 are stated (No. 3, 4 [Defendant's Assertion]).

However, it can be inferred that even if the F-number and imaging distance are not stated in the Present Description, etc., a person ordinarily skilled in the art, who understands that a standard deviation of luminance distribution may vary as the F-number is changed, would attempt to set the F-number and imaging distance so that the measurement result of the standard deviation indicates stable values. In addition, there is no evidence to demonstrate that no matter what F-number value is selected, the variation in the measured values of the standard deviation cannot be reduced. On the contrary, according to Exhibit Ko 24 (written opinion dated June 9, 2021 filed by the Plaintiff in the opposition procedures of the Present Case) and Exhibit Ko 40 (report dated May 13, 2022 prepared by an employee of the Plaintiff), it can be understood that when an aperture is "8," the standard deviation of the luminance distribution (sparkle value, Sparkle Value) varies less with changes in the imaging distance than when the aperture is "4" and "6". Thus, it can be inferred that a person ordinarily skilled in the art would select an F-number so that the variation in measurement results is small.

On the other hand, the larger the F-number, the darker the obtained image, which makes it difficult to set the image to a gray scale image with an 8-bit gradation display and an average luminance of 170 gradations. Thus, there is also a restriction on increasing the aperture of the film sparkle examination apparatus. Further, when the measurement was performed by selecting the F-number so that the variation in the measurement results is small and the appropriate average luminance is obtained, there is no evidence to support that the standard deviation of the luminance distribution

indicates significant variation. Thus, the standard deviation of the luminance distribution in each of the present inventions cannot be deemed to be unclear.

Note that Exhibit Ko 32 (Manual of Film Sparkle Examination Apparatus manufactured by Komatsu NTC Ltd.) states in the section "Adjustment of Aperture" "Start the measurement and adjust the maximum luminance so as not to exceed 255." and "When a film is mounted, if the maximum luminance has exceeded 255, adjust the aperture as well." (Exhibit Ko 32, page 7). That is, the maximum luminance is adjusted so as not to exceed 255, which suggests that the aperture is adjusted so as to obtain image data as 8-bit (0 to 255) gradation display; that is, 256 gradation display in each of the present inventions. Thus, it is unnatural that the aperture is not adjusted when photographs are taken using the sparkle examination apparatus stated in Exhibit Ko 32. Nevertheless, only by adjusting the aperture, it may not be possible to "adjust so as to obtain image data as a gray scale image with an 8-bit gradation display and an average luminance of 170 gradations in a state where the anti-glare film is mounted on a surface of the organic EL display with a pixel density of 441 ppi." Thus, as stated in the Present Description, etc., a relative distance between an imaging device and a display where a film is mounted may be adjusted to "the extent that there are no bright lines due to pixels or even if there is a bright line due to pixels, the bright line does not affect the evaluation of the sparkle of the display" (Present Description, etc., paragraph [0128]). In addition, in order to "adjust so as to obtain image data as a gray scale image with an 8-bit gradation display and an average luminance of 170 gradations in a state where the anti-glare film is mounted on a surface of the organic EL display with a pixel density of 441 ppi," it may be possible to alter an exposure time of an imaging device and the luminance of all pixels of a display (Present Description, etc., paragraph [0159]). However, just because the Present Description, etc. do not state that the adjustment of the F-number is performed, it can neither be construed that the adjustment of the aperture stated in the manual of the sparkle examination apparatus (Exhibit Ko 32) is prohibited in adjusting the settings for measuring the standard deviation of the luminance distribution appropriately, nor can it be construed that a person ordinarily skilled in the art does not perform the adjustment of the aperture. Further, it is not specifically clear how much the standard deviation varies depending on what specific F-number is set and whether the degree of the variation in the standard deviation makes the Scope of Claims so unclear that interests of a third party are unjustly prejudiced.

Therefore, the Defendant's assertion mentioned above is not acceptable.

(3) As mentioned in the foregoing, taking into consideration the statement of the description and the drawings attached to the application and based on the common general technical knowledge of a person ordinarily skilled in the art at the time of filing the application, the statement of Claim 1 in the Scope of Claims in the Present Patent (Present Invention 1) cannot be deemed to be so unclear that interests of a third party are unjustly prejudiced, and the invention for which the patent is sought is clear. The statement of Claims 2 to 4 (Present Inventions 2 to 4) is also clear.

Therefore, the decision of the Present Case is erroneous in determining that it cannot be deemed that Present Invention 1 is clear, and the same applies to Present Inventions 2 to 4 (Decision of the Present Case, No. 5, 2(4)E). Grounds 4 for rescission are well founded.

7. Conclusion

According to the foregoing, all of Grounds 1-1-2, 1-2-2, 1-3-2, and 1-4-2 for Rescission and Grounds 2 to 4 for Rescission are well founded. The decision of the Present Case contains illegality which should be rescinded.

Therefore, the Plaintiff's claim shall be granted, and the judgment is rendered as mentioned in the main text.

Intellectual Property High Court, Third Division

Presiding Judge: SHOJI Tamotsu
Judge: NAKADAIRA Ken
Judge: TSUNO Michinori

(Attachment 1 A copy of the Opposition Decision is omitted.)

Attachment 2 (Statement of the Present Description, etc., Exhibit Ko 20)

(1) Technical Field

"The present invention relates to an anti-glare film which prevents reflection of external light onto a surface of a display." (paragraph [0001])

(2) Background Art

"An anti-glare film is, for example, a film having an anti-glare layer in which asperities are formed on a surface by surface roughening, and such a film is mounted on a surface of a display to scatter external light thereby to prevent reflection of the external light onto the surface of the display." (paragraph [0002])

"In this regard, when an anti-glare film is mounted on a surface of a display or the like having high definition pixels, light transmitted through the anti-glare film from the display is refracted by asperities on the surface of the anti-glare layer, or the pixels of the display may appear to be expanded due to a lens effect produced by the asperities on the surface of the anti-glare layer, whereby sparkle on the display may be generated, which may make the image difficult to see." (paragraph [0003])

"Given this situation, for example, as disclosed in Patent Document 1, it is known that microparticles with a relatively small particle size are dispersed in an anti-glare layer to form fine asperities on the surface thereof, thereby intending to suppress sparkle of a display." (paragraph [0004])

"However, in a case where microparticles are merely dispersed in an anti-glare layer, the anti-glare film could be colored such as being tinged with a yellow tone, for example, and color reproducibility of a display through the anti-glare film may be lowered." (paragraph [0006])

(3) Problem to be Solved by the Invention

"Therefore, an object of the present invention is to provide an anti-glare film which is not easily colored, has a good anti-glare property, and can suppress sparkle of a display." (paragraph [0007])

(4) Means for Solving the Problem

"In order to solve the above-mentioned problem, an anti-glare film according to one aspect of the present invention comprises an anti-glare layer having a haze value ranging from 60% to 95% inclusive, an internal haze value ranging from 0.5% to 15.0% inclusive, and a standard deviation of luminance distribution of a display ranging from 0 to 10 inclusive in a state where the anti-glare film is mounted on a surface of the display." (paragraph [0008])

"The anti-glare layer of the anti-glare film having the above-mentioned

structure maintains the haze value at a value ranging from 60% to 95% inclusive by an external haze value while suppressing the internal haze value at a value ranging from 0.5% to 15.0% inclusive. (paragraph [0009])

(5) Advantageous Effect of the Invention

"By constituting the anti-glare layer in this manner, even if the internal haze value of the anti-glare layer is not increased, a good anti-glare property can be obtained by appropriately roughening the surface of the anti-glare layer to adjust the external haze value. Therefore, for example, light entering the anti-glare film can be inhibited from being scattered at a wide angle by microparticles in the anti-glare layer. Accordingly, light with a predetermined wavelength entering the anti-glare film can be prevented from being scattered at a wide angle to thereby prevent the anti-glare film from being colored (for example, low-wavelength light such as blue light is prevented from being scattered thereby to prevent the anti-glare film being colored as tinged with yellow)." (paragraph [0010])

"Further, the value of the standard deviation of the luminance distribution of the display indicates a degree of variation of bright spots on the display and is an objective indicator which can be used to quantitatively evaluate sparkle of a display. Therefore, in the above-mentioned structure, sparkle of a display can be more favorably suppressed while preventing the anti-glare film from being colored by setting the value of the standard deviation to a value ranging from 0 to 10 inclusive." (paragraph [0011])

"According to the present invention, it is possible to provide an anti-glare film which is not easily colored, has a good anti-glare property, and can suppress sparkle of a display." (paragraph [0017])

(6) Mode for Carrying Out the Invention

"Hereinafter, each of the embodiments of the present invention is described with reference to the drawings.

(First Embodiment)" (paragraph [0019])

"Figure 1 is a cross-sectional view illustrating a structure of an anti-glare film 1 according to a first embodiment. The anti-glare film 1 is mounted on a surface of a display 16a of a display device 16 (see Figure 3). The anti-glare film 1 comprises a substrate film 2, an anti-glare layer 3, and an adhesive layer 4." (paragraph [0020])

"In the anti-glare layer 3, the haze value is set to a value ranging from 60% to 95% inclusive, and the internal haze value is set to a value ranging from 0.5% to 15.0% inclusive." (paragraph [0023])

"The haze value can be appropriately set within the above-mentioned range, but

is more desirably a value ranging from 70% to 85% inclusive. In addition, the internal haze value can be appropriately set within the above-mentioned range, but is more desirably a value ranging from 0.5% to 8.0% inclusive." (paragraph [0024])

"The haze value in the present embodiment is a value measured by a method conforming to JIS K7136. The external haze value corresponds to a value obtained by subtracting the internal haze value from the haze value. The internal haze value can be measured by coating the anti-glare layer 3 with a resin layer or the like or affixing a smooth transparent film to the anti-glare layer 3 via a transparent adhesive layer, thereby flattening the surface of the anti-glare layer 3 and then measuring the haze value." (paragraph [0025])

"In this manner, the anti-glare layer 3 of the anti-glare film 1 maintains the haze value at a value ranging from 60% to 95% inclusive by an external haze value while suppressing the internal haze value at a value ranging from 0.5% to 15.0% inclusive. By constituting the anti-glare layer 3 in this manner, even if the internal haze value of the anti-glare layer 3 is not increased, a good anti-glare property can be obtained by appropriately roughening the surface of the anti-glare layer to adjust the external haze value. Therefore, for example, light entering the anti-glare film can be inhibited from being scattered at a wide angle by microparticles in the anti-glare layer. Accordingly, light with a predetermined wavelength entering the anti-glare film 1 can be prevented from being scattered at a wide angle to thereby prevent the anti-glare film from being colored (for example, low-wavelength light such as blue light is prevented from being scattered to thereby prevent the anti-glare film being colored as tinged with yellow). (paragraph [0026])

"Further, in the anti-glare film 1, the standard deviation of the luminance distribution of the display 16a in a state where the anti-glare film 1 is mounted on the surface of the display 16a (hereinafter also referred to as a sparkle value) is set to a value ranging from 0 to 10 inclusive." (paragraph [0029])

"The anti-glare layer 3 manifests an anti-glare property by the plurality of long narrow protrusions and indentations located between adjacent long narrow protrusions. By providing the anti-glare layer 3 in this manner, the anti-glare film 1 has excellent balance between the haze value and transmission image clarity (image clarity). The surface of the anti-glare layer 3 has a net-like structure or, in other words, a plurality of irregular loop structures which are continuous or partially missing by forming the long narrow protrusions in a roughly net-like shape." (paragraph [0035])

"The formation of the above-mentioned structure on the surface of the anti-glare layer 3 prevents the formation of protrusions in a lens shape (sea-island shape).

Thus, light transmitted through the anti-glare layer 3 from the display 16a is prevented from being refracted by the asperities of the surface of the anti-glare layer 3, or the pixels of the display 16a are prevented from being seen as expanded due to a lens effect produced by the asperities on the surface of the anti-glare layer 3, and the sparkle of the display 16a is suppressed. As a result, even when the anti-glare film 1 is mounted on the display 16a having high-definition pixels, the sparkle of the display 16a can be suppressed to a high degree while ensuring an anti-glare property, and blurring of texts / images can be suppressed." (paragraph [0036])

"Here, a refractive index of a polymer and a refractive index of a cured resin or cross-linked resin produced by curing a curable resin precursor typically differ from each other. In addition, refractive indexes of a plurality of types of polymers (a first polymer and a second polymer) also typically differ from each other. The difference between the refractive index of the polymer and the refractive index of the cured resin or cross-linked resin as well as the difference between the refractive indexes of the plurality of types of polymers (the first polymer and the second polymer) are, for example, desirably a value ranging from 0 to 0.04 inclusive, and more desirably a value ranging from 0 to 0.02 inclusive." (paragraph [0054])

"The anti-glare layer 3 may contain a plurality of microparticles (fillers) dispersed in a matrix resin. The microparticles may be any of organic microparticles and inorganic microparticles. The plurality of microparticles may contain a plurality of types of microparticles." (paragraph [0055])

"Examples of the organic microparticles include crosslinked acrylic particles and crosslinked styrene particles. In addition, examples of the inorganic microparticles include silica particles and alumina particles. Further, the refractive index difference between the matrix resin and the microparticles contained in the anti-glare layer 3 can be set to a value ranging from 0 to 0.2 inclusive as one example. This refractive index difference is more desirably a value ranging from 0 to 0.15 inclusive, and still more desirably a value ranging from 0 to 0.07 inclusive." (paragraph [0056])

"An average particle size of the microparticles is not particularly limited, and for example, can be set to a value ranging from 0.5 μm to 5.0 μm inclusive. This average particle size is more desirably a value ranging from 0.5 μm to 4.0 μm inclusive, and still more desirably a value ranging from 1.0 μm to 3.0 μm inclusive." (paragraph [0057])

"Note that the average particle size referred to herein is a 50% volume average particle size according to the Coulter counter method (the same applies to the average

particle size referred to hereinafter.). The microparticles may be solid or hollow. It should be noted that if the average particle size of the microparticles is too small, an anti-glare property will be difficult to achieve, and if the average particle size is too large, the sparkle of the display may become large." (paragraph [0058])

"Here, a haze value and an internal haze value of the anti-glare layer 3, b* value in L*a*b* color system of the anti-glare film 1, and a value of the standard deviation of the luminance distribution of the display 16a having the anti-glare film 1 mounted on the surface thereof (sparkle value) may vary depending on a combination and a weight ratio of resin compositions in a solution or execution conditions, etc. of a preparation step, a formation step, and a curing step. Therefore, by changing each of the conditions to form an anti-glare layer, and by measuring / understanding in advance the physical properties of the obtained anti-glare layer, an anti-glare film having targeted physical properties can be obtained." (paragraph [0067])

"When the co-continuous phase structure is formed and coarsening occurs in association with the progression of phase separation due to spinodal decomposition from the liquid phase of the plurality of resin components, the continuous phase becomes discontinuous, and a droplet phase structure (sea-island structure of an independent phase having a shape such as spherical, perfectly spherical, disc-like, or ellipsoidal) is formed. Here, depending on the degree of phase separation, an intermediate structure between the co-continuous phase structure and the droplet phase structure (a phase structure in a process of transitioning from the co-continuous phase to the droplet phase) can also be formed. After the solvent has been removed, a layer having fine asperities is formed on the surface." (paragraph [0072])

"By forming fine asperities on the surface of the layer by phase separation in this manner, the haze value of the anti-glare layer 3 can be adjusted even without dispersing microparticles in the anti-glare layer 3. In addition, since microparticles do not have to be dispersed in the anti-glare layer 3, the haze value of the anti-glare layer 3 can be easily adjusted while suppressing the internal haze value as compared to the external haze value. Note that the anti-glare layer 3 containing microparticles can also be formed by adding microparticles to the solution in the preparation step, but in this case, when the refractive index difference between the matrix resin and the microparticles in the anti-glare layer 3 is large, the anti-glare layer 3 may be colored, and therefore attention has to be paid." (paragraph [0073])

"Here, as a method of suppressing the sparkle of the display 16a, it can be considered, for example, to reduce the asperities of the surface of the anti-glare layer, but the anti-glare property of the anti-glare film may be reduced. However, by not

only reducing the asperities of the anti-glare layer but also increasing inclination of the asperities of the anti-glare layer thereby to make the asperities steeper and also by increasing the number of the asperities, an anti-glare property can be improved while suppressing the sparkle of the display." (paragraph [0078])

"Such asperities can be formed in the anti-glare layer by the above-mentioned spinodal decomposition in the first embodiment, but by other methods as well, such asperities can be formed in the anti-glare layer. As in the second embodiment, for example, even in the case where a plurality of microparticles are used to form the asperities on the surface of the anti-glare layer, when forming the anti-glare layer, materials are selected so as to strengthen repulsive interaction between the microparticles and other resins or solvents, which causes moderate aggregation of the microparticles, and a distributed structure of steep asperities with a high number density can be formed on the anti-glare layer. Hereinafter, the anti-glare layer in other embodiments will be described focusing on differences from the first embodiment." (paragraph [0079])

"(Second Embodiment)

The anti-glare layer of the anti-glare film according to the second embodiment comprises a matrix resin and a plurality of microparticles dispersed in the matrix resin. The microparticles are formed in a perfectly spherical shape, but the shape of the microparticles is not limited thereto, and the microparticles may be formed in a substantially spherical or ellipsoidal shape. In addition, the microparticles are formed in a solid form, but may also be formed so as to be hollow. When the microparticles are hollow, the hollow part of the microparticles may be filled with air or another gas. In the anti-glare layer, each of the microparticles may be dispersed as a primary particle, or a plurality of secondary particles formed by aggregating a plurality of microparticles may be dispersed." (paragraph [0080])

"The refractive index difference between the matrix resin and the microparticles is set to a value ranging from 0 to 0.2 inclusive. This refractive index difference is more desirably a value ranging from 0 to 0.15 inclusive, and still more desirably a value ranging from 0 to 0.07 inclusive." (paragraph [0081])

"In this manner, uniform and moderate asperities are formed on the surface of the anti-glare layer by microparticles having a relatively uniform particle size and having an average particle size which is set within the above-mentioned range. As a result, the sparkle of the display 16a can be suppressed while ensuring the anti-glare property. Moreover, by setting the refractive index difference between the matrix resin and the microparticles to the above-mentioned range, light with a predetermined

wavelength entering the anti-glare film can be prevented from being scattered at a wide angle to thereby prevent the anti-glare film from being colored." (paragraph [0084])

"According to the anti-glare film of the second embodiment, by setting the refractive index difference between the matrix resin and the microparticles to a predetermined range and by dispersing a plurality of microparticles in the matrix resin, the sparkle of the display 16a can be suppressed while ensuring a good anti-glare property, and light entering the anti-glare film can be favorably inhibited from being scattered at a wide angle due to the refractive index difference between the matrix resin and the microparticles, whereby the anti-glare film can be prevented from being colored." (paragraph [0101])

"(Third Embodiment)

An anti-glare layer 33 of an anti-glare film according to a third embodiment has a structure in which an asperity shape is formed on a surface of a side opposite to the substrate film side. The anti-glare layer 33 is composed of a resin layer. This resin layer is composed, as one example, of a material similar to the matrix resin in the second embodiment." (paragraph [0103])

"Specifically, the anti-glare film according to the third embodiment is produced by forming, on a substrate film, a coating layer which contains a curable resin, followed by shaping a surface of the coating layer into an asperity shape, and then curing the coating layer. Figure 2 is a diagram illustrating a method of producing the anti-glare film according to the third embodiment. In the example of Figure 2, a UV curable resin is used as the curable resin. (paragraph [0104])

"The layer of the UV curable resin precursor coated onto the substrate film 20a (hereinafter referred to as a coating layer) is pressed together with the substrate film 20a at the nip point between the rolls 21, 24. The roll 24 is a roll-shaped mold (embossing roll) having fine asperities formed on the circumferential surface and transfers the asperity shape to the surface of the coating layer as the film passes through the nip point N2 between the rolls 21, 24." (paragraph [0107])

"The coating layer having the asperity shape transferred to the surface by the roll 24 is cured by ultraviolet light irradiated from the ultraviolet lamp 26 provided below the rolls 21, 24. Thereby, the anti-glare layer 33 is formed. The anti-glare film produced in this manner is released from the roll 24 by a roll 25, which is axially supported adjacent to the roll 24, and is conveyed in a predetermined direction." (paragraph [0108])

"Here, the asperities on the surface of the roll 24 are formed by striking the

surface with blast particles having a predetermined particle size by a blasting method. The asperity shape formed in the coating layer of the anti-glare film can be adjusted by adjusting the blast particle size." (paragraph [0109])

"An average particle size of the blast particles used in step (b) can be set as appropriate, and as one example, can be set to a value ranging from 10 μm to 50 μm inclusive. The average particle size of the blast particles is more desirably a value ranging from 20 μm to 45 μm inclusive, and still more desirably a value ranging from 30 μm to 40 μm inclusive. Thereby, the anti-glare layer 33 having an asperity shape formed on the surface can be obtained." (paragraph [0112])

"In the anti-glare film of the third embodiment, since microparticles do not have to be dispersed in the anti-glare layer 33, light entering the anti-glare film can be favorably prevented from being scattered at a wide angle due to the refractive index difference between the matrix resin and the microparticles in the anti-glare film to thereby prevent the anti-glare layer from being colored." (paragraph [0115])

"(Sparkle Examination Apparatus)

Figure 3 is a schematic view of a sparkle examination apparatus 10. The sparkle examination apparatus 10 is a device for evaluating the sparkle of the display 16a in the display device 16 where a film such as the anti-glare film 1 is mounted on a surface. The sparkle examination apparatus 10 is provided with the housing 11, the imaging device 12, the holding unit 13, the imaging device frame 14, the display device frame 15, and the image processing device 17. Examples of a commercially available sparkle examination apparatus 10 include the 'Film Sparkle Examination Apparatus' manufactured by Komatsu NTC Ltd." (paragraph [0118])

"In the sparkle examination apparatus 10, by adjusting a relative distance between the imaging device 12 and the display 16a, a pixel size of an image which is captured per unit pixel (for example, one pixel) of the imaging element of the imaging device 12 and which is displayed on the display 16a is adjusted." (paragraph [0123])

"The methods of adjusting the pixel size of an image to be captured per unit pixel (for example, one pixel) of the imaging element when an image displayed on the display 16a is captured by the imaging device 12 include a method of changing the relative distance between the imaging device 12 and the display 16a, as well as a method of changing a focal distance of the imaging device 12 in a case where the lens 18 provided in the imaging device 12 is a zoom lens." (paragraph [0126])

"(Sparkle Evaluation Method)

Next, a method of evaluating the sparkle of the display 16a using the sparkle examination apparatus 10 is described. In this sparkle evaluation method, for

convenience of evaluation, the display 16a where the film is mounted on a surface is displayed by uniformly emitting light in a single color (green as one example) in advance." (paragraph [0127])

"Next, an adjusting step is performed to adjust the pixel size of the display 16a where a film to captured per unit pixel of the imaging element of the imaging device 12 is mounted. In the adjusting step, the relative distance between the imaging device 12 and the display 16a with the film mounted is adjusted according to the number of effective pixels of the imaging element of the imaging device 12 to the extent that, in the image captured by the imaging device 12, there are no bright lines due to pixels, or even if there is a bright line due to pixels, the bright line does not affect the evaluation of the sparkle of the display 16a." (paragraph [0128])

"Note that the relative distance between the imaging device 12 and the display device 16 is desirably set by taking into consideration a mode of use of the display device 16 (for example, the relative distance between user's eyes and the surface of the display 16a)." (paragraph [0129])

"After the adjustment step is performed, a setting step is performed to set a measurement area for evaluating the sparkle of the display 16a with the film mounted. In the setting step, the measurement area is appropriately set according to, for example, the size of the display 16a." (paragraph [0130])

"After the adjusting step is performed, an imaging step is performed to capture an image of the measurement area of the display 16a with the film mounted, using the imaging device 12. At this time, as one example, at least one of the exposure time of the imaging device 12 and the luminance of all pixels of the display 16a is adjusted so that image data can be obtained as a gray scale image with an 8-bit gradation display and an average luminance of 170 gradations. The image data captured in the imaging step is input into the image processing device 17." (paragraph [0131])

"After the imaging step, the image processing device 17 performs a calculation step to determine, by using image data, luminance variation in the measurement area of the display 16a with the film mounted. In this calculation step, the luminance variation is converted into a numerical form as a standard deviation of luminance distribution." (paragraph [0132])

"Here, the larger the luminance variation of the display 16a with the film mounted, the larger the sparkle of the display 16a with the film mounted becomes. Thus, the smaller the value of the standard deviation of the luminance distribution, the smaller the sparkle of the display 16a can be quantitatively evaluated. In addition, in the adjusting step, the bright line of the display 16a with the film mounted is adjusted

to the extent that the bright line does not affect the evaluation of the sparkle of the display 16a, and thus, luminance unevenness due to bright lines can be suppressed, and the sparkle of the display 16a can be accurately evaluated. Through each of the foregoing steps, it is possible to determine the standard deviation of the luminance distribution of the display 16a with the film mounted, and to evaluate the sparkle of the display 16a by the value of the standard deviation." (paragraph [0133])

"[Standard Deviation of Luminance Distribution of Display (Sparkle Value)]

A smartphone ('Galaxy S4' manufactured by Samsung Electronics Co., Ltd.) was used as the display device 16, and the anti-glare film of each sample was affixed to the surface of the display 16a using an adhesive layer (optical glue). The standard deviation (sparkle σ: sparkle value) of the luminance distribution of the display 16a was measured through the anti-glare film of each sample using the film sparkle examination apparatus 10 manufactured by Komatsu NTC Ltd. When this measurement was performed, at least one of the exposure time of the imaging device 12 and the luminance of all pixels of the display 16a was adjusted so that image data can be obtained as a gray scale image with an 8-bit gradation display and an average luminance of 170 gradations." (paragraph [0159])

End of document

Attachment 3

1. Statement of Cited Document 1 (Unexamined Patent Application Publication No. 2009-244465, Exhibit Ko 1)

"The present invention relates to an anti-glare hard coat film, and a liquid crystal panel and a liquid crystal display device using the same." (paragraph [0001])

"Liquid crystal displays (LCDs) are devices which display text and images using the electrooptic characteristics of liquid crystal molecules, and have become widespread in cellular phones, notebook-type personal computers, liquid crystal display TVs, etc. LCDs typically use a liquid crystal panel in which polarizing plates are arranged on both sides of a liquid crystal cell. On the surface of the liquid crystal panel, hard coating treatment is generally performed in order to prevent scratches on the polarizing plates. The hard coating treatment often uses hard coat films to which anti-glare treatment has been applied to prevent reflection caused by fluorescent light or sunlight entering the surface of the liquid crystal panel. The anti-glare treatment includes various methods such as embossing, transfer of surface shape, and phase separation methods, but a method of creating an asperity shape on the surface of the film by adding inorganic or organic particles, etc. is commonly used. Conventional anti-glare treatment can prevent the appearance degradation caused by external light, but it had a problem of decreasing contrast in the front direction by scattering transmitted light from the panel backlight. For this reason, as the anti-glare treatment, anti-glare films which do not have very strong scattering properties with a haze value of about 50% or less are used in most of the panels. However, panels are required to have higher definition and higher viewing angles, and thus panels using high haze anti-glare films have become necessary (see Patent Document 1, for example). However, such high haze films have high light-diffusing properties, and when a high haze film is mounted on a liquid crystal panel, this diffuses light in the front direction, which would otherwise exit diagonally, thus increasing front black luminance and sometimes causing a reduction in the front contrast ratio." (paragraph [0002])

"Therefore, an object of the present invention is to provide an anti-glare hard coat film which can improve a diagonal contrast ratio without significantly decreasing a front contrast ratio to thereby expand a viewing angle and which can suppress sparkle phenomena to accommodate high definition panels as well, and is to provide a liquid crystal panel and a liquid crystal display device using the same." (paragraph [0004])

"To achieve the object, the anti-glare hard coat film of the present invention is an anti-glare hard coat film having an anti-glare hard coat layer on at least one side of a transparent plastic film substrate, wherein the anti-glare hard coat layer is formed from an anti-glare hard coat layer-forming material comprising microparticles and a curable hard coat resin, and wherein the anti-glare hard coat film has a haze value of 60% or more, characterized in that the anti-glare hard coat film is used for a liquid crystal panel in which an all-directional average of light leakage of black luminance in the diagonal 60° direction is 1 cd or less." (paragraph [0005])

"The anti-glare hard coat film of the present invention can improve a diagonal contrast ratio without significantly decreasing a front contrast ratio to thereby expand a viewing angle when used for liquid crystal panels with little light leakage of black luminance in a diagonal direction. In addition, the anti-glare hard coat film of the present invention can also suppress sparkle phenomena and thus can accommodate high definition panels. Therefore, the liquid crystal display device using the anti-glare hard coat film or liquid crystal panel of the present invention has excellent display properties." (paragraph [0008])

"In the anti-glare hard coat film of the present invention, the microparticles preferably comprise at least microparticles which form surface asperities and microparticles which adjust an internal haze." (paragraph [0010])

"The microparticles for forming the anti-glare hard coat layer have the main function to impart an anti-glare property by forming the surface of the anti-glare hard coat layer into an asperity shape and also to control the haze value of the anti-glare hard coat layer. The haze value of the anti-glare hard coat layer can be designed by controlling a refractive index difference between the microparticles and the curable hard coat resin." (paragraph [0032])

"The microparticles include at least one or more types, but preferably include first microparticles which mainly forms surface asperities and second microparticles which mainly adjust an internal haze. Combining the first and second microparticles can reduce an added amount of the microparticles, which mainly form surface asperities, for the anti-glare hard coat film to have a haze value of 60% or more. As a result, the hardness of the anti-glare hard coat layer to be formed can be prevented from decreasing." (paragraph [0034])

"As the first microparticles which mainly form surface asperities, the microparticles mentioned above can be used. The weight average particle size of the first microparticles is preferably in the range of 20 to 80% of the thickness of the anti-glare hard coat layer. When the weight average particle size of the first

microparticle is larger than the above-mentioned range, image clarity is reduced. When the weight average particle size of the first microparticles is smaller than the above-mentioned range, a sufficient anti-glare property cannot be obtained and sparkle becomes larger, which is a problem." (paragraph [0035])

"The refractive index difference between the second microparticles and the curable hard coat resin is preferably in a range of 0.05 to 0.2." (paragraph [0040])

"The anti-glare hard coat film of the present invention has a haze value of 60% or more. The haze value refers to a haze value (cloudiness) in accordance with JIS K7136 (Year 2000 edition). The haze value is more preferably in a range of 60 to 90%, and even more preferably in a range of 65 to 85%. In order to increase the haze value, it is preferable to select the microparticles and the curable hard coat resin so that the refractive index difference between the at least one or more types of microparticles and the curable hard coat resin is 0.005 or more. In order to achieve a haze value of 60% or more using only microparticles having the refractive index difference from that of the resin of less than 0.005, the added amount of the microparticles has to be 40 parts or more in general. If the added amount of the microparticles is excessive, a reduction in hardness and a reduction in scratch resistance will easily occur, which is not preferable." (paragraph [0042])

"Figure 1 shows a cross-sectional schematic view illustrating one example of the anti-glare hard coat film of the present invention. As illustrated in Figure 1, in the anti-glare hard coat film 4 in this example, an anti-glare hard coat layer 2 is formed on one side of a transparent plastic film substrate 1. The anti-glare hard coat layer 2 comprises first microparticles 3A which mainly form surface asperities, and second microparticles 3B which mainly adjust an internal haze. In this example, the surface of the anti-glare hard coat layer 2 is formed into an asperity shape mainly by the first microparticle 3A. However, the first microparticle 3A may contribute to adjusting the internal haze, and the second microparticle 3B may contribute to forming surface asperities. Note that, in this example, the anti-glare hard coat layer 2 is formed on one side of the transparent plastic film substrate 1, but the present invention is not limited thereto and may be an anti-glare hard coat film in which the anti-glare hard coat layer 2 is formed on both sides of the transparent plastic film substrate 1. Further, in this example, the anti-glare hard coat layer 2 is a single layer, but the present invention is not limited thereto, and the anti-glare hard coat layer 2 may have a multi-layer structure with two or more layers laminated." (paragraph [0053])

"The anti-glare hard coat film of the present invention and various optical

elements such as polarizing plates using the same are used for the liquid crystal panel in which the all-directional average of light leakage of black luminance in the diagonal 60° direction is 1 cd or less. Hereinafter, the all-directional average of the light leakage of black luminance in the diagonal 60° direction is referred to as an 'average black luminance.' The average black luminance can be measured, for example, by a method stated in the Examples below. All directions refer to an azimuth angle in a range of 0° to 360° shown in Figure 3. If a hard coat film having a high haze value is used, when black is displayed on a liquid crystal panel, light which would otherwise exit in a diagonal direction is diffused in the front direction, thus increasing the black luminance at the front panel and easily causing a reduction in the front contrast ratio. By combining a panel with an average black luminance of 1 cd or less and an anti-glare hard coat film with a haze value of 60% or more, the increase in black luminance at the front is reduced and a good front contrast ratio is obtained. Examples of the panels with an average black luminance of 1 cd or less include those with in-plane switching (IPS) mode and vertical alignment (VA) mode as a drive system." (paragraph [0076])

"(Sparkle (Definition))

(1) A polarizing plate of 185 μm is affixed to a surface of a transparent film substrate on which an anti-glare hard coat layer is not formed, and then this is bonded to a glass substrate.

(2) The degree of sparkle of a film sample prepared on a mask pattern fixed on a light table was evaluated visually. Mask patterns with a definition of 106 ppi, 144 ppi, and 212 ppi were prepared and determined sequentially. The definition of the mask pattern which was determined as A based on the following determination criteria was recorded.

Determination Criteria

A: There is almost no sparkle.

B: There is sparkle, but no problem in practical use.

C: There is sparkle." (paragraph [0096])

"(Example 1)

As a transparent plastic film substrate, triacetylcellulose film (manufactured by FUJIFILM Corporation; trade name 'TD80UL'; thickness: 80 μm; refractive index: 1.48) was prepared. In addition, as an anti-glare hard coat layer-forming material, per 100 parts by weight of the resin solid content of GRANDIC PC-1070 (hard coat resin manufactured by Dainippon Ink and Chemicals, Inc.; solid content: 65% by weight; refractive index: 1.53), there were added 0.5 parts by weight of the solid

content of a leveling agent (manufactured by Dainippon Ink and Chemicals, Inc.; trade name 'GRANDIC PC-4100'; solid content: 10% by weight), 0.5 parts by weight of IRGACURE 184 (photopolymerization initiator manufactured by Ciba Specialty Chemicals, Inc.), 30 parts by weight of acrylic resin microparticles (manufactured by Sekisui Kasei Co., Ltd.; MBX-8SSTN; size: 8 μm; refractive index: 1.49) as the first microparticles which mainly form surface asperities, and 2 parts by weight of silicone microparticles (manufactured by Toshiba Silicone Co., Ltd.; 'TOSPEARL 145'; size: 4.5 μm; refractive index: 1.43) as the second microparticles which mainly adjust an internal haze. The mixture was prepared by diluting with ethyl acetate so as to be a solid content concentration of 50% by weight, and stirring for 5 minutes using an ultrasonic cleaner." (paragraph [0097])

"(Example 2)

The target anti-glare hard coat film was obtained in the same manner as in Example 1, except that the number of parts of the second microparticles to be added was changed to 5 parts by weight per 100 parts by weight of the solid content of the resin material. The obtained anti-glare hard coat film was mounted on the liquid crystal panel with IPS mode in the same manner as in Example 1." (paragraph [0105])

"(Comparative Example 1)

The anti-glare hard coat film was obtained in the same manner as in Example 1, except that neither the first nor the second microparticles were added. The obtained anti-glare hard coat film was mounted on the liquid crystal panel with IPS mode in the same manner as in Example 1." (paragraph [0106])

"(Comparative Example 2)

The target anti-glare hard coat film was obtained in the same manner as in Example 1, except that the number of parts of the first microparticles to be added was changed to 25 parts by weight per 100 parts by weight of the solid content of the resin material and that the second microparticles were not added. The obtained anti-glare hard coat film was mounted on the liquid crystal panel with IPS mode in the same manner as in Example 1." (paragraph [0107])

"(Comparative Example 9)

The target anti-glare hard coat film was obtained in the same manner as in Example 1, except that the number of parts of the first microparticles to be added was changed to 15 parts by weight per 100 parts by weight of the solid content of the resin material. The obtained anti-glare hard coat film was mounted on the liquid crystal panel with TN mode in the same manner as in Comparative Example 8." (paragraph [0117])

"[Table 2]

	Haze value (%)	Average black luminance (cd)	Front CR ratio	Diagonal CR ratio	Anti-glare property	Clarity	Definition (Sparkle)		
							106 ppi	144 ppi	212 ppi
Example 1	60	0.19	98	111	AA	B	A	A	B
Example 2	80	0.19	98	116	AA	B	A	A	A
Comparative Example 1	0	0.19	100	100	C	A	A	A	A
Comparative Example 2	40	0.19	99	102	A	B	A	A	C
Comparative Example 3	0	1.12	100	100	C	A	A	A	A
Comparative Example 4	40	1.12	94	111	A	B	A	A	C
Comparative Example 5	80	1.12	90	122	AA	B	A	A	A
Example 3	60	0.71	96	114	AA	B	A	A	A
Example 4	80	0.71	95	120	AA	B	A	A	A
Comparative Example 6	0	0.71	100	100	C	A	A	A	A
Comparative Example 7	40	0.71	97	108	A	B	A	A	C
Comparative Example 8	0	8.46	100	100	C	A	A	A	A
Comparative Example 9	20	8.46	90	105	B	A	A	C	C
Comparative Example 10	40	8.46	70	110	A	B	A	A	C
Comparative Example 11	60	8.46	50	120	AA	B	A	A	B
Comparative Example 12	80	8.46	20	150	AA	B	A	A	A

" (paragraph [0123])

2. Statement of Cited Document 2 (Unexamined Patent Application Publication No. 2015-172837, Exhibit Ko 2)

"The present invention relates to a touch panel, a display device, and an optical sheet, as well as a method of screening an optical sheet and a method of producing an optical sheet." (paragraph [0001])

"However, when an optical sheet having an asperity structure such as an anti-glare film is used, there is a problem in that the asperity structure causes a phenomenon in which minute variation in luminance appears in image light (sparkle), which degrades the quality of the display. In particular, recent ultra high definition display elements (a pixel density of 300 ppi or more) tend to have stronger sparkle, which makes the problem of sparkle even more serious." (paragraph [0004])

"In order to solve the above-mentioned problem, the present inventors have conducted diligent research on optical sheets to prevent sparkle. First, sparkle is considered to be caused by distortion of transmitted light due to an asperity shape when image light is transmitted through an optical sheet having surface asperity. For this reason, in the past, in order to prevent sparkle, a design was made to increase the number of smooth surfaces (design to reduce the degree of asperities) by lowering the angle of inclination of the asperities as in Patent Documents 3 to 9.

However, as mentioned above, even if the design to reduce the degree of asperities could prevent sparkle in display elements with low pixel density, the same design could not prevent sparkle in ultra high definition display elements with a pixel density of 300 ppi or more. In addition, recent personal digital assistants, as represented by smartphones, require a high level of anti-glare property for operating the touch panel outdoors. However, the design to increase the proportion of smooth surfaces to thereby prevent sparkle could not quite satisfy such a high level of anti-glare property.

Further, as mentioned above, only imparting an internal haze could not simultaneously prevent sparkle of ultra high definition display elements with a pixel density of 300 ppi or more and a reduction in resolution.

The present inventors, as a result of their diligent research, have obtained the findings that sparkle is caused by localized unevenness in luminance, etc. due to the relationship between the pixel density and the asperity shape, and that the internal haze has a role in making sparkle to be less visible through diffusion. Further, the present inventors conducted diligent research on the prevention of sparkle without resorting to an internal haze which may cause a reduction in resolution. As a result, the present inventors found that the after-mentioned formula (I) which represents a proportion of surface asperities and a surface haze which generally indicates an area having an angle of inclination of 5 degrees or more are set in a specific range to thereby prevent sparkle and also to prevent a reduction in resolution of ultra high definition display elements. Thus, the present inventors have completed the present invention." (paragraph [0008])

"The optical sheet used for the touch panel of the present invention can prevent sparkle of image light from ultra high definition display elements with a pixel density of 300 ppi or more and can also prevent a reduction in resolution by setting a surface haze and a ratio of [an intensity in the regular transmission direction / a virtual intensity in the regular transmission direction] (hereinafter sometimes referred to as an "intensity ratio") to a certain range. Even if only one of the surface haze and the intensity ratio satisfies the range of the present invention, the prevention of sparkle and the prevention of a reduction in resolution cannot be achieved simultaneously." (paragraph [0021])

"First, sparkle is considered to be caused by distortion of transmitted light due to an asperity shape when image light is transmitted through an optical sheet having surface asperities. For this reason, in the past, in order to prevent sparkle, a design to reduce the degree of asperities by lowering the angle of inclination as stated in Patent Documents 3 to 9 or a design to suppress perceived sparkle by imparting the internal haze as in Patent Documents 1 and 2 was made.

However, the design to reduce the degree of asperities or imparting the internal haze alone could not prevent sparkle of image light from ultra high definition display elements with a pixel density of 300 ppi or more.

The present inventors, as a result of their diligent research, have found that when the degree of asperities is reduced by lowering the angle of inclination as in the past, the proportion of nearly smooth areas which do not have asperities is increased, and the boundary between the smooth area and the asperity surface (in other words, an area where a steep change in the angle occurs) is one of the causes of sparkle. Further, the JIS standard on surface shapes (JIS B0601) specifies that a contact-type profilometer should be used, but measurement results cannot sometimes accurately reflect surface shapes due to the relationship between stylus shapes and surface shapes." (paragraph [0022])

"Thus, the present inventors focused on a ratio of [an intensity in the regular transmission direction / a virtual intensity in the regular transmission direction] (an intensity ratio) which indirectly represents an asperity shape. Then, the present inventors indirectly defined the asperity shape by setting the intensity ratio to a certain range, and also further specified the asperity shape by setting the surface haze to a certain range, thereby making it possible to prevent sparkle of ultra high definition display elements and also to prevent a reduction in resolution.

The intensity ratio, which will be explained in detail below, is approximated by the proportion of light which collides with diffusing elements (the sum of internal

diffusing elements and surface diffusing elements). That is, if the intensity ratio is close to 1, it can be deemed that the proportion of the case where light transmitted through an optical sheet collides with a diffusing element is high, and as the intensity ratio shifts away from 1, it can be deemed that the proportion of the case where light transmitted through an optical sheet collides with a diffusing element is low (in other words, 'the proportion of light passing through without being disturbed is high'). Further, an effect on the intensity ratio due to surface diffusing elements is much greater than that due to internal diffusing elements. Therefore, the degree of asperities (surface diffusing elements) can be indirectly represented by specifying the intensity ratio." (paragraph [0023])

"For the optical sheet used in the touch panel of the present invention, the intensity ratio has a value close to 1. Thus, this indicates that the optical sheet has many surface diffusing elements among the diffusing elements; in other words, the asperity surface has few nearly smooth surfaces and almost the whole surface has an asperity shape. That is, the optical sheet quite differs from the design of the optical sheets of Patent Documents 3 to 9, which have many nearly smooth areas.

On the other hand, according to JIS K7136:2000 and ISO 14782:1999, haze is defined as the "percentage of transmitted light passing through the test sample which, due to forward scattering, deviates from the incident light by 0.044 rad (2.5 degrees) or more." That is, the haze indicates the proportion of scattered light where incident light ray is scattered by ±2.5 degrees or more. In addition, as a physical property of light, it is known that an angle of light transmitted through an asperity surface is generally 1/2 times an angle of inclination. That is, light transmitted through an area where an angle of inclination exceeds 5 degrees will be reflected in the haze, but light transmitted through an area where an angle of inclination is less than 5 degrees will not be reflected in the haze.

The optical sheet used in the touch panel of the present invention has an intensity ratio of close to 1, in which almost the whole surface has an asperity shape, but the surface haze is not extremely large. This means that the optical sheet used in the touch panel of the present invention includes many asperities having small angle of inclination (asperities having an angle of inclination of less than 5 degrees) which is not reflected in the surface haze. In addition, the optical sheet used in the touch panel of the present invention does not have a small surface haze, which means that the optical sheet includes many asperities having a large angle of inclination (asperities having an angle of inclination of 5 degrees or more) which is reflected in the surface haze." (paragraph [0024])

"Since the optical sheet used in the touch panel of the present invention has an intensity ratio of close to 1, in which nearly smooth surfaces are few and the whole surface has an asperity shape, it is considered that there are fewer boundaries between asperity areas and nearly smooth areas on the surface of the optical sheet, which makes it easy to prevent sparkle. Further, since the optical sheet has an intensity ratio close to 1 and a surface haze in a range which is neither too large nor too small, the asperity shape includes asperities with a small angle of inclination (asperities with an angle of inclination of less than 5 degrees) and asperities with a large angle of inclination (asperities with an angle of inclination of 5 degrees or more) in a mixed manner. Thus, the presence of various angles of inclination in the asperities makes it easier to prevent sparkle. (To be precise, sparkle is considered to occur in some degree even in the present invention. However, in the present invention, it is considered that sparkle is averaged out and is made less noticeable by reducing boundaries between asperity areas and nearly smooth areas on the surface of the optical sheet and by having various angles of inclination be present.).

In addition, since the asperity surface has few nearly smooth surfaces and has various angles of inclination be present, the optical sheet can impart a high degree of anti-glare property which can also withstand bright outdoor environments. Further, the optical sheet has asperities on almost the whole surface, whereas it has many asperities having small angle of inclination which is not reflected in the haze, which prevents a reduction in resolution and also prevents a reduction in contrast when the optical sheet is used as an anti-glare sheet." (paragraph [0025])

"As mentioned above, in the present invention, by using the optical sheet having a surface haze of 22 to 40% and an intensity ratio of 1.0 to 4.0 inclusive, sparkle and a reduction in resolution of ultra high definition display elements can be prevented while imparting various properties such as an anti-glare property.

If the surface haze is less than 22% or the intensity ratio exceeds 4.0, sparkle cannot be prevented. In addition, if the surface haze exceeds 40%, the resolution will be reduced.

In addition, if the intensity ratio exceeds 4.0, the proportion of areas having a diffusing element is reduced, making it difficult to impart a high degree of anti-glare property which can also withstand bright outdoor environments, and also the number of areas where a steep change in the angle occurs on the surface of the optical sheet, making it easy to cause sparkle.

The surface haze is preferably 25 to 40%, and more preferably 25 to 35%. The surface haze can be determined by the method stated in the Examples."

(paragraph [0026])

"Next, what is meant by the intensity ratio will be explained.

The optical sheet includes an area having a diffusing element (an area having asperities on a surface, an area having a diffusing particle inside) and an area without a diffusing element (an area having a nearly smooth surface and not having a diffusing particle inside as well). For this reason, diffuse transmitted light is a composite of light 'which passes through without being disturbed' without colliding with a diffusing element and light which collides with a diffusing element. That is, the intensity distribution measured as mentioned above is a composite of light 'which passes through without being disturbed' and light which collides with a diffusing element. Thus, the intrinsic intensity in the regular transmission direction shown in Figures 3 to 9 is also an intensity composed of light 'which passes through without being disturbed' and light which collides with a diffusing element.

On the other hand, since sparkle is considered to be caused by distortion of transmitted light due to a surface diffusing element among diffusing elements, it is first necessary to know the diffusion characteristics of the light which collides with a diffusing element among the composite intensity in the regular transmission direction. Moreover, the virtual intensity in the regular transmission direction can be approximated as the regular transmission of light which collides with a diffusing element.

Thus, the ratio of [the intensity in the regular transmission direction / the virtual intensity in the regular transmission direction] is approximated as the proportion of light which collides with a diffusing element. That is, if the intensity ratio is close to 1, it can be deemed that the proportion of the case where light transmitted through an optical sheet collides with a diffusing element is high, and as the intensity ratio becomes larger than 1, it can be deemed that the proportion of the case where light transmitted through an optical sheet collides with a diffusing element is low (in other words, 'the proportion of light passing through without being disturbed is high').

Moreover, as mentioned above, the degree of asperities (surface diffusing element) can be more specifically expressed by specifying the surface haze as well as specifying the intensity ratio.

Note that since intensity of transmission and intensity of reflection show almost the same behavior, it can be deemed that a high proportion of the case where light transmitted through an optical sheet collides with a diffusing element means that a proportion of the case where external light collides with a diffusing element is high.

That is, the evaluation of the intensity ratio mentioned above leads to the evaluation of the anti-glare property as well." (paragraph [0029])

"Preferably, the optical sheet has a total luminous transmittance (JIS K7361-1: 1997) of 80% or more, more preferably of 85% or more, and even more preferably of 90% or more.

Preferably, the optical sheet has a haze (JIS K7136: 2000) of 25 to 60%, more preferably of 30 to 60%, and even more preferably of 30 to 50%. By setting the haze to 25% or more, an anti-glare property can be imparted and the shape and scratches of electrodes can be made difficult to see. Further, by setting the haze to 60% or less, a reduction in resolution of ultra high definition display elements is prevented, and a reduction in contrast can be easily prevented.

Furthermore, the internal haze is preferably 5 to 30%, more preferably 5 to 25%, and even more preferably 10 to 18%. By setting the internal haze to 5% or more, sparkle can be easily prevented through a synergistic effect with surface asperities, and by setting the internal haze to 30% or less, a reduction in resolution of ultra high definition display elements can be prevented.

In addition, from the viewpoint of balancing the effects of the surface haze and the internal haze mentioned above, the ratio of the surface haze (Hs) and the internal haze (Hi) (Hs/Hi) is preferably 1.0 to 5.0, more preferably 2.0 to 5.0, and even more preferably 2.5 to 4.5." (paragraph [0035])

"In order to set the surface haze to 22 to 40% in the optical sheet, the surface diffusing element should be adjusted. Specifically, the asperity layer is formed from a binder resin and translucent particles, and the surface diffusing element can be adjusted by controlling the shape of the translucent particles, the dispersion state of the particles, the particle size, the added amount of particles, the thickness of the asperity layer, etc. Further, the surface diffusion element is preferably adjusted by taking into consideration the inclination angle of asperities, and the inclination angle of asperities can be adjusted by the method mentioned below." (paragraph [0045])

"Methods of forming asperities include, for example, 1) a method using an embossing roll, 2) etching treatment, 3) molding with a mold, and 4) forming a coated film with coating. Among these methods, 3) molding with a mold is suitable from the viewpoint of reproducibility of asperity shapes, and 4) forming a coated film with coating is suitable from the viewpoint of productivity and compatibility with a wide variety of products." (paragraph [0047])

"Production by molding with a mold can be performed by preparing a mold with a complementary shape to an asperity surface, pouring materials constituting the

asperity layer, such as a polymer resin or glass, into the mold, allowing them to cure, and then removing from the mold. When using a transparent substrate, production can be performed by pouring a polymer resin or the like into a mold, laminating a transparent substrate thereon, then allowing the polymer resin or the like to cure, and removing the whole transparent substrate from the mold. Further, in the case of imparting internal diffusion by translucent particles, additives, etc., when a polymer resin, etc. is poured into a mold, the translucent particles, additives, etc. should additionally be poured into the mold." (paragraph [0048])

"(Omitted) In addition, from the viewpoint of setting the internal haze within the range of the present invention, the refractive index difference between the translucent particles and the binder resin is preferably 0.01 to 0.10." (paragraph [0051])

3. Statement of Well-known Document A1 (Unexamined Patent Application Publication No. 2015-172835, Exhibit Ko 7)

"Preferably, the optical sheet has a total luminous transmittance (JIS K7361-1: 1997) of 80% or more, more preferably of 85% or more, and even more preferably of 90% or more.

Preferably, the optical sheet has a haze (JIS K7136: 2000) of 25 to 60%, more preferably of 30 to 60%, and even more preferably of 30 to 50%. By setting the haze to 25% or more, the anti-glare property can be imparted and the shape and scratches of electrodes can be made difficult to see. Further, by setting the haze to 60% or less, a reduction in resolution of ultra high definition display elements is prevented, and a reduction in contrast can be easily prevented.

Furthermore, when the haze is divided into the surface haze (Hs) and the internal haze (Hi), the surface haze is preferably 20 to 50%, more preferably 20 to 45%, and even more preferably 25 to 40%. By setting the surface haze to 20% or more, it is possible to make an anti-glare property to be good and to make it difficult to see the shape and scratches of electrodes even in bright operating environments such as outdoors, etc. By setting the surface haze to 50% or less, a reduction in contrast and a reduction in resolution can be easily prevented.

Furthermore, the internal haze is preferably 5 to 30%, more preferably 5 to 25%, and even more preferably 10 to 18%. By setting the internal haze to 5% or more, sparkle can be easily prevented through a synergistic effect with surface asperities, and by setting the internal haze to 30% or less, a reduction in resolution of ultra high definition display elements can be prevented.

In addition, from the viewpoint of balancing the effects of the surface haze and the internal haze as mentioned above, the ratio of the surface haze and the internal haze (Hs/Hi) is preferably 1.0 to 5.0, more preferably 2.0 to 5.0, and even more preferably 2.5 to 4.5.

The surface haze and the internal haze can be determined, for example, by the method described in the Examples." (paragraph [0029])

End of document