Patent Right	Date	November 14, 2023	Court	Intellectual Property High Court, Fourth Division
	Case number	2022 (Gyo-Ke) 10113		
- A case in which the determination by the JPO decision due to lack of inventiveness was maintained by stating that, even if Cited Invention has an art to maintain / control minimum luminance, employment of a proportional configuration of illuminance-luminance in the Present Amended Invention (and the invention of the Present Application before the Amendment) is not inevitably denied, but the configuration could have been easily conceived of by a person ordinarily skilled in the art.				

Case type: Rescission of Appeal Decision

Result: Dismissed

References: Article 29, paragraph (2) of the Patent Act

Decision of JPO: Appeal against Examiner's Decision No. 2022-4857

Summary of the Judgment

1 The Plaintiffs filed a patent application of the invention titled "display device" but received the decision of refusal and thus, made a claim for an Appeal against an Examiner's Decision of defusal and submitted a written amendment for a change of claim 1 of the scope of claims. The Japan Patent Office dismissed the amendment by stating that the invention according to the Amendment cannot be patented under Article 29, paragraph (2) of the Patent Act and moreover, made a JPO decision that "the claim for the appeal of this case is not established." by stating that the invention of the Present Application before the Amendment cannot be granted a patent, either, under the same clause. This case is a case in which the Plaintiffs claimed rescission of the JPO Decision.

2 The Plaintiffs assert that, regarding Grounds for Rescission 1 (error in determination on how easily it could have been conceived of for the Different Features 1 and 2 acknowledged by the Present JPO decision), [i] it cannot be considered that an organic light-emission display device has a light emission distribution close to Lampert distribution; [ii] an illuminance value and a radiant luminance in Cited Document 1 (Cited Invention) cannot be considered to have a proportional relation (proportionality constant ρ/π); [iii] common general technical knowledge 3 cannot be acknowledged from Cited Document 3; [iv] common general technical knowledge 2 acknowledged from Cited Documents 7 and 8 is not such a common general technical knowledge that can be applied to control of a display device.

However, on the basis of the description in the cited document and the evidence, none of these assertions by the Plaintiffs can be employed.

3 Moreover, the Plaintiffs assert that, regarding Grounds for Rescission 1, [v] the

Cited Invention (Cited Document 1) executes such control that the minimum luminance is maintained when the illuminance of an ambient light is lower than a threshold value (art to maintain / control the minimum luminance) and has a disincentive to employment of such a configuration (proportional configuration of illuminance-luminance) that the illuminance and the radiant luminance are in a proportional relation as in the Amended Invention of this case.

However, in light of the description in Cited Document 1, the art to maintain / control the minimum luminance in the Cited Invention is positioned as "one embodiment", which is not indispensable in relation with the original purpose, and the art to maintain / control the minimum luminance and the proportional configuration of illuminance-luminance are compatible / coexistent as technical ideas and thus, even if the Cited Invention has the art to maintain / control the minimum luminance, they are not in such a relation that the employment of the proportional configuration of illuminance-luminance should be inevitably denied. The configuration as the proportional relation of the illuminance and the luminance by imitating optical characteristics of paper as in the Present Invention cannot be considered to be a disincentive in the Cited Invention, either, and is acknowledged that it could have been easily conceived of by a person ordinarily skilled in the art.

4 The Plaintiffs assert Grounds for Rescission 2 (error in determination on exertion of remarkable effect of the Amended Invention of this case), but the effect of the Present Amended Invention asserted by the Plaintiffs is merely that such a feeling can be given as if the display device is a print medium such as paper. However, a person ordinarily skilled in the art can be sufficiently expect this from the described matters in Cited Document 1 and the common general technical knowledge, and conspicuity cannot be acknowledged, either.

5 According to the above, none of the grounds for rescission asserted by the Plaintiffs has a reason and thus, all the claims by the Plaintiffs shall be dismissed.

Judgment rendered on November 14, 2023
2022 (Gyo-Ke) 10113 A Case of Seeking Rescission of Appeal Decision
Date of conclusion of oral argument: September 14, 2023

Judgment

Plaintiff: Kepler Co., Ltd.

Plaintiff: National University Corporation, Tohoku University

Defendant: Commissioner of the Japan Patent Office

Main Text

1. All the claims by the Plaintiffs shall be dismissed.

2. The Plaintiffs shall bear the court costs.

Fact and Reason

No. 1 Claims

The JPO decision made on September 22, 2022 with regard to the Appeal against Examiner's Decision No. 2022-4857 shall be rescinded.

No. 2 Background

1. History of the procedures and the like in the Patent Office (no dispute between the parties)

(1) The Plaintiffs filed a patent application for the invention titled "Display device" on November 18, 2019 (Japanese Patent Application No. 2019-208203, Priority claimed / November 19, 2018) and submitted procedural amendment on November 12, 2021, but received an examiner's decision of refusal as of December 23 of the same year.

(2) The Plaintiffs requested an appeal against the examiner's decision of refusal on April 1, 2022 and submitted a written amendment on change of claim 1 of the scope of claims (hereinafter, this amendment shall be referred to as the "Present Amendment"). The JPO examined the aforementioned request for appeal as the Appeal against Examiner's Decision No. 2022-4857, dismissed the Present Amendment on September 22 of the same year, and made the JPO Decision (the Present JPO Decision) that "The claim for this appeal is not established.", for which the transcript was serviced to the Plaintiffs on October 4 of the same year.

(3) The Plaintiffs instituted this lawsuit seeking rescission of the Present JPO

Decision on November 2, 2022.

2. Outline of the Invention related to the Present Application

(1) The description in claim 1 of the scope of claims is as follows. It is to be noted that there are claims 2 to 10 citing claim 1, but they shall be omitted.

[Claim 1]

A display device, comprising:

a display panel including pixels that are disposed two-dimensionally for emitting display light; and

at least one optical sensor that detects external light, wherein

in order to reproduce diffusion reflected light to the external light of a print display medium,

in a specific region in the display panel, with respect to a light flux of the external light incident to the specific region of the display panel from the outside and detected by the optical sensor, the light flux emitted from the pixel in the specific region is controlled by a product of a diffuse reflectance of a predetermined ratio and the light flux of the external light incident to the specific region; and

angle dependency of radiated light intensity of the pixel becomes uniform diffuse distribution of a complete diffusion plate or has light distribution gently decreasing from a direction perpendicular to a board surface at a half-value angle of luminance of 120° or more on the basis of Lambert's cosine law.

(2) The description of claim 1 in the scope of claims after the Present Amendment is as follows (hereinafter, the invention based on this shall be referred to as the "Present Amended Invention"; the underlined part is a part added by the Present Amendment).

[Claim 1]

A display device, comprising:

a display panel including pixels that are disposed two-dimensionally for emitting display light; and

at least one optical sensor that detects external light, wherein

in order to reproduce diffusion reflected light to the external light of a print display medium,

in a specific region in the display panel, with respect to a light flux of the external light incident to the specific region of the display panel from the outside and detected by the optical sensor, the light flux emitted from the pixel in the specific region is controlled by a product of a diffuse reflectance of a predetermined ratio and the light flux of the external light incident to the specific region;

angle dependency of radiated light intensity of the pixel becomes uniform diffuse distribution of a complete diffusion plate or has light distribution gently decreasing from a direction perpendicular to a board surface at a half-value angle of luminance of 120° or more on the basis of Lambert's cosine law; and

the luminance of the pixel when the diffusion reflected light to the external light of the print display medium is reproduced is set on the basis of a calculation formula of luminance of pixel = diffuse reflectance × illuminance / π by using the illuminance detected by the optical sensor.

(3) Summary of the description in the Present Application Description

An extract of the Present Application Description (Exhibit Ko 9) is posted in the Attachment "Described matters (extract) of the Present Application Description". According to this, the following matters are found to be disclosed on the Present Application invention.

A. The present invention relates to a display device and particularly relates to a display device which reproduces diffusion reflected light of a print display medium ([0001]).

B. The arts disclosed in the prior art and publicly-known documents describe that the luminance and color tones are adjusted in accordance with brightness of the external light so as to change the luminance of the display device, but it remains to the description on adjustment of the luminance from the viewpoints of visibility and power saving ([0006]). Moreover, in a reflective display that reflects ambient light such as external light to perform display, in the case of color display, reflected light is greatly decreased due to light absorption or the like by color filters in three primary colors, and there is a concern that visibility is drastically lowered as compared with print media ([0007]).

Thus, the present invention has an object to provide a display device that reproduces optical characteristics of a print display medium so as to give such a feeling as if the display device is a print medium such as paper and to realize display as if it is a print medium which is familiar to viewers for transmission of information without a sense of discomfort ([0008]).

C. The display device of the present invention includes a display panel and at least one optical sensor and is characterized in that, in order to reproduce diffusion reflected light to external light of a print display medium, a light flux emitted from a pixel is controlled at a diffuse reflectance of a predetermined ratio in a specific region in the display panel and angle dependency of radiated light intensity of the pixel becomes uniform diffuse distribution of a complete diffusion plate on the basis of

Lambert's cosine law; that is, the luminance does not have angle dependency (the luminance is isotropic) or a half-value angle of luminance (the angle at which the luminance becomes a half value of front luminance) is as wide as 120° or more in terms of full angle, and has the light distribution gently decreasing from a direction perpendicular to a board surface. According to the aforementioned configuration, since the light flux emitted from the pixel is controlled at the diffuse reflectance of a predetermined ratio, the diffusion reflected light of the print display medium can be reproduced by the display device, and such a feeling as if the display device is a print medium such as paper can be given ([0009], [0016]).

3. Gist of the Reasons Given in the Present JPO Decision

The Present JPO Decision determined that [i] the Present Amendment falls under what is done for the purpose of restriction of the scope of claims (Article 17-2, paragraph (5), item (ii) of the Patent Act), but [ii] the Present Amended Invention can be easily made by a person ordinarily skilled in the art on the basis of the following cited invention and the common general technical knowledge 1 to 3 and cannot be granted a patent pursuant to the provision of Article 29, paragraph (2) of the Patent Act and thus, the Present Amendment should be dismissed due to lack of the independent patentability requirement; and [iii] regarding the invention of the Present Application before the Present Amendment, since the Present Amended Invention including all the configurations thereof is as described above, it cannot be granted a patent, either, pursuant to the provision of Article 29, paragraph (2) of the Patent Act. Details of the determination in the aforementioned [ii] are shown in the Attachment "Gist of the Reasons Given in the Present JPO Decision".

(1) Finding of cited invention

The Present JPO Decision found that the following invention is described in Cited Document 1 (Exhibit Ko 1, the Japanese translation thereof is Exhibit Otsu 13).

[Cited Invention]

A display device for imitating optical characteristics of substantial paper under an ambient environment, and in order to provide a natural image quality of a printed matter on the display device under a specific ambient light condition, characteristics of image contents printed on the paper can be imitated by using the ambient light characteristics and optical characteristics of substantial paper ([0010]),

one or more ambient optical characteristics are measured from one or more sensors, a maximum luminance value of an RGB sub pixel of a display pixel is determined on the basis of light reflectance of the paper type and the ambient light characteristics, a minimum luminance value of the RGB sub pixel of the display pixel

is determined on the basis of ink-type light reflectance and the ambient light characteristics, the RGB color values of image data associated with each of the sub pixels of the display pixels are subjected to scaling by referring to the maximum luminance value and the minimum luminance value, and each of the display pixels is activated by using the scaled RGB color values of the image data ([0011]),

the ambient light characteristics include illuminance of the ambient light, the scaled RGB color values of the image data are compensated for by a preset value for display so that the minimum luminance is maintained when the illuminance of the ambient light is lower than a threshold value ([0013]),

the display device 100 includes a processing portion 120 including an image-characteristic determining portion 122 and an image processing portion 124, and a display portion 130 ([0067]),

an optical sensor for detecting the characteristics of the ambient light can measure an illuminance value, and a part of the optical sensor is disposed in a display region of the display device ([0068]),

the display portion 130 is an organic light-emission display device ([0075]),

in order to determine the maximum luminance value in a paper mode of the RGB sub pixel of the display pixel on the basis of the light reflectance of the paper type and environmental light characteristics, reflectance of a visible wavelength of the paper and environmental-light intensity distribution of the visible wavelength can be used, and by multiplying the reflectance of the visible wavelength by the environmental-light intensity distribution of the visible wavelength, the image-characteristic determining portion 122 can simulate the environmental light ([0107]).

(2) Common General Technical Knowledge 1 to 3

The Present JPO Decision found the following common general technical knowledge 1 on the basis of Cited Documents 2, 6 (Exhibits Ko 2, 6), the following common general technical knowledge 2 on the basis of Cited Documents 7, 8 (Exhibits Ko 7, 8), and the following common general technical knowledge 3 on the basis of Cited Document 3 (Exhibit Ko 3).

[Common General Technical Knowledge 1]

The organic EL display device has light emission distribution close to Lambert's distribution which gives substantially constant luminance to an angle of view.

[Common General Technical Knowledge 2]

Lambert's cosine law is that the luminous intensity (radiant intensity) of the uniform diffuser lowers in proportion to cosine of a shift angle θ from a normal line with a normal line direction of the surface as the maximum, and luminance of the

uniform diffuser is constant regardless of an observation direction, and

the luminance L can be determined by $L = \rho \times E / \pi$ from the reflectance ρ and the illuminance E of the reflective surface on the premise that the reflective surface is a uniform diffuser in compliance with Lambert's cosine law.

[Common General Technical Knowledge 3]

The illuminance of the external light with the print display medium such as paper as a reflective surface and the luminance of the reflected light thereof are in a proportional relation, and by causing the relation between the illuminance of the external light on a display portion and the radiant luminance to match the relation between the illuminance of the external light with the print display medium as a reflective surface and the luminance of the reflected light thereof, a display image imitating the appearance of the print display medium by the external light is obtained.

4. Grounds for Rescission of the JPO Decision

(1) Ground for Rescission 1 (error in determination on how easily it could have been conceived of for Different Features 1 and 2)

A. It cannot be considered that the organic light-emission display device has light emission distribution close to Lambert's distribution.

B. The illuminance value and the radiant luminance in Cited Document 1 cannot be considered to have a proportional relation (proportional constant ρ/π).

C. Common general technical knowledge 3 cannot be acknowledged from Cited Document 3.

D. Common general technical knowledge 2 is not common general technical knowledge that can be applied to control of a display device.

E. Disincentive

(2) Grounds for Rescission 2 (error in determination that the Present Amended Invention exerts a remarkable effect)

(omitted)

No. 4 Judgment of this court

1. Ground for Rescission 1 (error in determination on how easily it could have been conceived of for Different Features 1 and 2)

(1) Regarding assertion by the Plaintiffs that it cannot be considered that the organic light-emission display device has light emission distribution close to Lambert's distribution

A. The Plaintiffs assert that common general technical knowledge 1 approved by

the Present JPO Decision is erroneous, and cite the following grounds: [i] in an organic light-emission display device with a bottom-emission structure, a light taking-out region is limited due to presence of a pixel circuit; and [ii] in the organic light-emission display device with a top-emission structure, the configuration that collects light by using a microcavity effect is known.

B. However, first, with reference to the aforementioned [i], it only presents the question on correctness of common general technical knowledge 1 due to the light emission distribution caused by individual circumstances related to an element structure or disposition of a pixel circuit employed by a specific product in the organic light-emission display devices in the market, and it cannot be considered to be a counterargument against general features of the organic EL display device.

In the first place, there is insufficient accurate evidence to admit that the diffusion mode of light is influenced more by the smallness of an opening rate in the bottom-emission structure pointed out by the Plaintiffs than by lowering of utilization efficiency (external taking-out efficiency) of the light, when the opening rate becomes smaller. Or rather, according to the Evidences (Exhibits Otsu 7, 8) and the entire import of oral argument, in the bottom-emission type organic light-emission display device in general, a thickness from the pixel circuit (TFT) to the organic light-emission layer is extremely smaller than the pixel size of an organic light-emission layer and as a result, in actuality, it is such a degree that a part of light diffusing in a diagonal direction in the emission light emitted from the light emission layer of an organic EL element (an extremely small amount in terms of the entire light emission layer) is shielded by a light-shielding portion of the TFT layer, and it is found that an influence by the presence of the TFT to the light distribution is extremely limited.

Then, the Plaintiffs' assertion that the finding of common general technical knowledge 1 as an error on the grounds of the smallness of the opening rate in the bottom-emission structure cannot be employed.

C. Subsequently, regarding the aforementioned [ii], it is certain that Exhibit Ko 21 pointed out by the Plaintiffs has a description that "a light distribution pattern of an AMOLED display in the market usually presents a characteristic of microcavity of an optical stack" ([0036]), and from the facts that Exhibit Ko 21 is one from about the same time in 2014 as Cited Document 1 (the date of application of Exhibit Ko 1 [Cited Document 1] is March 24, 2014, and the date of application of the Exhibit Ko 21 is October 20 of the same year) and that a small-sized display is disclosed as an embodiment in FIG. 2A of Exhibit Ko 1, it can be considered that there was a possibility to employ the microcavity structure for the organic EL display in Cited Invention 1.

However, paragraph [0036] in Exhibit Ko 21 has a description that, immediately before the aforementioned description, "the OLED which lacks the microcavity in an optical stack of an OLED might be a Lambert emitter in some cases and has a smoothly and uniformly distributed light distribution pattern over a hemisphere.", and it is found that, in organic light-emission display devices with the top-emission structure, those with the microcavity effect are not indispensable configurations.

In addition for making sure, even if those without the light distribution close to the Lambert distribution are included in the organic light-emission display devices in the market as the result of employment of the microcavity structure, this is not considered to influence the determination of the Present JPO Decision, because the cited invention is "a display device that imitates the optical characteristics of substantial paper under the ambient environment and that can imitate the characteristics of image contents printed on the paper by using the ambient light characteristics and the optical characteristics of the substantial paper in order to provide a natural image quality of a printed matter on the display device under a specific ambient light condition." On the basis of the fact that the paper surface has a wide view-angle characteristic (Exhibit Ko 3 [Exhibit Otsu 3] [0058], Exhibit Otsu 4 [0004], [0035], [0036], Exhibit Otsu 5 [0003], [0022]), it is difficult to consider use of the organic EL display having the microcavity structure on purpose, and it was easy to employ common general technical knowledge 1 at least as of the priority date of the Present Amended Invention.

D. It is to be noted that, according to the evidence (Exhibit Otsu 6) and the entire import of oral argument, in 2017, before the priority date of the Present Amended Invention, it is found that the large-sized organic EL display having a wide angle of view had started to spread in general such that 55-inch, 65-inch organic EL television sets using the panel made by LG Display had already been sold (Exhibit Otsu 6). In light of the points as above, it cannot be considered that common general technical knowledge 1 ("the organic EL display device has a light emission distribution close to Lambert's distribution which gives substantially constant luminance to the angle of view") as found by the Present JPO Decision was erroneous.

(2) Regarding the assertion by the Plaintiffs that the illuminance value and the radiant luminance in Cited Document 1 cannot be considered to have a proportional relation (proportional constant ρ/π)

The Plaintiffs assert that, on the grounds of paragraphs [0101], [0102] and FIG. 8 in Cited Document 1 (Exhibit Ko 1), the "illuminance value" "detected" by the "optical sensor" and the radiant luminance are not in a proportional relation in the Cited Invention.

However, the Present JPO Decision only found that, when the design of the Cited Invention is to be changed on the basis of common general technical knowledge 3, correspondence of the proportional constant of the proportional relation in the cited invention to "ρ/π" also on the basis of common general technical knowledge 2 is a self-evident matter (Attachment "Gist of the Reasons Given in the Present JPO Decision" 3) and did not find that the Cited Invention itself includes the aforementioned configuration. The Plaintiffs assert that the Present JPO Decision approved the major cited invention by combining two or more independent cited inventions and the like, but it does not reflect accurate understanding of the determination structure of the present JPO Decision and cannot be employed.

Moreover, FIG. 8 in Cited Document 1 pointed out by the Plaintiffs can be considered to illustrate that, by using the lateral axis as linear scaling, it has a shape of $y = mx + c$ at a value equal to or smaller than 1000 lux on the lateral axis and thus, it is also found that it is a linear function (proportional relation) at least in a region at a value equal to or smaller than 1000 lux on the lateral axis.

Then, the Plaintiffs' assertion lacks its premises and cannot be employed.

(3) Regarding the Plaintiffs' assertion that common general technical knowledge 3 cannot be approved from Cited Document 3

The Plaintiffs assert that Cited Invention 3 is an invention which pursued functions as an image display device by separately using a low-light mode, a paper mode, and a bright-light mode, and it is not possible to approve common general technical knowledge 3 by eliminating specific problems to be solved and solutions as above and by cutting out a part thereof.

However, regarding the first half of common general technical knowledge 3 (the illuminance of the external light with the print display medium such as paper as a reflective surface and the luminance of the reflected light are in a proportional relation), as described in the paragraph [0054] of Cited Document 3 (Exhibit Ko 3) and FIG. 8, a curve 60 indicated by "PAPER" in FIG. 8 illustrates how the luminance of a diffuse reflection object such as paper changes as the intensity of an illumination light source changes, and the proportional relation itself between the illuminance on the x-axis (ILLUMINANCE) and the luminance on the y-axis (LUMINANCE) has nothing to do with the problem of the invention and the solution thereof and is obvious for a person ordinarily skilled in the art. Therefore, the first half of common general technical knowledge 3 can be extracted as common general technical knowledge from Cited Document 3.

Moreover, regarding the second half of common general technical knowledge 3,

too, it is obvious that an appearance of paper is imitated only for the part in the "paper mode" from the description in paragraphs [0056], [0059] in Cited Document 3. As described in paragraph [0058], FIG. 8 in Cited Document 3, in the "paper mode", "a display image imitates the appearance of the print display medium (paper) by the external light", the "relation between the illuminance of the external light on the display portion and the radiant luminance" (curve 62) is made to "match" the "relation between the illuminance of the external light and the luminance of the reflected light thereof with the print display medium as a reflective surface" (curve 60). This can be considered to be an independent technical matter in a dimension different from that of the problem to be solved (use of the modes for different purposes and the like) of the invention in Cited Document 3 asserted by the Plaintiffs. Thus, for the second half of common general technical knowledge 3, too, it can be acknowledged as common general technical knowledge from the description in Cited Document 3.

Furthermore, according to the evidences (Exhibits Otsu 9, 10) and the entire import of the oral argument, it is found that, the Exhibit Otsu 9 (Japanese Unexamined Patent Application Publication No. 2008-76767) has a description that the luminance of the display is made the same luminance as the luminance of the light reflected from paper (paragraph [0030]), and Exhibit Otsu 10 (U.S. patent publication No. 2013/0328842 Description) has a description (second half of common general technical knowledge 3) that, in reproduction of a type of a change of the luminance according to an ambient light level expected by a reader of a paper book, the luminance of a display is adjusted so that an ambient-light sensor level is in a proportional relation with the luminance level.

Thus, the aforementioned assertion by the Plaintiffs cannot be employed, either.

(4) Regarding the Plaintiffs' assertion that common general technical knowledge 2 is not common general technical knowledge which can be applied to the control of a display device

The Plaintiffs assert that Cited Documents 7 and 8 cited in the finding of common general technical knowledge 2 by the Present JPO Decision are related to the field of measurement of light and a calibration art and are not common general technical knowledge that can be applied to the control of the display device. However, the description on the complete diffusion surface and the luminance in Cited Document 7 (Exhibit Ko 7) and Cited Document 8 (Exhibit Ko 8) relates to the knowledge related to general optics in view of the context thereof and cannot be acknowledged to be described as finding limited to the "measurement of light" or "calibration art".

Thus, common general technical knowledge 2 acknowledged by presenting Cited

Documents 7 and 8 in the Present JPO Decision can be considered to be common general technical knowledge that can be applied also to the technical field of the organic light-emission display device (organic EL display device) as the Cited Invention, and the aforementioned assertion by the Plaintiffs cannot be employed.

(5) Regarding assertion by the Plaintiffs on disincentive

A. The Plaintiffs assert that the Cited Invention is to execute such control that the minimum luminance is maintained when the illuminance of the ambient light is lower than the threshold value (hereinafter, referred to as the "art to maintain / control the minimum luminance"), and there is a disincentive to employment of such a configuration that the illuminance and the radiant luminance are in a proportional relation as in the Present Amended Invention (hereinafter, referred to as the "proportional configuration of illuminance-luminance".)

B. Thus, by examining the above, Cited Document 1 (Exhibit Ko 1, Exhibit Otsu 13) is found to have the following descriptions:

(a) The present invention relates to an image processing method and a device for a display device and more specifically relates to an image processing method and a device for a display device which variably controls various image-quality modes including a paper mode ([0003]).

(b) Unlike the display device, paper does not emit light from itself but only reflects the ambient light. Therefore, the inventor of the embodiment of this disclosure recognized that, regarding image contents printed on the paper, the optical characteristics sensed by a human are different from those of the image contents displayed on the display device under a changing ambient light condition ..., and most of the users prefer a natural image quality such as those giving a feeling of paper as compared with those from general display devices such as a liquid-crystal display device and an organic light-emission display device ([0007], [0009]). Therefore, an aspect of this disclosure relates to an image processing method for a display device for imitating the optical characteristics of substantial paper under the ambient environment. In order to provide a natural image quality such as that of a printed matter on the display device under a specific ambient light condition, the ambient light characteristics and the optical characteristics of substantial paper can be used for imitating the characteristics of the image contents printed on the paper ([0010]).

(c) In the one embodiment, the ambient light characteristics include illuminance of the ambient light, and the scaled RGB color values of the image data are compensated for by a preset value for display so that the minimum luminance is maintained when the illuminance of the ambient light is lower than a threshold value ([0013]).

(d) ... the luminance in the paper mode is indicated by using reflectance of the paper applied in accordance with the illuminance of the ambient light. Regarding a target luminance in the paper mode, if the ambient light is too dark, the user cannot see the actual paper, which is the same in the paper mode, too, and thus, the minimum light-emission luminance may be provided as an offset to visibility of the user. ... The image-characteristic determining portion 122 may determine the luminance in the paper mode on the basis of the reflectance of paper and the illuminance of the ambient light ([0102]).

C. In light of the aforementioned description, the invention described in Cited Document 1 is found to be such that, on the basis of a difference in mechanisms of light emission between the display device and paper, with an object to provide a natural image quality as that of a printed matter in the display device, too, in order to realize that, the characteristic of the image contents printed on the paper is to be imitated by using the ambient light characteristics and the optical characteristics of substantial paper (see the first paragraph part in Cited Invention found by the Present JPO Decision).

In the cited invention as above, by using the optical characteristics of the paper (the illuminance of the external light with the print display medium such as paper as a reflective surface and the luminance of the reflected light thereof are in a proportional relation) so that the relation between the illuminance of the external light and the radiant luminance in the display of the display device is caused to match the relation between the illuminance of the external light with the print display medium as a reflected light and the luminance of the reflected light thereof, the display image that imitates the appearance of the print display medium by the external light is obtained; that is, application of common general technical knowledge 3 should be considered to be extremely natural.

Cited Document 1 discloses, as asserted by the Plaintiffs, the art to maintain / control the minimum luminance (aforementioned B(c)), and the Present JPO Decision acknowledged this as a constituent element of the Cited Invention (the third paragraph part of the Cited Invention according to the acknowledgement of the Present JPO Decision). However, on the basis of the entire described matters of Cited Document 1, the art to maintain / control the minimum luminance is positioned as the "one embodiment" and is not considered to be indispensable in relation with the original object. The description in the aforementioned B(d) ("may ...") also supports that.

Moreover, the art to maintain / control the minimum luminance is not activated until the illuminance of the ambient light is lower than the threshold value, and under conditions other than that, it does not contradict / conflict with the proportional

configuration of illuminance-luminance or rather forms the basis for that. That is, the art to maintain / control the minimum luminance and the proportional configuration of illuminance-luminance can be considered to be compatible and coexist with each other as technical ideas. And even if the Cited Invention has the art to maintain / control the minimum luminance, it does not have such a relation that inevitably denies the employment of the proportional configuration of illuminance-luminance.

On the basis of the aforementioned examination, it should be considered that the art to maintain / control the minimum luminance included in the Cited Invention does not make a disincentive to combination of the Cited Invention and common general technical knowledge 3.

D. According to the above, in the Cited Invention, it is acknowledged that a person ordinarily skilled in the art could have easily conceived of such a configuration that the illuminance and the luminance are in a proportional relation by imitating the optical characteristics of paper as in the Present Amended Invention according to Different Feature 2.

(6) Summary

As described above, none of the Plaintiffs' assertion related to Grounds for Rescission 1 can be employed.

2. Grounds for Rescission 2 (error in determination that the Present Amended Invention exerts a remarkable effect)

The Plaintiffs assert that the Present Amended Invention exerts such an advantageous effect that, in order to solve the problem that a feeling as if the display device is a print medium as paper is given, a technical matter not existing in the Cited Invention is intentionally included, whereby the Present Amended Invention can give the feeling as if the display device is the print medium as paper as compared with the Cited Invention.

However, the effect of the Present Amended Invention as asserted by the Plaintiffs is only that the feeling as if the display device is a print medium as paper can be given, but in light of the described matters in Cited Document 1 (aforementioned 1(5)B), it can be sufficiently expected by a person ordinarily skilled in the art from the described matters and the common general technical knowledge, and its conspicuity is not acknowledged, either.

3. Conclusion

As described above, none of the grounds for rescission asserted by the Plaintiffs are grounded, and no illegality due to which the Present JPO Decision should be rescinded is acknowledged. Therefore, all the claims by the Plaintiffs shall be

dismissed, and the Judgment shall be rendered as in the Main Text.

Intellectual Property High Court, Fourth Division

Presiding Judge: MIYASAKA Masatoshi
Judge: IWAI Naoyuki
Judge: RAI Shinichi

Attachment

Described matters of the Present Application Description (extracts)

[Detailed Description of the Invention]

[Technical Field]

[0001]

The present invention relates to a display device and particularly relates to a display device that reproduces diffusion reflected light of a print display medium.

[0002]

Conventionally, display devices such as a liquid-crystal display device, an organic EL display device, and the like are known. In these display devices, a method of controlling luminance of display in accordance with illuminance of external light is also known.

In the conventional display devices such as a liquid-crystal display using a backlight, such a method is common that the luminance is increased in order to improve visibility when the surroundings are bright, while if the surroundings are dark, the luminance is lowered in order to eliminate glaring feeling. Moreover, in a darker place, it is required that the luminance be suppressed, from the viewpoint of power saving, too.

[0003]

On the other hand, reflective displays which perform display resembling the optical characteristics of print display media of paper such as copy sheets, photos, calendars, and the like by reflecting the ambient light such as external light, such as an electrophoretic display, a reflection-type liquid-crystal display, and the like have also been developed.

[0004]

Patent Document 1 discloses an art of changing the luminance of the display device for each part through adjustment of the luminance and color tones in accordance with the brightness of the external light and of causing display with lowered luminance of an applicable spot when the illuminance of the external light is lowered by being shadowed by an object in a display device.

[Summary of the Invention]

[Problems to be Solved by the Invention]

[0006]

Regarding the arts disclosed in the conventional art and Patent Document 1, the adjustment of the luminance and the color tone in accordance with the brightness of the external light so as to change the luminance of the display device is described, but it

remains the description of the adjustment of the luminance from the viewpoint of visibility and power savings. Patent Document 1 has the description that an atmosphere that letters are being written on actual paper can be provided, but this only indicates that the shadow of a pen is shown as if the shadow of the pen was caught in an image, by lowering the luminance of the picture element included in the region to be a shadow of the pen. Thus, there is no change in a point that the display is made by lowering the luminance of the applicable spot in accordance with the lowered illuminance of the external light when the illuminance of the external light is lowered by being shadowed by an object.

[0007]

Moreover, in the reflective display which performs display by reflecting the ambient light such as the external light, too, in a case of color display, the reflected light is greatly decreased due to light absorption by color filters in the three primary colors or the like, and there is a concern that visibility is extremely lowered as compared with the print medium.

[0008]

Thus, the present invention has an object to provide a display device which reproduces the optical characteristics of the print display medium so as to give a feeling as if the display device is the print medium such as paper and performs display as if it is the familiar print medium to viewers so as to transmit information without a sense of discomfort.

[Means for Solving the Problem]

[0009]

The display device of the present invention includes a display panel and at least one optical sensor and is characterized in that, in order to reproduce the diffusion reflected light to the external light of the print display medium, in a specific region in the display panel, the light flux emitted from the pixel is controlled at a diffuse reflectance of a predetermined ratio.

According to the aforementioned configuration, since the light flux emitted from the pixel is controlled at the diffuse reflectance of the predetermined ratio, the diffusion reflected light of the print display medium is reproduced by the display device, and such a feeling as if the display device is the print medium such as paper can be given.

[0016]

Moreover, it may be configured to have such light distribution that the angle dependency of the radiant light intensity of the pixel becomes the uniform diffuse distribution of the complete diffusion plate on the basis of the Lambert's cosine law;

that is, the luminance does not have angle dependency (luminance is isotropic) or the half-value angle of the luminance (angle until the value becomes a half of that of the front luminance) is as wide as 120° or more at a full angle and gently decreases from the direction perpendicular to a board surface. As a result, the optical characteristics of the print display medium such as paper can be reproduced. Moreover, when a liquid-crystal element is used, the backlight to be a light source may be configured to have a similar light distribution.

Attachment

Gist of the Reasons Given in the Present JPO Decision

The gist of the reasons given in the Present JPO Decision related to the requirement for independent patentability of the Present Amendment (inventiveness of the Present Amended Invention) is as follows.

1. Acknowledgement of Corresponding Features and Different Features

The Present Amended Invention and the Cited Invention correspond to each other in the following corresponding features and are different from each other in the following Different Feature 1 and Different Feature 2.

[Corresponding Features]

A point that it is a "display device comprising:

a display panel including pixels that are disposed two-dimensionally for emitting display light; and

at least one optical sensor that detects external light, wherein

in order to reproduce diffusion reflected light to the external light of a print display medium,

in a specific region in the display panel, with respect to a light flux of the external light incident to the specific region of the display panel from the outside and detected by the optical sensor, the light flux emitted from the pixel in the specific region is controlled by a product of a diffuse reflectance of a predetermined ratio and the light flux of the external light incident to the specific region".

[Different Feature 1]

A point that the Present Amended Invention is the one "[having] angle dependency of radiated light intensity of the pixel that becomes uniform diffuse distribution of a complete diffusion plate or light distribution gently decreasing from a direction perpendicular to a board surface at a half-value angle of luminance of 120° or more",

while the Cited Invention has no such specification that it has the light distribution as above.

[Different Feature 2]

A point that, in the Present Amended Invention, "the luminance of the pixel when the diffusion reflected light to the external light of the print display medium is reproduced is set on the basis of a calculation formula of luminance of pixel = diffuse reflectance × illuminance / π by using the illuminance detected by the optical sensor",

while, in the Cited Invention, the RGB color values of image data associated with each of the sub pixels of the display pixels are subjected to scaling by referring to

the maximum luminance value and the minimum luminance value of the RGB sub pixel of the display pixels determined on the basis of illuminance of the measured ambient light, and the scaled RGB color values of the image data are compensated for by a preset value for a display so that the minimum luminance is maintained when the illuminance of the ambient light becomes lower than a threshold value.

2. Different Feature 1

(1) The fact that "the organic EL display device has light distribution close to Lambert's distribution which gives substantially constant luminance to an angle of view" is common general technical knowledge (see common general technical knowledge 1) and thus, it can be considered that the "organic light-emission display device" of the Cited Invention also has the light emission distribution close to Lambert's distribution which gives substantially constant luminance to an angle of view. Then, when the "organic light-emission display device" of the Cited Invention has the light emission distribution (light-distribution characteristics) close to Lambert's distribution, it is usual that the light emission distribution when seen by the unit of the "display pixel" (organic EL element) is also close to Lambert's distribution.

(2) In Different Feature 1, it should be considered that the configuration "having such light distribution gently decreasing from a direction perpendicular to a board surface at a half-value angle of luminance of 120° or more" is of such a degree that the "organic light-emission display device" of the Cited Invention having light distribution (light-distribution characteristics) close to Lambert's distribution is expressed by using a physical quantity of luminance of the display pixel and thus, it cannot be considered to be a substantial different feature.

Even if the fact that "the half-value angle of luminance is 120° or more" is a substantial different feature in such a meaning that it is not inevitably satisfied in the Cited Invention, the demand that the angle of view should be made as wide as possible is natural in the display device, and the necessity that "the half-value angle of luminance is 120° or more" is self-obvious.

(3) In Different Feature 1, regarding the configuration that "angle dependency of radiated light intensity of the pixel becomes uniform diffuse distribution of a complete diffusion plate on the basis of Lambert's cosine law", the "uniform diffuser" is ideal in strict compliance with Lambert's cosine law in the first place (see common general technical knowledge 2) and thus, in the Present Amended Invention, it is not obvious how the "uniform diffuse distribution of a complete diffusion plate" in a strict sense can be realized, but it is self-obvious as a technical idea to realize such a state that the "angle dependency of radiated light intensity of the pixel becomes uniform diffuse distribution

of a complete diffusion plate on the basis of Lambert's cosine law" by strictly following Lambert's cosine law in order to make the angle of view as wide as possible also in the "organic light-emission display device" of the Cited Invention.

(4) As described above, whether the configuration of the Present Amended Invention according to Different Feature 1 is satisfied by the "organic light-emission display device" of the Cited Invention is only self-obvious at least as a technical idea and is not special.

3. Different Feature 2

(1) In the Cited Invention, which is a "display device for imitating optical characteristics of substantial paper under an ambient environment", to cause a relation between the "illuminance value" "detected" by the "optical sensor" in the "display portion 130" and the radiant luminance to match the relation between the illuminance of the "ambient light" and the luminance of the reflected light when the "printed matter" is made a reflective surface in accordance with common general technical knowledge 3 is only a design matter that could have been naturally made by a person ordinarily skilled in the art.

Moreover, on the basis of the common general technical knowledge that the illuminance of the external light and the luminance of the reflected light with the print display medium such as paper as a reflective surface are in a proportional relation (see common general technical knowledge 3), in the Cited Invention, which is a "display device for imitating optical characteristics of substantial paper under an ambient environment", it should be also natural to configure such that the "illuminance value" "detected" by the "optical sensor" and the radiant luminance are in a proportional relation.

(2) Then, as examined in aforementioned Different Feature 1, light distribution of the "organic light-emission display device" of the Cited Invention can be approximated by Lambert's cosine law, and on the premise of the reflective surface following Lambert's cosine law, the luminance L can be determined by $L = \rho \times E/\pi$ from the reflectance ρ and the illuminance E of the reflective surface (see common general technical knowledge 2) and thus, it is a self-obvious matter that the proportional constant of the proportional relation in the aforementioned (1) in Cited Invention corresponds to "ρ/π".

(3) Therefore, in the Cited Invention, to have the configuration corresponding to that "the luminance of the pixel when the diffusion reflected light to the external light of the print display medium is reproduced is set on the basis of a calculation formula of luminance of pixel = diffuse reflectance × illuminance / π by using the illuminance

detected by the optical sensor" could have been easily conceived of.

4. Conclusion on the Present Amended Invention

Even by comprehensively considering Different Feature 1 and Different Feature 2, the effect exerted by the Present Amended Invention is only of such a degree that could be expected by a person ordinarily skilled in the art from the Cited Invention and common general technical knowledge 1 to 3 and cannot be considered to be especially remarkable. Therefore, the Present Amended Invention could have been easily made by a person ordinarily skilled in the art on the basis of the Cited Invention and common general technical knowledge 1 to 3.

As examined as above, the Present Amended Invention cannot be independently granted a patent at the filing of a patent pursuant to the provisions of Article 29, paragraph (2) of the Patent Act. Therefore, since the Present Amendment violates the provisions of Article 126, paragraph (7) of the Patent Act applied mutatis mutandis by Article 17-2, paragraph (6) of the same Act, it should be dismissed pursuant to the provisions of Article 53, paragraph (1) of the same Act applied mutatis mutandis by Article 159, paragraph (1) of the same Act.

(omitted)