

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

HISENSE INTERNATIONAL CO. LTD.; HISENSE INTERNATIONAL (HONG
KONG) AMERICA INVESTMENTS CO. LTD.,

Petitioners,

v.

VISTA PEAK VENTURES, LLC,
Patent Owner.

Case No. IPR2023-00651

U.S. Patent No. 6,513,943

**PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 6,513,943 (the '943 patent)**

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TABLE OF ABBREVIATIONS AND CONVENTIONS

Petitioners	HISENSE INTERNATIONAL CO. LTD.; HISENSE INTERNATIONAL (HONG KONG) AMERICA INVESTMENTS CO. LTD.
Patent Owner	VISTA PEAK VENTURES, LLC
'943 Patent	U.S. Patent No. 6,513,943 (the patent being challenged herein)
Flasck Dec.	Declaration of Dick Flasck submitted herewith
POSITA	person of ordinary skill in the art
Yamamoto	Japan Patent No. JPH10105074A

PETITIONERS' EXHIBIT LIST

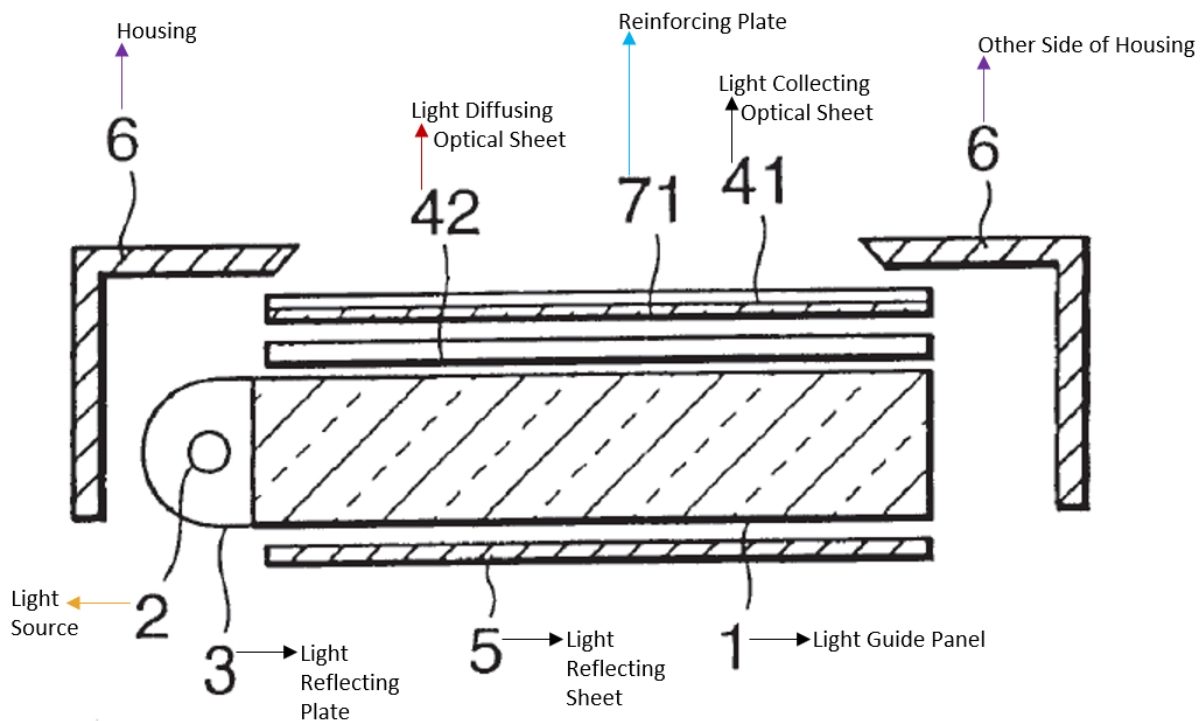
Ex. No.	Brief Description
1001	U.S. Patent No. 6,513,943
1002	U.S. Patent No. 6,513,943 File History
1003	Flasck Declaration
1004	Certified English translation: Japan Patent No. JPH10105074A (Yamamoto)
1005	[Intentionally Omitted]
1006	Flasck CV
1007	“How Are Acrylic Sheets Made?”, ACME Plastic.com, available at: https://www.pmma-online.eu/pmma-science/
1008	“Glass Transition Temperature”, Omnexus: The Material Selection Platform, available at: https://omnexus.specialchem.com/polymer-properties/properties/glass-transition-temperature
1009	Fred W. Billmeyer, Jr. (1962). Textbook of Polymer Science; see also Comprehensive Guide on Polyethylene Terephthalate (PET), Omnexus: The Material Selection Platform, available at: https://omnexus.specialchem.com/selection-guide/polyethylene-terephthalate-pet-plastic?src=prop-cnx
1010	U.S. Patent No. 5,499,120
1011	U.S. Patent No. 4,193,287
1012	Untranslated: Japan Patent No. JPH10105074A (Yamamoto)

I. Introduction

Petitioners request *inter partes* review (“IPR”) of Claims 1–2, 4–6, 8, 10–11 (“Challenged Claims”) of U.S. Patent No. 6,513,943 (“’943 Patent”).

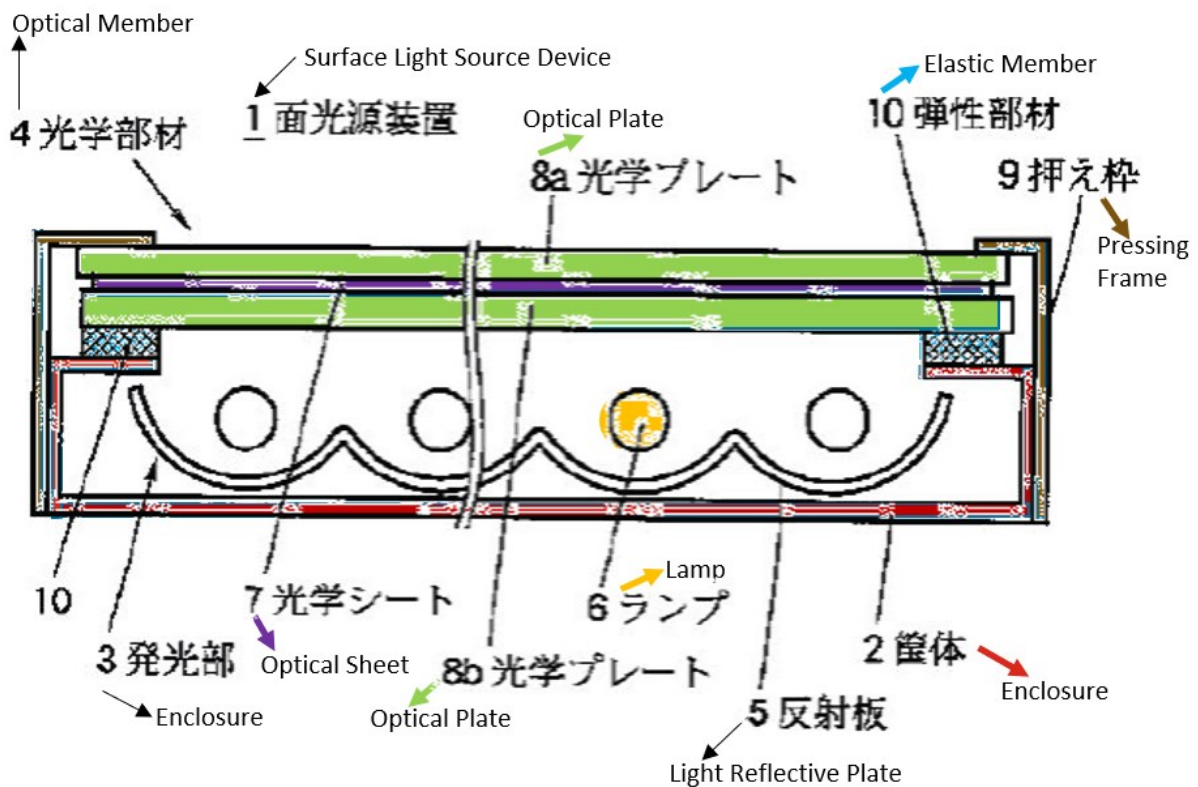
The independent Challenged Claims of the ’943 Patent (claims 1 and 4) are directed to a backlight unit, for example for use with a liquid crystal display device, including a light source, an optical sheet, a transparent reinforcing plate in contact with the optical sheet, and a reflection member, where the light source is arranged between the reinforcing plate and the reflecting member. The annotated ’943 Patent Figure 4 copied below is illustrative:

FIG.4



Ex. 1001, Fig. 4 (annotated).

The fatal flaw for '943 Patent Claim 1, however, is that the claimed backlight unit was well-known. Specifically, Yamamoto issued nearly seven years before the '943 Patent was filed and discloses the same device. The annotated Yamamoto Figure 1, copied below, depicts the features and configuration recited in '943 Patent Claim 1:



Ex. 1004, Fig. 1 (annotated).

Specifically, and as shown, Yamamoto discloses a backlit unit with a light source (lamp 6), an optical sheet (optical sheet 7), a transparent reinforcing plate (optical Plate 8b) in contact with the optical sheet, and a reflection member (light

reflective plate 5), where the light source is arranged between the reinforcing plate and the reflecting member. *Id.* The '943 Patent's remaining claims add nothing further to the validity analysis, as they merely recite well-known and obvious configurations of a backlight unit.

Petitioners therefore request that the Board institute trial and find all claims unpatentable based on the prior art identified herein.

II. Requirements for *Inter Partes* Review

This Petition complies with all statutory requirements, as well as 37 C.F.R. §§ 42.104, 42.105, and 42.15, and should be accorded a filing date pursuant to 37 C.F.R. § 42.106. The required fee is being paid electronically through PTAB E2E. Petitioners' mandatory notices are found in Section VI *infra*.

A. Certification

Pursuant to 37 C.F.R. § 42.104(a), Petitioners certify that the '943 Patent is available for IPR and Petitioners are not barred or estopped from requesting an IPR challenging the claims on the grounds identified herein.

B. Identification of Challenges

Under 37 C.F.R. §§ 42.104(b) and 42.22, Petitioners request that the Board institute this IPR on claims 1–2, 4–6, 8, 10–11 of the '943 Patent and cancel those claims as unpatentable on the following grounds:

Ground	Claims	Basis for Unpatentability
1	1, 4 and 10	Anticipated by or rendered obvious under 35 U.S.C. § 102(b) by Yamamoto (Ex. 1004)
2	Claims 2, 5-6, 8, and 11	Rendered obvious under 35 U.S.C. § 103 by Yamamoto (Ex. 1004) in view of the knowledge of a POSITA

III. The '943 Patent

A. Effective Filing Date

The '943 Patent resulted from Application No. 09/810,542 (“’542 Application”), filed March 19, 2001. The '943 patent alleges priority to Japanese Patent Application No. 2000-84622 filed March 24, 2000. For the purposes of this Petition, Petitioners assume that the Challenged Claims are entitled to a priority date no earlier than March 24, 2000. All references relied on herein qualify as prior art under section 102(b).

B. Level of Ordinary Skill in the Art

As of March 24, 2000, a person of ordinary skill in the art (“POSITA”) in the technological field of the '943 Patent would have possessed (i) a bachelor’s degree in mechanical engineering, optical engineering, or physics, or undergraduate training in an equivalent field, and (ii) at least two years of experience in the design and/or implementation of backlight units (BLUs) for liquid crystal displays (LCDs). Additional graduate education could substitute for professional experience, and

significant work experience could substitute for formal education. *See* Ex. 1003, ¶¶ 76–81.

C. Overview of the '943 Patent

The '943 Patent discloses a backlight unit such as for use with an LCD device. Ex. 1001, 1:13–33. The “backlight unit for a liquid crystal display device includes a line-shaped light source such as a cold cathode fluorescent lamp arranged on a side surface of a light guide panel and a light reflection plate for reflecting light from the light source to the light guide panel. A reflection sheet is arranged on a rear surface of the light guide panel . . . A light collecting optical sheet such as a prism sheet is arranged on the surface side of the light guide panel and a light diffusing optical sheet is provided between the light collecting optical sheet and the light guide panel. These components are housed in a housing to form the back light unit.” *Id.*, 1:20–34.

The '943 Patent describes that prior art systems commonly create the backlight unit by attaching the “the liquid crystal display device is completed by sandwiching the housing between an upper shield and a lower shield and fixing the shields to the housing.” *Id.*, 1:34–41. According to the '943 Patent, assembly of a device and operation “in high temperature and high humidity environment or in low temperature environment” may cause the “light collecting and light diffusing optical sheets of the backlight unit [to be] not only thermally expanded but also thermally

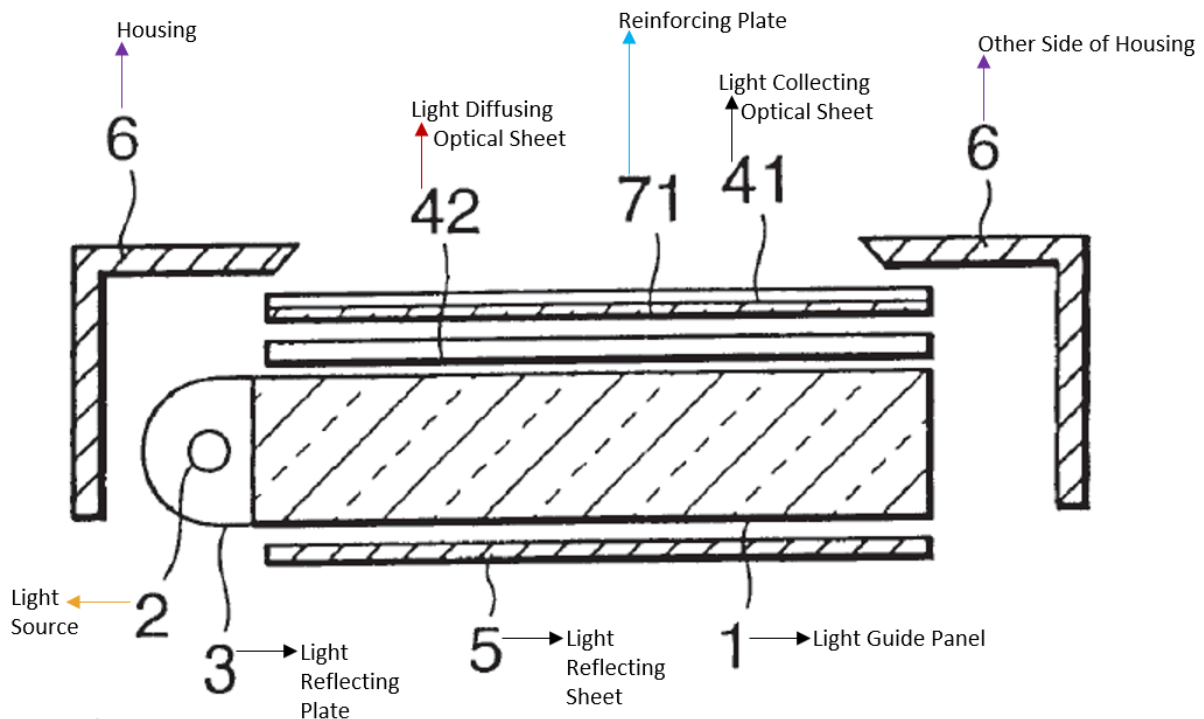
deformed, resulting in wrinkles or flexion of the optical sheets.” *Id.*, 2:1-8. The ’943 Patent alleges that this results in degrading the “uniformity of luminance.” *Id.*

The ’943 Patent alleges an improvement through utilizing a reinforcing plate to press against the optical sheet and thereby reduce thermal deformation of the optical sheet. Specifically, the ’943 Patent alleges that “a reinforcing plate stuck on the optical sheet and having light transmittance higher than that of the one sheet and durability against thermal deformation” may result in uniform luminance “without irregularity in high temperature and high humidity environment.” Ex. 1001, 2:38-43.

For example, the ’943 Patent states that “[w]hen a display device is operated in high temperature and high humidity environment, an optical sheet formed of resin is expanded” which may shrink the clearance between the frame and optical sheet and result in an optical sheet that is “warped or wrinkled.” Ex. 1001, 5:42-58. The ’943 Patent explains its invention in terms of “sticking [a] reinforcing plate having high light transmittance and resistive to thermal deformation on such optical sheet” to “prevent the optical sheet from being deformed.” *Id.*, 5:42-55. The ’943 Patent states that “the thicker the reinforcing plate . . . the higher the effect of preventing deformation of the optical sheet.” *Id.*, 5:66-6:2.

Figure 4 depicts an exemplary device according to the ’943 Patent approach:

FIG.4

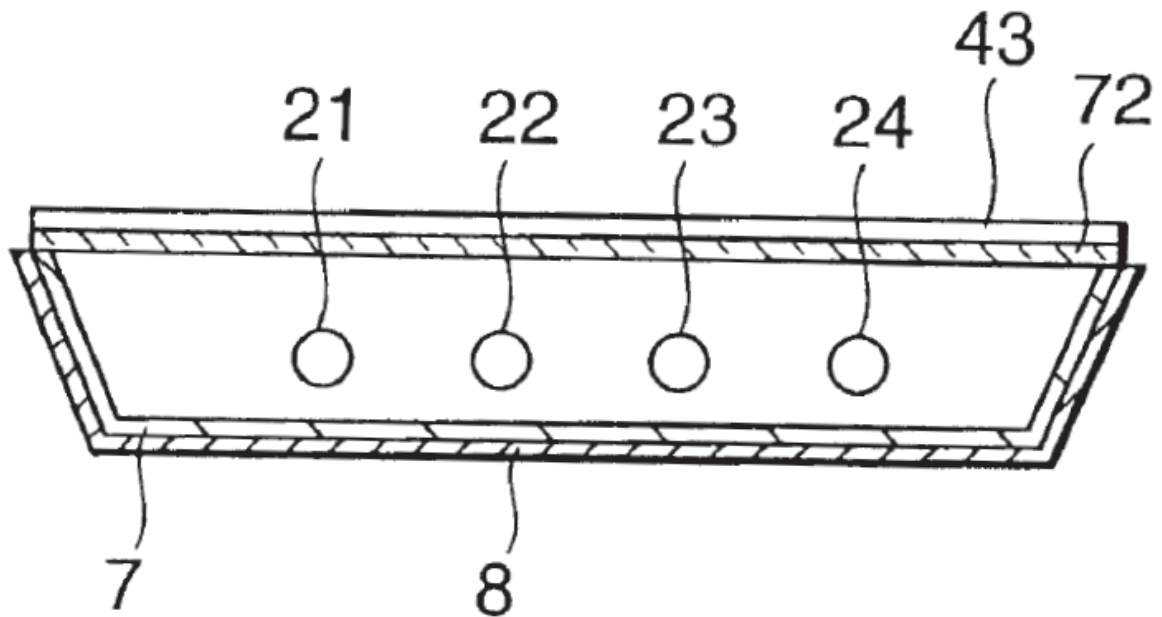


Ex. 1001, Fig. 4 (annotated).

As shown, Figure 4 depicts two optical sheets: the Light Diffusing Optical 43 and Light Collecting Optical sheet 41. *Id.* Interposed between the two optical sheets is Reinforcing Plate 71. *Id.* The two sides of the frame are shown as Housing 6. The '943 Patent describes the purpose of the two optical sheets as follows: “[t]he light diffusing optical sheet 42 for improving uniformity of luminance of the light emitting surface and the light collecting optical sheet 41 for improving luminance of the front surface.” One surface of the light collecting optical sheet 41 is depicted as in intimate contact with Reinforcing Plate 71. *Id.*

The '943 Patent discloses another embodiment in Figure 5:

FIG.5



Id., Fig. 5.

Figure 5 depicts a “backlight unit of the light-up type” with a “plurality of line-shaped light sources 21 to 24 such as fluorescent lamps . . . juxtaposed between a white reflecting plate 7 and a light diffusing optical sheet 43.” Ex. 1001, 6:19-23. Figure 5 further depicts that “a transparent reinforcing plate 72 is stuck on a rear surface of the light diffusing optical sheet 43 . . . by using a tackiness agent.” *Id.*, 6:28-31.

D. Relevant Prosecution History

Japan Patent Application No. JP27995396A was filed on September 30, 1996, and published on April 24, 1998 as Publication No. JPH10105074A (“Yamamoto”). Yamamoto is prior art to claim 1 of the ’943 patent under at least 35 U.S.C. § 102(b) (2000). On August 8, 2002, the applicant responded to an office action rejection by, *inter alia*, amending claim 1 to further recite “*wherein said light source is arranged immediately below said reinforcing plate and between said reflecting member and said reinforcing plate.*” Ex. 1002.

IV. Claim Construction

The Board construes claims under the same standard used in civil actions in federal district court. Petitioners submit that for the purposes of this Petition, the Board does not need to explicitly construe any claim term and there are no known claim construction disputes that affect the outcome of this Petition.

V. Detailed Discussion of the Grounds for Unpatentability

The Challenged Claims are unpatentable on two grounds. Ground 1 establishes that the ’943 Patent claims 1, 4 and 10 are anticipated by Yamamoto (Ex. 1004). Ground 2 establishes that the ’943 Patent claims 2, 5-6, 8, and 11 are rendered obvious by Yamamoto in view of the knowledge of a POSITA.

A. Overview of the Principal Prior Art

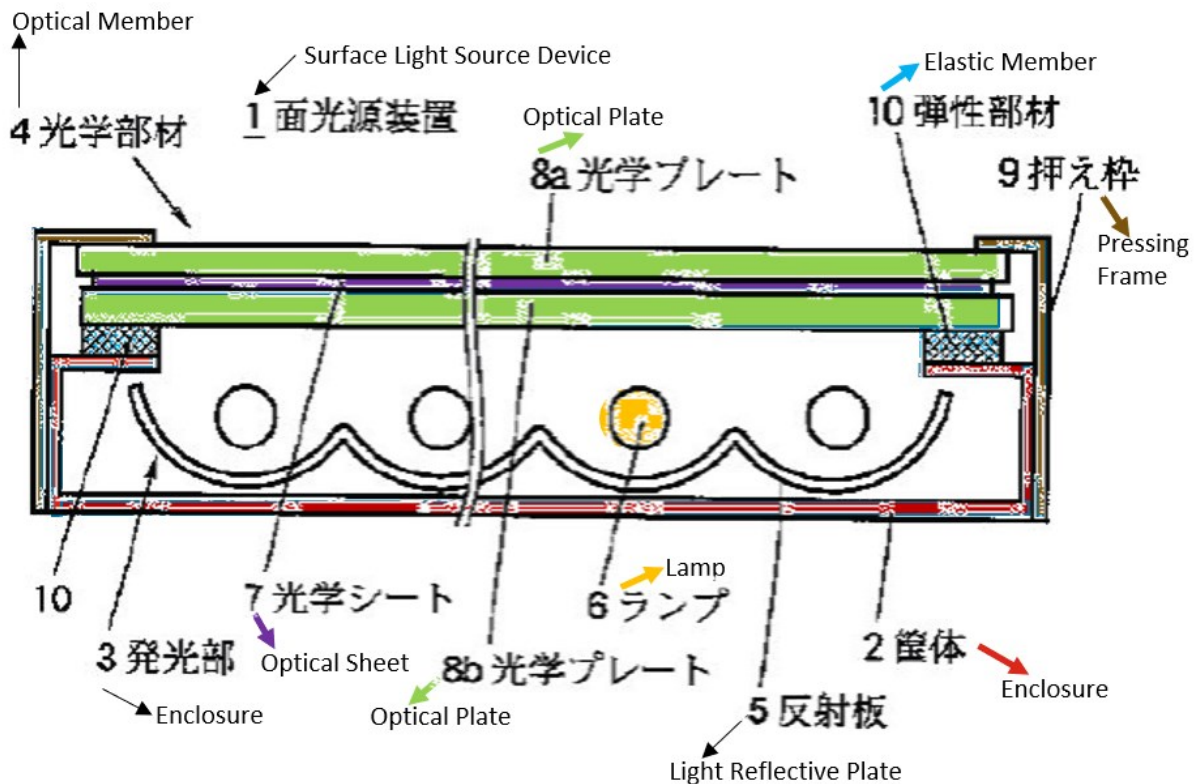
1. Yamamoto (Ex. 1004)

Yamamoto issued on April 24, 1998 as Publication No. JPH10105074A (“Yamamoto”), and is prior art under 35 U.S.C. § 102(b). Yamamoto was not considered during prosecution of the ’943 Patent application. A certified translation of Yamamoto is submitted herewith as Ex. 1004.¹

Yamamoto presents the problem to be solved as: “To suppress bending deformation and thermal deformation of an optical sheet incorporated in a surface light source device.” Ex. 1004, *Abstract*. Yamamoto presents its solution at its *Resolution Means*: “The optical member 4 has a composite structure composed of an optical sheet 7 that is relatively thin and flexible and is stretchable by heat, and a pair of optical plates 8a, 8b that are relatively thick and rigid, interposed between the optical sheets 7 from the front and back.” Ex. 1004, *Resolution Means*.

Yamamoto’s Figure 1 is illustrative:

¹ The original Yamamoto Patent in its untranslated form is included as Ex. 1012.



Ex. 1004, Fig. 1 (annotated).

Yamamoto explains that in prior art; “in order to prevent bending deformation of the optical sheet 7, a structure in which the peripheral edge part of the optical member 4 is supported and secured so as to be interposed between the holding frame 9 and the housing 2 is also conceivable. Thereby, tension can be applied so that the optical sheet 7 does not bend.” Ex. 1004, [0004]. Yamamoto continues that, “[h]owever, the optical sheet 7 is thermally stretchable, and when heated from the lamp 6 side, the sheet thermally expands and wrinkles. The wrinkles also adversely affect the surface luminance distribution of illumination light.” *Id.*

Yamamoto explains its solution to the problems in the prior art. Specifically, Yamamoto explains that “[i]n order to solve the aforementioned problems of the conventional technology . . . the basic configuration of the surface light source device of the present invention, provides: a housing . . . a light emitting part . . . an optical sheet that is relatively thin and flexible . . . and a pair of optical plates that are relatively thick and rigid, interposed between the optical sheets from the front and back.” Ex. 1004, [0005]. Yamamoto describes the optical sheet in terms of a “prism sheet in which microprisms are arranged at a prescribed pitch, refracts and transmits the light source light and converts the light into illumination light having a desired front surface luminance distribution.” *Id.* Yamamoto describes the “pair of optical plates” as a “light diffusing plate, which diffuses and transmits the light source light, and converts the light into illumination light having a uniform surface luminance distribution” or “a transparent plate, which transmits the light source light without conversion, and maintains the surface luminance distribution of the illumination light.” *Id.* Yamamoto further describes that “the light emitting part includes a reflector . . . and a lamp provided directly below the open surface and directly above the reflector.” *Id.*

Yamamoto describes the advantages of its invention in terms of “two optical plates having the same dimensions or larger dimensions than the optical sheet are used to interpose and hold the entire surface of the optical sheet from the front and

rear (front and back). As a result, it is possible to prevent the optical sheet from becoming wrinkled due to the heat generated by the light source part.” Ex. 1004, [0006]. Yamamoto explains that the “optical plate interposing the optical sheet is not simply a part for holding, but can also use a light diffusing plate with various diffusion coefficients, or a transparent plate made of acrylic or the like with an anti-reflection film on the outer surface, as a component that satisfies the optical properties required of a surface light source device.” *Id.*

B. Ground 1: Claims 1, 4 and 10 are Anticipated by Yamamoto (Ex. 1004)

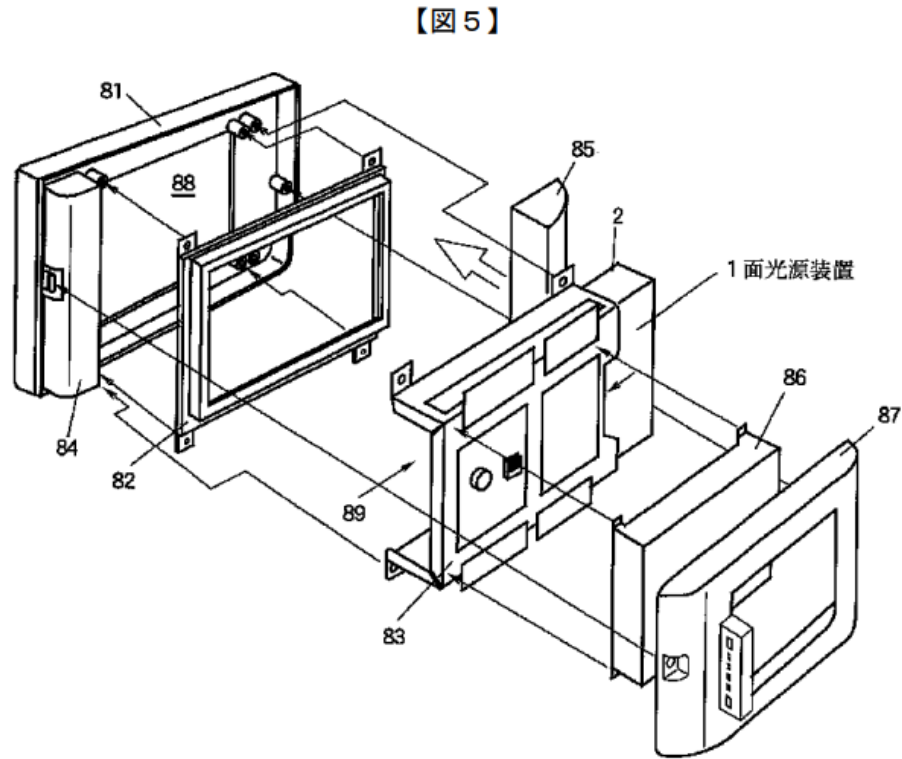
1. Claim 1

a. Preamble

The preamble of claim 1 recites “*A backlight unit, comprising.*”

To the extent the Board considers the preamble a limitation, Yamamoto discloses this limitation. Yamamoto describes its “invention relates to a surface light source device used for a backlight or the like provided on the rear surface of a transmissive liquid crystal panel.” Ex. 1004, [0001].

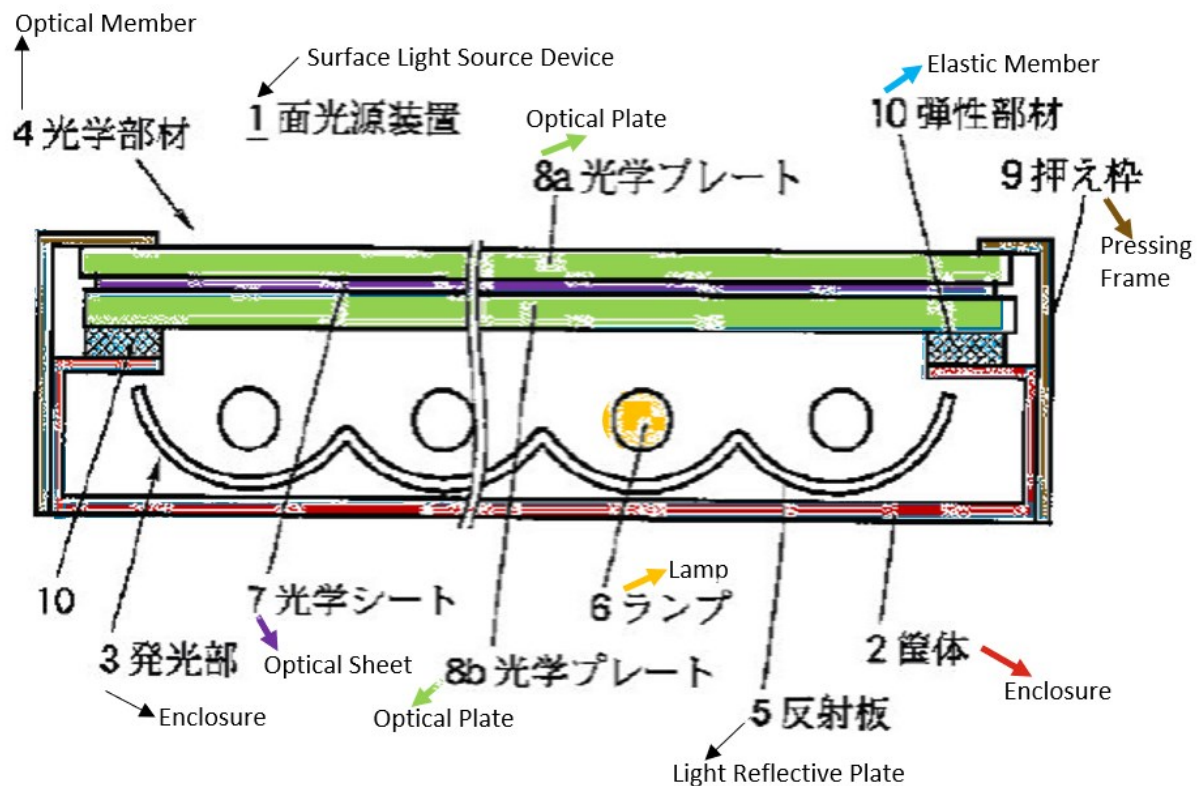
Yamamoto’s backlight unit is depicted in a device, for example, in Yamamoto’s Figure 5 copied below.



Ex. 1004, Fig. 5.

Yamamoto explains that: “FIG. 5 is an exploded perspective view illustrating an example of a flat display using the surface light source device of the present invention as a backlight.” *Id.*, [0012].

A close-up view of Yamamoto’s backlight unit is depicted in Yamamoto’s Figure 1 copied below.



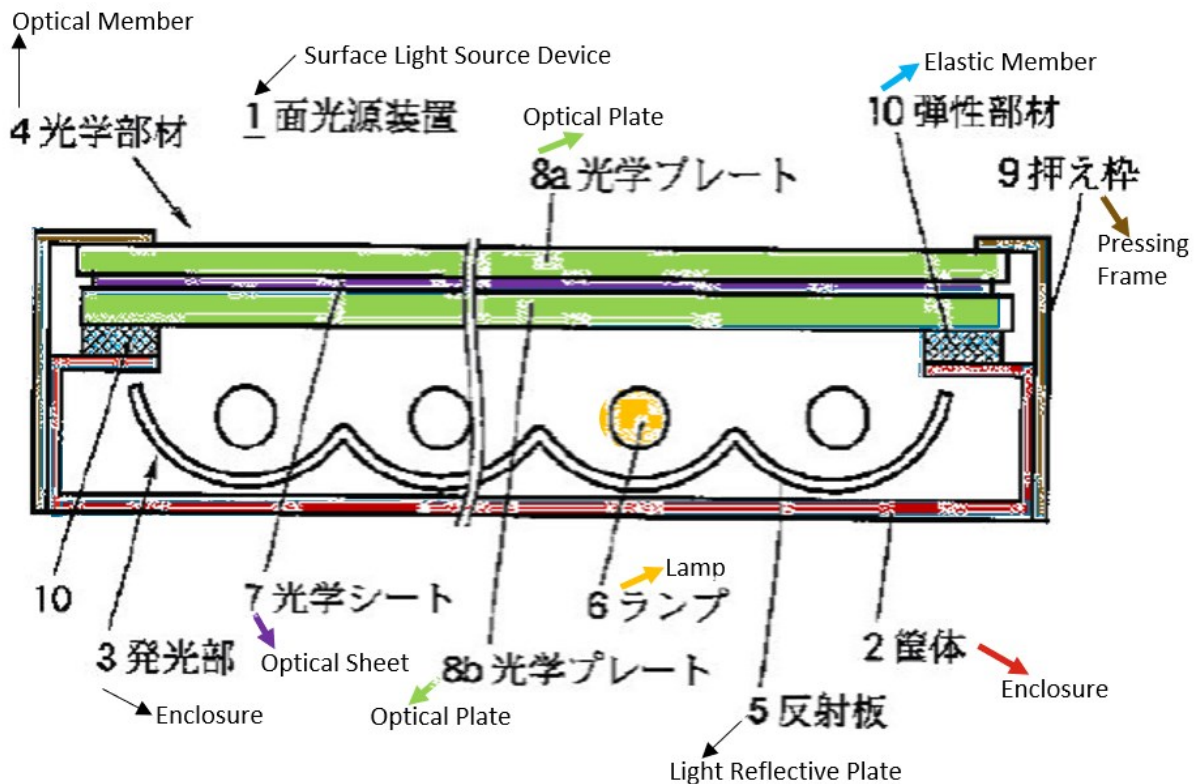
Ex. 1004, Fig. 1 (annotated).

Referring to Fig. 1, Yamamoto states “[t]he present embodiment is a so-called direct type backlight.” *Id.*, [0007].

b. Limitation 1[a]

The ’943 Patent’s claim 1 continues by reciting “*a light source.*”

Yamamoto discloses this limitation. Ex. 1003, ¶ 105–107. With reference to Yamamoto’s Figure 1 (copied below), component 6 is a light source. Ex. 1003, ¶ 105–107.



Ex. 1004, Fig. 1 (annotated).

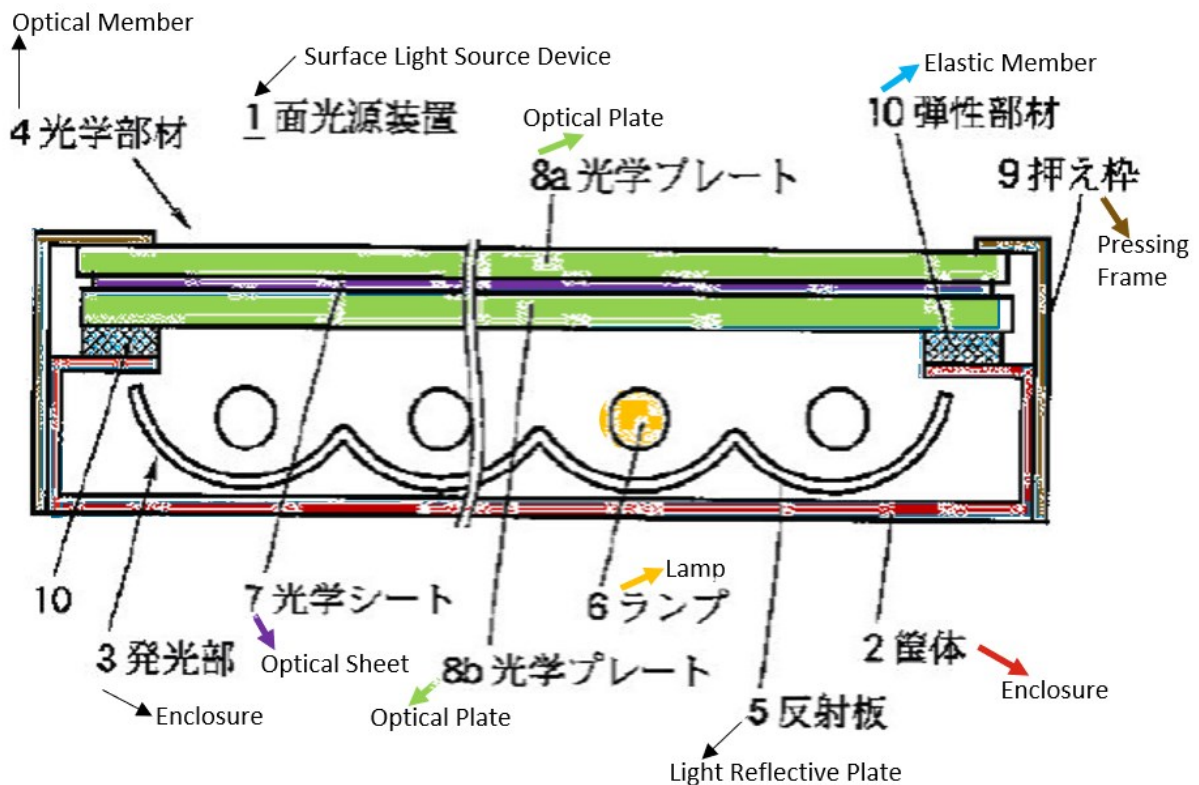
Yamamoto at [0007], states “a lamp 6 including a plurality of fluorescent tubes or the like provided directly below the open surface of the housing 2 and directly above the reflective plate 5.” The ’943 Patent describes a similar “light source.” See Ex. 1001, 1:20–26 (“As shown in FIG. 1, a backlight unit 10 for a liquid crystal display device includes a line-shaped light source 2 such as a cold cathode fluorescent lamp arranged on a side surface of a light guide panel 1 and a light reflection plate 3 for reflecting light from the light source 2 to the light guide panel 1. A reflection sheet 5 is arranged on a rear surface of the light guide panel 1.”).

Yamamoto's lamp 6 is the '943 light source 21–24 in '943 Figure 5 or light source 2 in '943 Figure 4. Ex. 1003, ¶ 35.

c. Limitation 1[b]

The '943 Patent's claim 1 continues by reciting “an optical sheet for transmitting light from said light source and giving an optical change to the light.”

Yamamoto discloses this limitation. Ex. 1003, ¶ 108–115. With reference to Yamamoto's Figure 1 (copied below), component 7 is an optical sheet:



Ex. 1004, Fig. 1 (annotated).

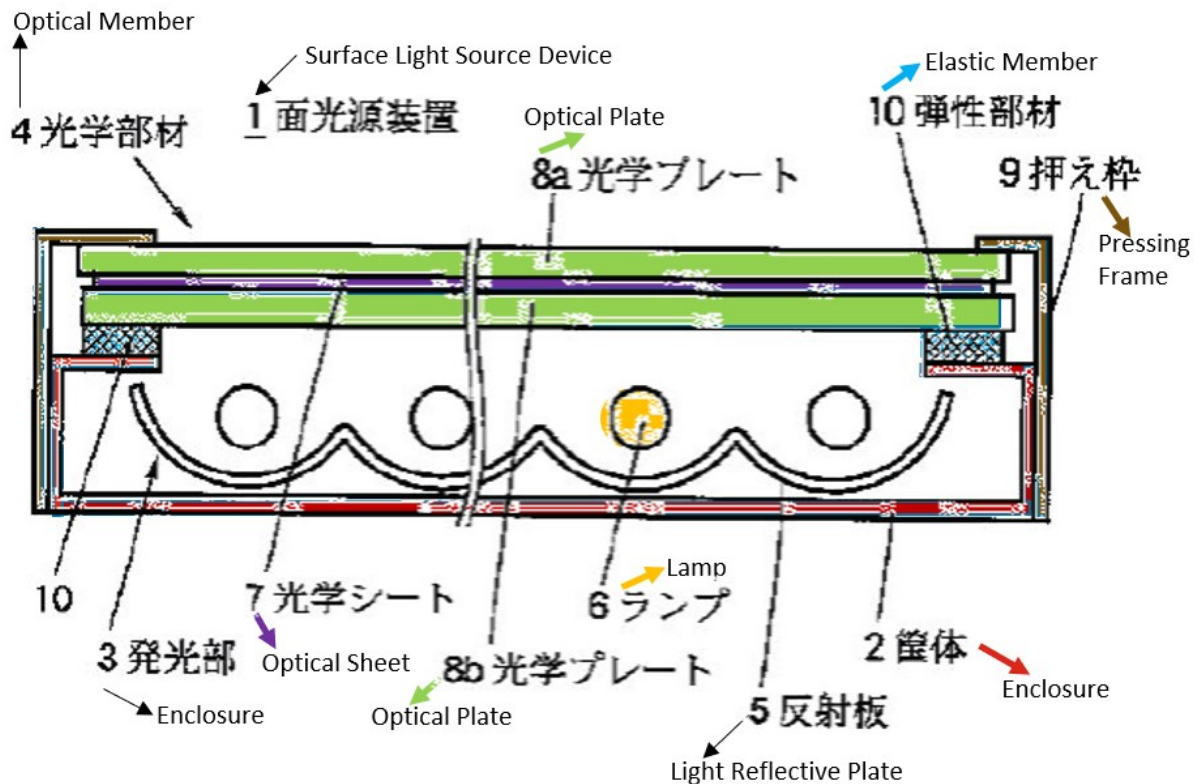
Yamamoto explains that “[t]he optical sheet 7 is a prism sheet, and serves to collect the light source light diffused outside the viewing angle by the lower optical

plate 8b toward the front, in order to increase the front brightness.” *Id.*, [0008]; *see also id.* [0003] (“The optical sheet 7 is, for example, a prism.”). A POSITA would understand that increasing the front brightness provides an optical change for the light being transmitted from the light source as claimed. Ex. 1003, ¶ 114; *see also id.* [0007] (“the optical sheet 7 is a prism sheet in which microprisms are arranged at a prescribed pitch, refracts and transmits the light source light and converts the light into illumination light having a desired front surface luminance distribution”). The ’943 Patent describes a similar optical sheet comprising a “prism sheet.” Ex. 1001, 1:28-29.

d. Limitation 1[c]

The ’943 Patent’s claim 1 continues by reciting “*a transparent reinforcing plate in intimate contact with a major surface of said optical sheet.*”

Yamamoto discloses this limitation. With reference to Yamamoto’s Figure 1 (copied below), components 8a and 8b are transparent reinforcing plates in intimate contact with a major surface of the optical sheet 7:

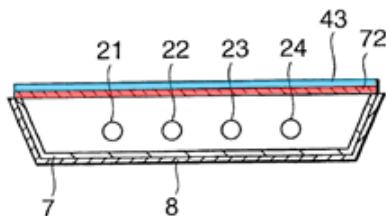


Ex. 1004, Fig. 1 (annotated).

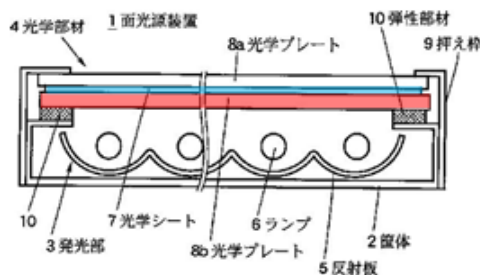
Yamamoto explains that “a pair of optical plates 8a, 8b that are relatively thick and rigid, interposed between the optical sheets 7 from the front and back.” *Id.*, [0007]. Yamamoto continues by stating that elements 8a and 8b can be transparent plates. *Id.*, [0007] (“In some cases, at least one side of the pair of optical plates 8 a, 8b may be a transparent plate.”). Yamamoto explains that “[i]n this case, the transparent plate transmits the light source light without conversion, and maintains the surface luminance distribution of the illumination light.” *Id.*

A further comparison of the '943 Patent embodiment and Yamamoto's is provided below to illustrate the similarities. Ex. 1003, ¶¶ 116–130.

'943 Patent, Fig. 5 (annotated)



Yamamoto, Fig. 1 (annotated)



Ex. 1001, Fig. 5 (annotated); Ex. 1004, Fig. 1 (annotated).

As shown, the '943 Patent's Figure 5 depicts a reinforcing plate 72 (noted in red) and an optical sheet 43 (noted in blue). *See also id.*, 6:28-30 ("Furthermore, a transparent reinforcing plate 72 is stuck on a rear surface of the light diffusing optical sheet 43."). Ex. 1003, ¶¶ 116–130. Similarly, and as shown, Yamamoto's Figure 1 depicts a reinforcing sheet 8b (noted in red) and optical sheet 7 (noted in blue). *Id.*

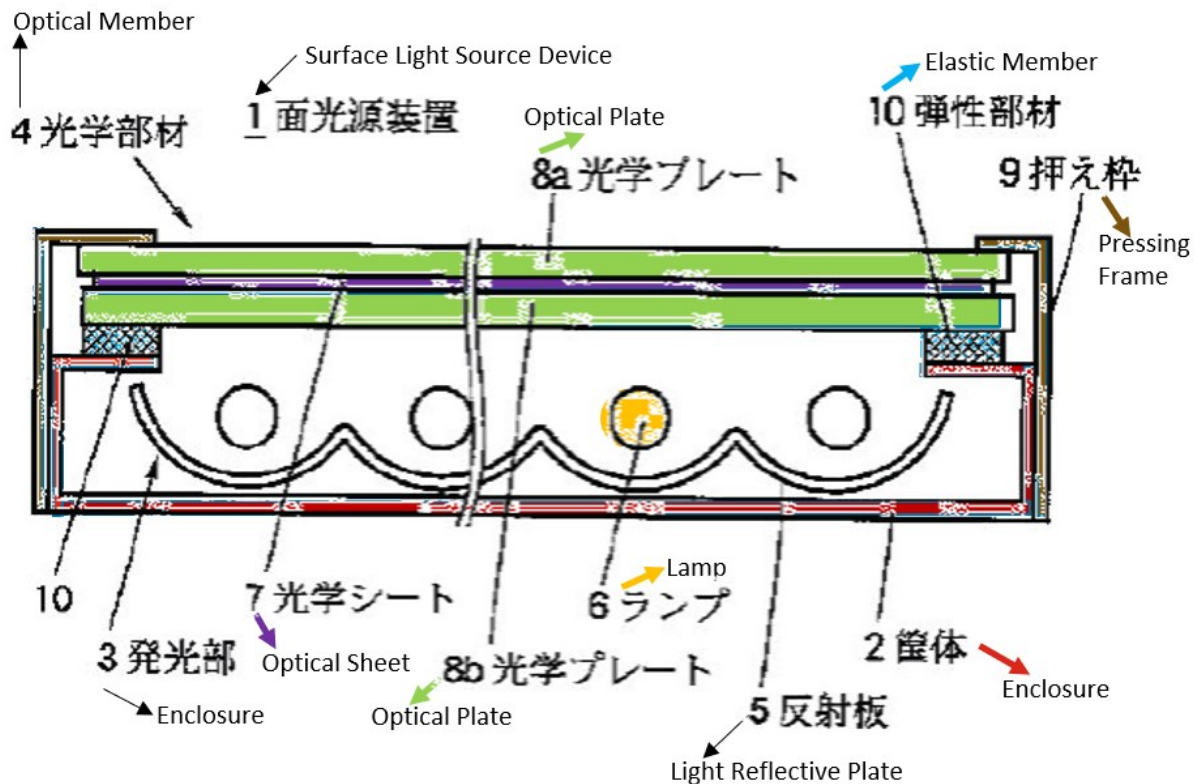
Yamamoto's reinforcing plate 8b serves the same purpose as the reinforcing plate in the '943 Patent. Ex. 1003, ¶¶ 125–130. For example, Yamamoto describes the advantages of its invention in terms of "two optical plates having the same dimensions or larger dimensions than the optical sheet are used to interpose and hold the entire surface of the optical sheet from the front and rear (front and back). *Id.* As a result, it is possible to prevent the optical sheet from becoming wrinkled due to

the heat generated by the light source part.” Ex. 1004, [0006]. The ’943 Patent describes its reinforcing sheet in the same manner. *See* Ex. 1001, 5:42-55 (“sticking [a] reinforcing plate having high light transmittance and resistive to thermal deformation on such optical sheet” to “prevent the optical sheet from being deformed”). *Id.*

e. Limitation 1[d]

The ’943 Patent’s claim 1 continues by reciting “*a reflection member for reflecting the light emitted from said light source to said transparent reinforcing plate such that the light from said light source passed through said transparent reinforcing plate passes through said optical sheet.*”

Yamamoto discloses this limitation. Ex. 1003, ¶¶ 131–133. With reference to Yamamoto’s Figure 1 (copied below), component 5 is a reflection member for reflecting the light emitted from light source (lamp 6) to transparent reinforcing plate (reinforcing plate 8b), where the reflected light passes through optical sheet (optical sheet 7):



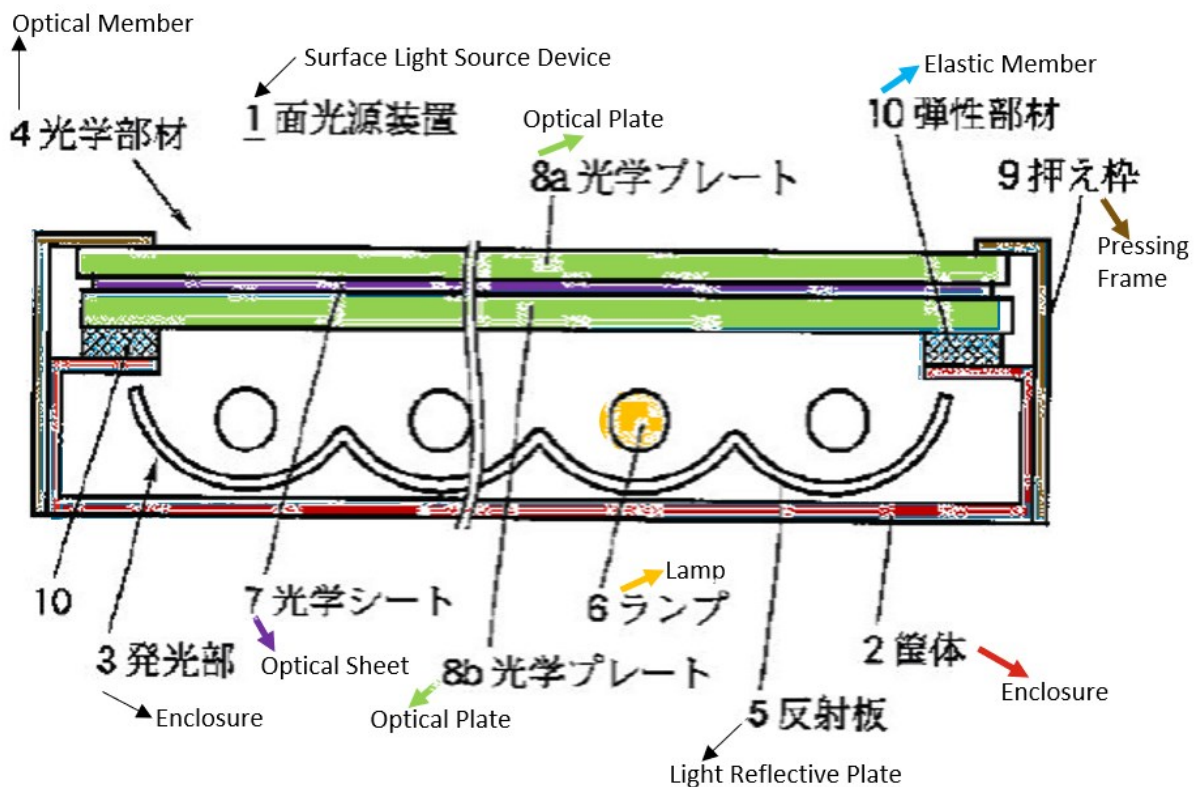
Ex. 1004, Fig. 1 (annotated).

Yamamoto explains that, “[t]he reflective plate 5 reflects the light source light generated by the lamp 6 toward the front.” Ex. 1004, [0008]. As depicted in Yamamoto’s Figure 1, the front includes “lower optical plate 8b” which is “a light diffusing plate” that receives the “direct light source light from the lamp 6 and the indirect light source light from the reflective plate 5.” *Id.*, Fig. 1 and [0008]. Further, the optical sheet 7, is “interposed between the front and rear optical plates 8a, 8b” and “serves to collect the light source light diffused outside the viewing angle by the lower optical plate 8b toward the front, in order to increase the front brightness.” *Id.*, [0008].

f. Limitation 1[e]

The '943 Patent's claim 1 continues by reciting “*wherein said light source is arranged immediately below said reinforcing plate and between said reflecting member and said reinforcing plate.*”

Yamamoto discloses this component. Ex. 1003, ¶¶ 134–139. With reference to Yamamoto's Figure 1 (copied below), light source (lamp 6) is arranged immediately below reinforcing plate (reinforcing plate 8b) and between said reflecting member (light reflective plate 5) and said reinforcing plate 8b:



Ex. 1004, Fig. 1 (annotated).

Yamamoto explains: “As illustrated, the surface light source device 1

includes a housing 2, a light emitting part 3, and an optical member 4. The housing 2 has an open surface in front of the flat space. The light emitting part 3 is arranged in a flat space, and emits light from the light source toward the front open surface. The optical member 4 is mounted on the open surface of the housing 2 by the holding frame 9, transmits light source light, and converts this light into illumination light having a desired surface luminance distribution.” *Id.*, [0007]; *see also id.* (“lamp 6 including a plurality of fluorescent tubes arranged immediately below the opening surface and directly above the reflecting plate 5). Ex. 1003, ¶¶ 134–139.

2. Claim 4

a. Preamble

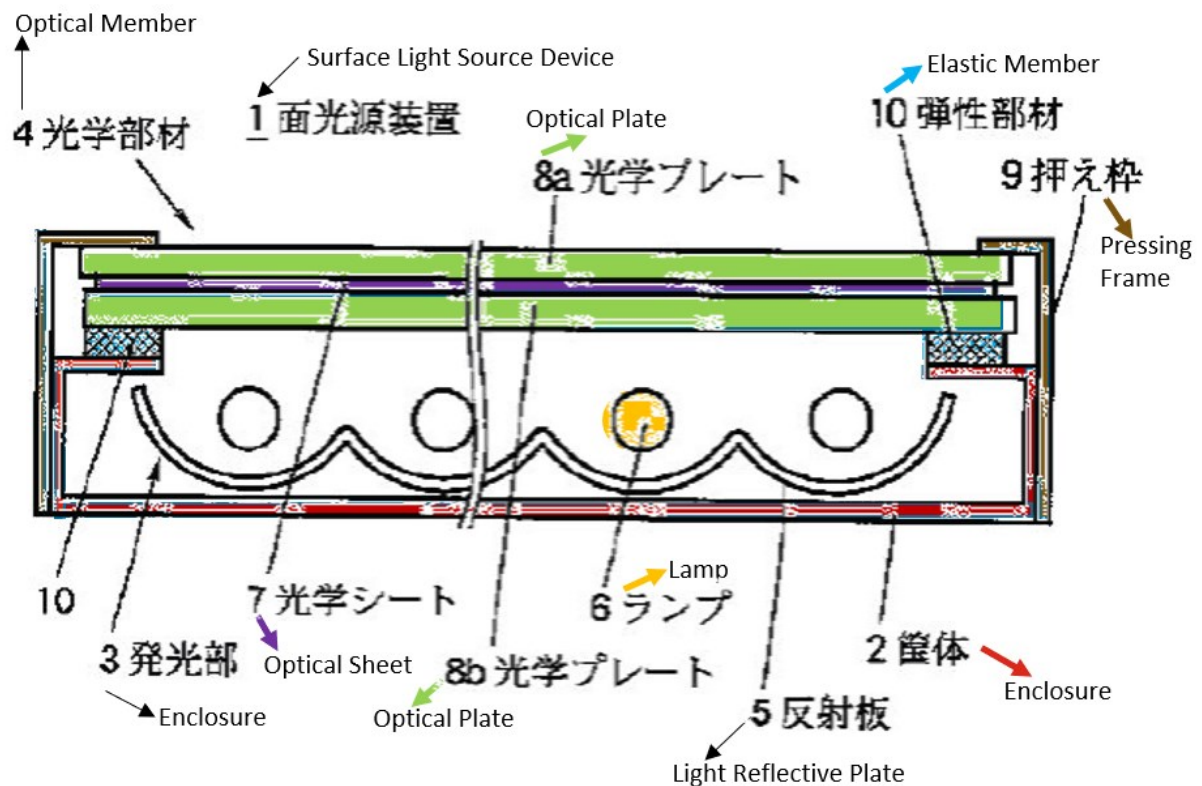
The preamble of claim 4 recites: “*A backlight unit.*”

To the extent this term is limiting Yamamoto discloses this limitation. See Claim 1 Preamble § V.B.1.a.

b. Limitation 4[a]

The ’943 Patent’s claim 4 continues by reciting: “*a reflecting member constructed with a support plate.*”

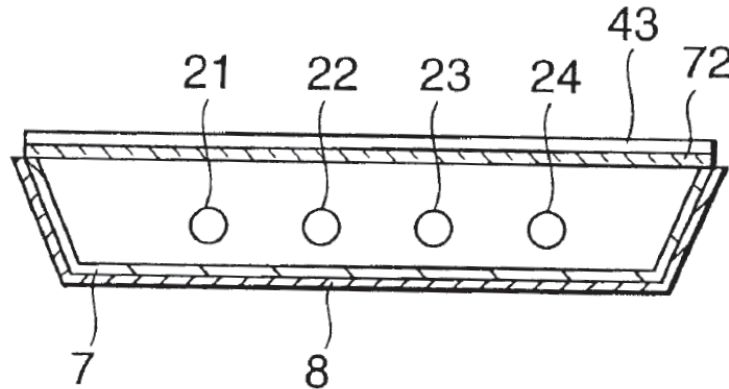
Yamamoto discloses this limitation. With reference to Yamamoto’s Figure 1 (copied below), component 2 is a support plate for reflecting member (light reflective sheet 5):



Ex. 1004, Fig. 1 (annotated).

For example, Yamamoto discloses “A surface light source device 1 has an enclosure 2.” A POSITA would understand that the placement of enclosure 2 under the light reflective plate 5 provides support therefore. Ex. 1003, ¶ 157; *see also* limitation 1d (Yamamoto discloses a reflecting member). The '943 Patent similarly depicts and describes its support plate 8 with reference to its Figure 5 copied below:

FIG.5



Ex. 1001, Fig. 5 and 6:23-24 (“The white reflecting plate 7 is supported by a support plate 8”).

c. Limitation 4[b]

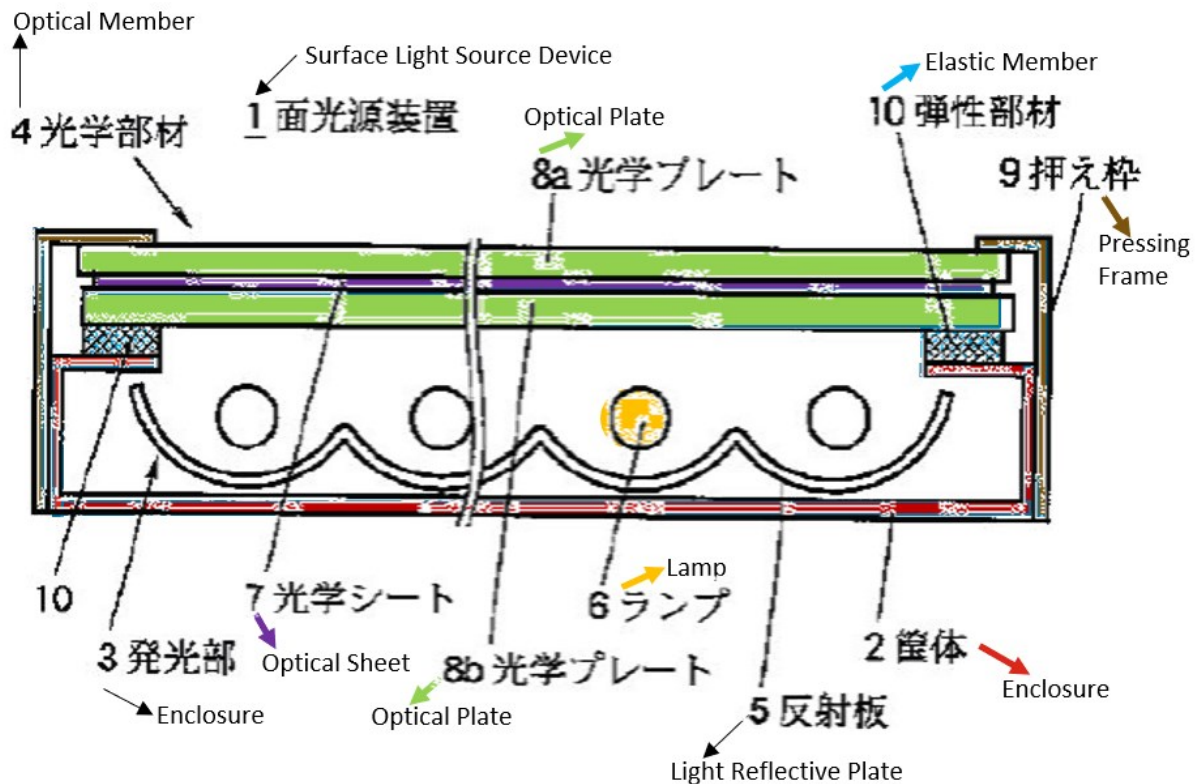
The '943 Patent's claim 4 continues by reciting “*a reflecting plate supported by said support plate.*”

Yamamoto discloses this limitation. Ex. 1003, ¶¶ 159–163. See Claim Limitation 4[a] § V.B.2.b.

d. Limitation 4[c]

The '943 Patent's claim 4 continues by reciting “*a light source comprising a plurality of juxtaposed line shaped light sources.*”

Yamamoto discloses this limitation. With reference to Yamamoto's Figure 1 (copied below), components 6 are a plurality of juxtaposed line shaped light sources:



Ex. 1004, Fig. 1 (annotated).

Yamamoto further discloses “the light emitting part 3 includes a reflective plate 5 provided across from the opening surface of the housing 2, and a lamp 6 including a plurality of fluorescent tubes or the like provided directly below the open surface of the housing 2 and directly above the reflective plate 5.” *Id.*, [0007]. The ’943 Patent discloses similar juxtaposed light sources. Ex. 1001, 4:59-61 (“As the line-shaped light source, a fluorescent lamp such as a hot cathode tube or a cold cathode tube is usually used.”). See Ex. 1003, ¶¶ 164–165.

e. Limitation 4[d]

The '943 Patent's claim 4 continues by reciting "*an optical sheet for transmitting light from the light source and giving an optical change to the light.*"

Yamamoto discloses this limitation. See Claim Limitation 1b § V.B.1.c.

f. Limitation 4[e]

The '943 Patent's claim 4 continues by reciting "*a transparent reinforcing plate in intimate contact with a major surface of said optical sheet.*"

Yamamoto discloses this limitation. See Claim Limitation 1c § V.B.1.d.

g. Limitation 4[f]

The '943 Patent's claim 4 continues by reciting "*the reflection member for reflecting the light emitted from said light source to said transparent reinforcing plate such that the light from said light source passed through said transparent reinforcing plate passes through said optical sheet.*"

Yamamoto discloses this limitation. See Claim Limitation 1d § V.B.1.e.

h. Limitation 4[g]

The '943 Patent's claim 4 continues by reciting "*wherein said light source is arranged immediately below said reinforcing plate and between said reflecting member and said reinforcing plate.*"

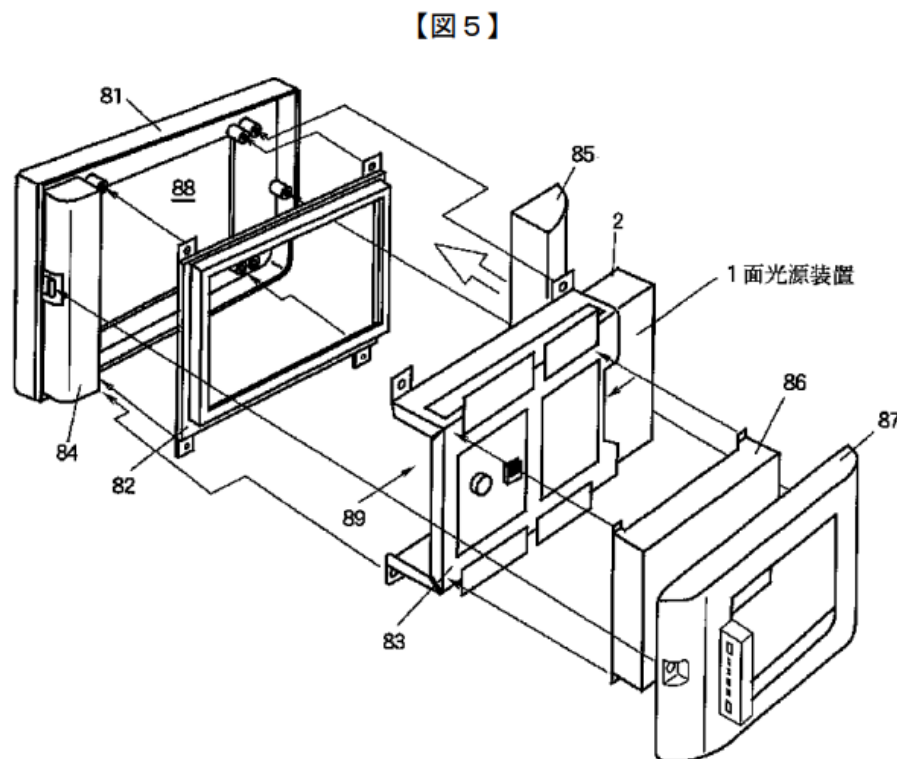
Yamamoto discloses this limitation. See Claim Limitation 1e § V.B.1.f.

3. Claim 10

The '943 Patent's claim 10 depends on claim 1 and further recites "*A liquid crystal display device comprising a liquid crystal display panel and a backlight unit claimed in Claim 1, wherein said backlight unit is arranged on a rear surface of said liquid crystal display panel integrally.*"

Yamamoto discloses this limitation. Yamamoto describes its "invention relates to a surface light source device used for a backlight or the like ***provided on the rear surface*** of a transmissive liquid crystal panel." Ex. 1004, [0001] (emphasis added).

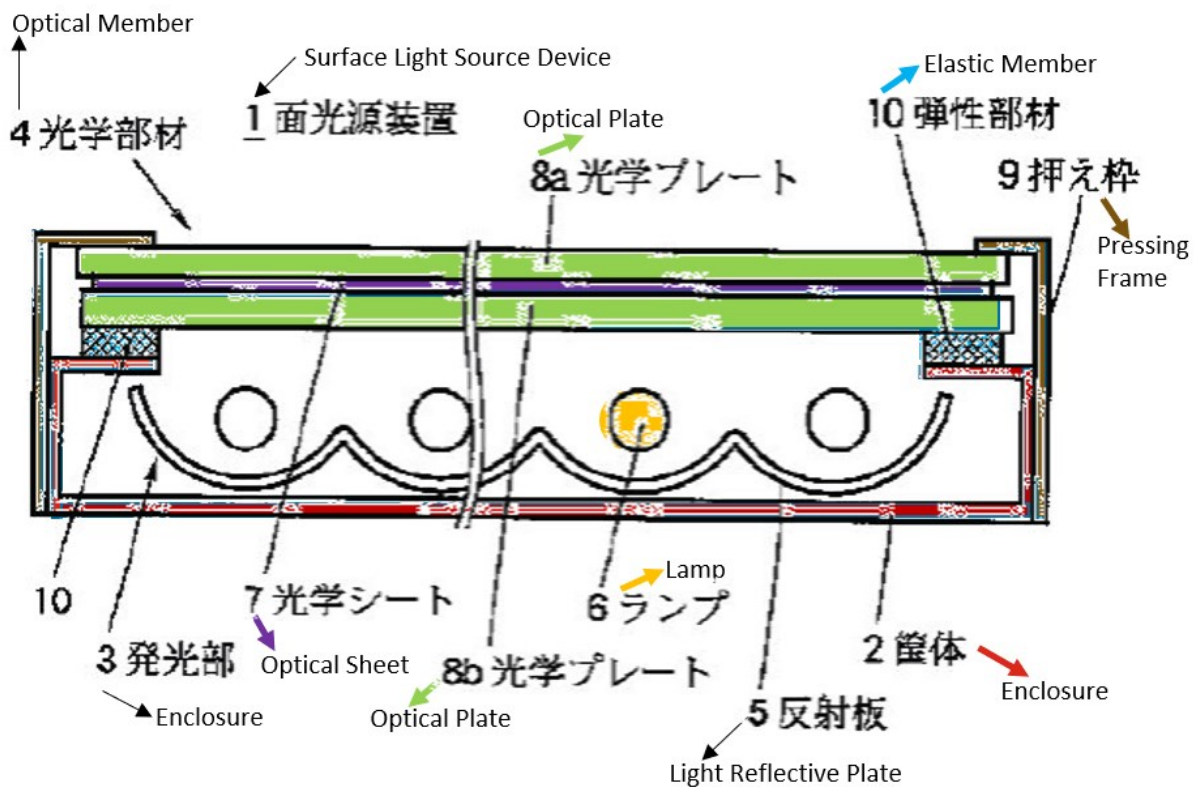
Yamamoto's backlight unit is depicted in a device, for example, in Yamamoto's Figure 5 copied below.



Ex. 1004, Fig. 5.

Yamamoto explains that: “FIG. 5 is an exploded perspective view illustrating an example of a flat display using the surface light source device of the present invention as a backlight.” *Id.*, [0012].

A close-up view of Yamamoto’s backlight unit is depicted in Yamamoto’s Figure 1 copied below.



Ex. 1004, Fig. 1 (annotated).

Referring to Fig. 1, Yamamoto states “[t]he present embodiment is a so-called direct type backlight.” *Id.*, [0007]. Yamamoto further discloses that “[l]iquid crystal panels are not self-luminous, but display images by modulating external light, and

are broadly classified as being a transmissive type or a reflective type. With the transmissive type, a backlight *must be attached to the back surface of the liquid crystal panel.*” Ex. 1004, [0002] (emphasis added); Ex. 1003, ¶ 195–200.

C. Ground 2: Claims 2, 5-6, 8, 11-15, and 17 are rendered Obvious by Yamamoto (Ex. 1004) in view of POSITA knowledge

1. Claim 2

The ’943 Patent’s claim 2 depends on claim 1 and further recites, “*A backlight unit as claimed in claim 1, wherein said transparent reinforcing plate is formed of a material having light transmittance and glass transition temperature higher than those of said optical sheet.*”

Yamamoto discloses this limitation or renders it obvious in view of a POSITA’s knowledge. Yamamoto teaches “In some cases, at least one side of the pair of optical plates 8a, 8b may be a transparent plate. In this case, the transparent plate transmits the light source light without conversion, and maintains the surface luminance distribution of the illumination light.” Ex. 1004, [0007]. Yamamoto also teaches that “the optical sheet 7 is a prism sheet in which microprisms are arranged at a prescribed pitch.” *Id.* A POSITA would understand that prism sheets have lower light transmittance than transparent plates because, by their very nature, they send some incident light back toward the light source, rather than simply transmitting it through the plate. Ex. 1003, ¶¶ 141–151.

Yamamoto also teaches that “the optical plates 8a and 8b are made of acrylic resin and the optical sheet 7 is made of polyester resin.” Ex. 1004, [0008]. A POSITA would understand that the most common acrylic resin is PMMA or plexiglass which are often used in liquid crystal display device manufacturing. Ex. 1003, ¶ 145. PMMA has a glass transition temperature of 90°C. *Id.* A POSITA would also know that the most common polyester resin is PET which is often used in liquid crystal display device manufacturing and has a glass transition temperature (depending on purity) between 69°C and 85°C. *Id.* Thus, A POSITA would find it obvious to use a transparent reinforcing plate formed from a PMMA acrylic resin and an optical sheet formed of a PET polyester resin, which would result in a reinforcing plate having a glass transition temperature higher than the optical sheet. Ex. 1003, ¶ 148. A POSITA would find it obvious to try using these commonly used materials according to their known methods of use in manufacturing liquid crystal display manufacturing as claimed and could do so easily with predictable results. Ex. 1003, ¶ 148; *see also KSR International Co. v. Teleflex Inc.*, 550 U.S. 398, 415-16 (2007) (“[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results”).

2. Claim 5

The '943 Patent's claim 5 depends on claim 1 and further recites "*A backlight unit as claimed in claim 1, wherein said reinforcing plate is stuck on said optical sheet by a transparent tackiness agent.*"

Yamamoto discloses this limitation or renders it obvious in view of a POSITA's knowledge. Yamamoto teaches "[i]n some cases, the two optical plates interposing the optical sheet may be adhered to each other using heat-resistant adhesive tape or an adhesive." Ex. 1004, [0005]. A POSITA would understand that Superglue (Cyanoacrylate), a transparent tackiness agent, was commonly used as an adhesive to glue optical parts together. Ex. 1003, ¶ 177. A POSITA would find it obvious to try using Superglue as a commonly used adhesive adhering the reinforcing plate and optical sheet as claimed and could do so easily with predictable results. Ex. 1003, ¶ 177; *see also KSR*, 550 U.S. 398, 415-16 (2007) ("[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results").²

² See also Ex. 1011, Pfeiffer, U.S. Patent No. 4,193,287 (issued Mar. 18, 1980). Pfeiffer 4:27-35: "Continuing with FIG. 1, two polarizers 17 and 18 are shown near the partially-finished LCD it). Each polarizer 17 or 18 has a transparent adhesive coating on the side of the polarizer nearest the partially-finished LCD 10. For

3. Claim 6

The '943 Patent's claim 6 depends on claim 5 and further recites "*A backlight unit as claimed in claim 5, wherein said transparent tackiness agent is acrylic tackiness agent.*"

Yamamoto discloses this limitation or renders it obvious in view of a POSITA's knowledge. *See* Claim 5 § V.C.2. Superglue is a transparent acrylic tackiness agent as claimed. Ex. 1003, ¶ 177–182.

4. Claim 8

The '943 Patent's claim 8 depends on claim 1 and further recites "*A backlight unit as claimed in claim 1, wherein light transmittance of said reinforcing plate for light from said light source is 90% or more.*"

Yamamoto discloses this limitation or renders it obvious in view of a POSITA's knowledge. *See* Claim 2 § V.C.1 ("optical plates 8a and 8b are made of

simplicity in illustrating the drawing, a transparent adhesive coating 19 is only shown on the second polarizer 18. The polarizers 17 and 18 are pressed onto the outside faces of the glass plates 12 and 13 to complete assembly of the LCD in the prior art." So Pfeiffer discloses polarizer (18) attached to LCD plate (13) using an adhesive coating (19).

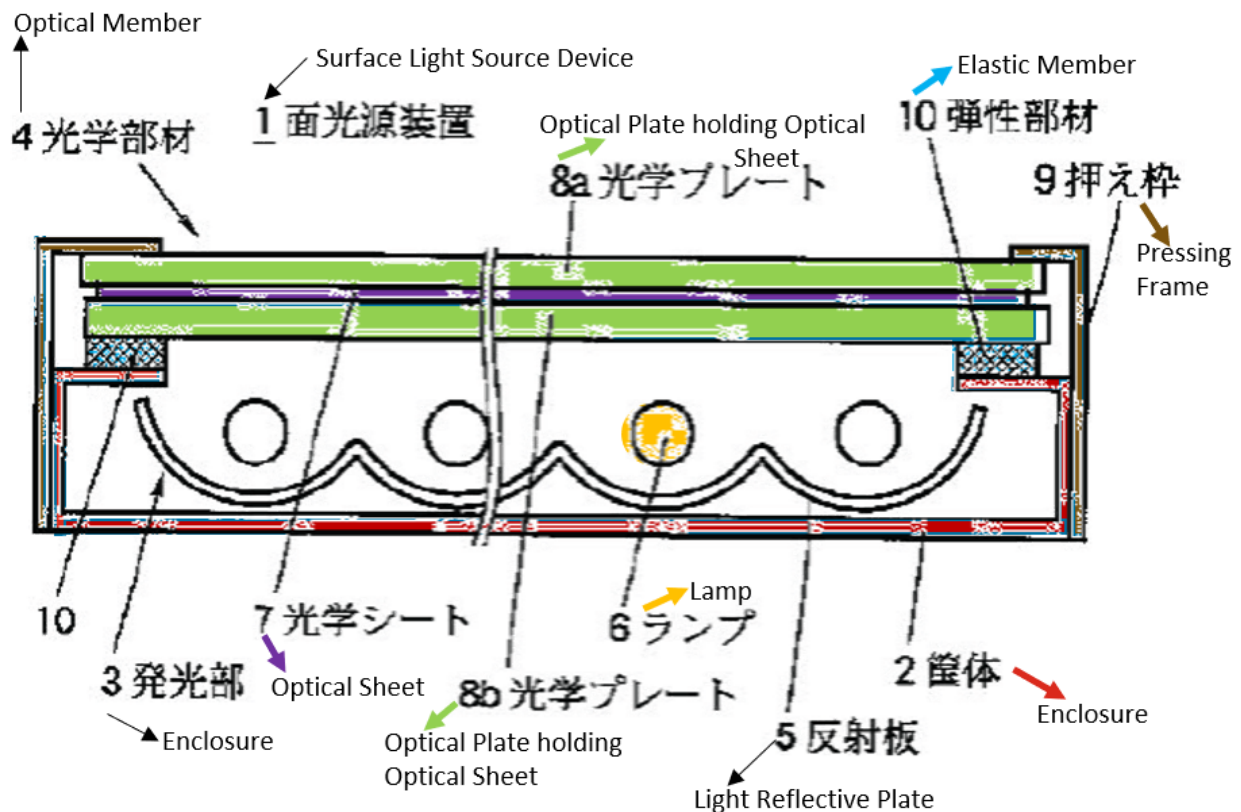
acrylic resin,” “the most common acrylic resin is PMMA or plexiglass,” and “PMMA has a glass transition temperature of 90°C”).

5. Claim 11

The '943 Patent's claim 11 depends on claim 4 and further recites: “*The unit of claim 4, wherein said reflecting plate is a white reflecting plate.*”

Yamamoto discloses this limitation or renders it obvious in view of a POSITA's knowledge. Yamamoto discloses that “[t]he reflective plate 5 reflects the light source light generated by the lamp 6 toward the front.” Ex. 1004, [0008].

Yamamoto Figure 1 (annotated) below depicts the reflective plate 5:



Ex. 1004, Yamamoto, Fig. 1 (annotated).

A POSITA would understand that most liquid-crystal displays were color active-matrix TFT liquid-crystal displays and required producing white light, so that the red, green, and blue subpixels in the display device receive the required light.

Ex. 1003, ¶¶ 206–212. A POSITA would further understand that there are only two possible reflector alternatives to produce the white light: a reflector with a specular (mirrorlike) reflective surface or a reflector with a diffuse white reflective surface.

Id. Both specular and white reflectors were routinely used in display devices at the relevant time period. *Id.* As such, a POSITA would find it obvious to try using a commonly used white reflective plate as claimed and could do so easily with predictable results. Ex. 1003, ¶ 206–212; *see also KSR*, 550 U.S. 398, 415-16 (2007) (“[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results”).³

³ Ex. 1010, Hansen, U.S. Patent No. 5,499,120 (issued Mar. 12, 1996).

See Hansen 3:59-63: “Referring to FIG. 1, there is shown a printed circuitboard (PCB) 10 having mounted thereon an array of LEDs 11, 12, 13. The PCB 10 has a top solder mask 14 which has a white surface.”

D. No Secondary Considerations Exist

No secondary indicia of nonobviousness exist. Petitioners reserve the right to respond to any assertion of secondary indicia of nonobviousness advanced by Patent Owner.

VI. Mandatory Notices

A. Real Parties-in-Interest

Petitioners are the only entities funding and controlling this Petition and are therefore the named real parties-in-interest. The following Hisense entities were also named in the “Related Proceeding” identified herein at Section VI.B: Hisense Co. Ltd.; Hisense Visual Technology Co. Ltd.; Hisense Electronica Mexico S.A. de C.V.; Hisense Import & Export Co. Ltd.; Hisense International Co. Ltd.; Hisense

See also, Hansen 3:35-40 “The surface of the PCB may be lightly coloured or silvered, but is most preferably white (e.g. paper white) so as to reflect as much as possible of the light from the LEDs within the space between the PCB and the LCD backplane. Preferably still, all the surfaces behind and around the LEDs are substantially white.”

International (HK) Co. Ltd.; and Hisense Electronica Mexico S.A. de C.V.⁴ Out of abundance of caution, these additional named Hisense defendants are identified as potential real parties-in-interest for the purposes of this Petition.

B. Related Proceedings

Patent Owner asserted the '943 Patent against Petitioners in the Eastern District of Texas, Case No. 2:21-cv-00262 (lead case).

C. Lead and Backup Counsel

Petitioners' lead and backup counsel are:

Lead Counsel for Petitioner	Backup Counsel for Petitioner
Ya-Chiao Chang Reg. No. 43,407 Winston & Strawn LLP c/o Yuanda China Law Offices 2801 No. 88 Century Avenue Shanghai 200121 China ychang@winston.com T: +86.21.2208.2628 F: +86.21.5298.5262	Louis L. Campbell (Reg # 59,963) Michael Rueckheim (<i>pro hac vice</i> to be filed) Winston & Strawn LLP 255 Shoreline Drive, Suite 520 Redwood City, CA 94065 llcampbell@winston.com mrueckheim@winston.com T: 650.858.6500 F: 650.858.6550

⁴ To Petitioners' knowledge, none of these Hisense entities was served with a copy of a complaint alleging infringement of the Challenged Claims more than one year before the filing of this Petition. Named codefendant Xianyang Caihong Optoelectronics Technology Co., Ltd. (CHOT) is not affiliated with Petitioners.

D. Electronic Service

Petitioners consent to electronic service at:

Winston-Hisense-IPR@winston.com.

VII. Fees

The required fee is being paid electronically through PTAB E2E.

VIII. Conclusion

Petitioners respectfully request that the Board institute IPR and enter a final written decision finding the Challenged Claims unpatentable.

Dated: February 28, 2023

Respectfully submitted,

/ Ya-Chiao Chang /

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Counsel for Petitioners

CERTIFICATE OF COMPLIANCE

This Petition complies with the word count limits set forth in 37 C.F.R. § 42.24(a)(1)(i), because this Petition contains 6,414 words, excluding the parts of the Petition exempted by 37 C.F.R. § 42.24(a)(1), determined using the word count provided by Microsoft Word, which was used to prepare this Petition.

Dated: February 28, 2023

Respectfully submitted,

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CERTIFICATE OF SERVICE

Under 37 C.F.R. §§ 42.6(e) and 42.105(a), this is to certify that on February 28, 2023, I caused to be served a true and correct copy of the foregoing “**PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 6,513,943**” and Exhibits 1001-1011 by Federal Express on the Patent Owner at the correspondence address of record for U.S. Patent No. 6,513,943:

AMIN, TUROCY & WATSON, LLP
200 Park Avenue
Suite 300
Beachwood, OH

A courtesy copy of this Petition and supporting material was also served on litigation counsel for Patent Owner via email:

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Dated: February 28, 2023

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