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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SONY CORPORATION,
Petitioner,

v.

COLLABO INNOVATIONS, INC.,
Patent Owner.

Case IPR2016-00941
U.S. Patent No. 5,952,714

PATENT OWNER'S DEMONSTRATIVES FOR ORAL ARGUMENT

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Patent Trial and Appeal Board
U.S. Patent & Trademark Office
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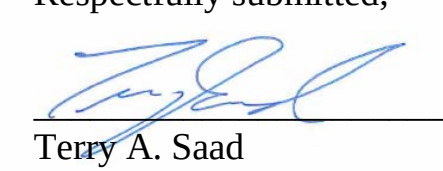
Dated: July 7, 2017

Respectfully submitted,



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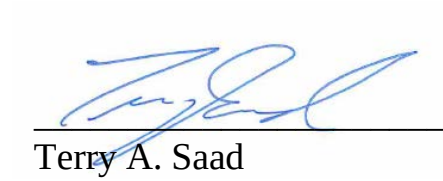
CERTIFICATE OF SERVICE

The undersigned hereby certifies that document has been served via electronic mail on July 7, 2017, to Petitioner at following email addresses pursuant to its consent in its Petition at p. 1: smith@turnerboyd.com, docketing@turnerboyd.com, gu@turnerboyd.com, and zweig@turnerboyd.com.



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Oral Argument Demonstratives

Patent Owner Collabo Innovations, Inc.
IPR2016-00942
U.S. Patent No. 5,952,714

United States Patent and Trademark Office
Patent Trial and Appeal Board

Administrative Patent Judges
David C. McKone, Gregg I. Anderson, and Jennifer Meyer Chagnon

***Oral Argument* – July 11, 2017**

BRAGALONE CONROY PC

Ground 1: Claim 1 Is Not Anticipated by Yoshino

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference."

Verdegaal Bros. v. Union Oil Co., 814 F.2d 628, 631 (Fed. Cir. 1987)

"The identical invention must be shown in as complete detail as is contained in the . . . claim."

Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236 (Fed. Cir. 1989) (emphasis added)

"[U]nless a reference discloses . . . all of the limitations arranged or combined in the same way as recited in the claim, it cannot . . . anticipate."

Net MoneyIN, Inc. v. Verisign, Inc., 545 F.3d 1359, 1371 (Fed. Cir. 2008) (emphasis added) (reversing district court's reliance on multiple distinct teachings in a reference)

POR at 19-20

Ground 1: Construction of "Secured"

All claims require that the image sensing device be "secured to said package via an adhesive."

The specification describes this as "gluing" to the package:

- **"Then a back side of the CCD chip is glued to the package by adhesive" '714 at 3:27-29**
- **"[U]ltra-violet hardening adhesive 30 is injected in a specified quantity from a dispenser which is situated beside a press-fit jig to glue four sides of the CCD chip 41 to the package 21." *Id.* at 8:18-22**

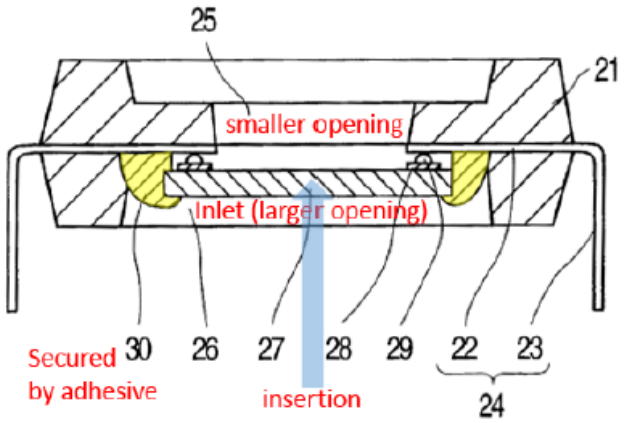
A POSA would know this is different from injection molding epoxy resin, which the specification describes differently. *Id.* at 4:67-5:4.

POR at 19-20

Yoshino Does Not Disclose an Image Sensing Device Being Secured to Package Via an Adhesive

As illustrated in Fig. 2, the image sensing device is glued into place in inlet cavity 26.

FIG. 2



In constrast, Yoshino's use of molded resin to "support" the image sensor is not an adhesive.

Patent Owner's expert explained that "[i]n the 42 years that I have been involved in the semiconductor field, I have never heard of molded resin as an adhesive."

POR at 27-28

Yoshino Itself Distinguishes Between "Support" and "Secured Via an Adhesive"

Yoshino describes the use of molded resin 28 in FIG. 1 as "supporting" the image sensor 25. But Yoshino describes prior art in FIG. 2 in which the image sensor 3 "is secured . . . via a conductive adhesive (4)."

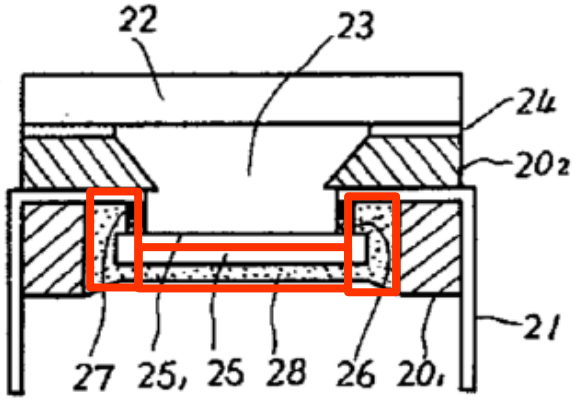
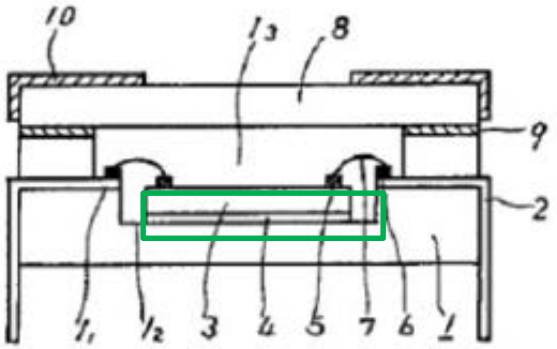


FIG. 2



POR at 28-29

Claim 1 Requires a Device Mounted by Being Inserted from the Opening Having a Wider Area

Figures 1 and 2 of the ’714 patent illustrate the claimed limitation.

FIG. 1

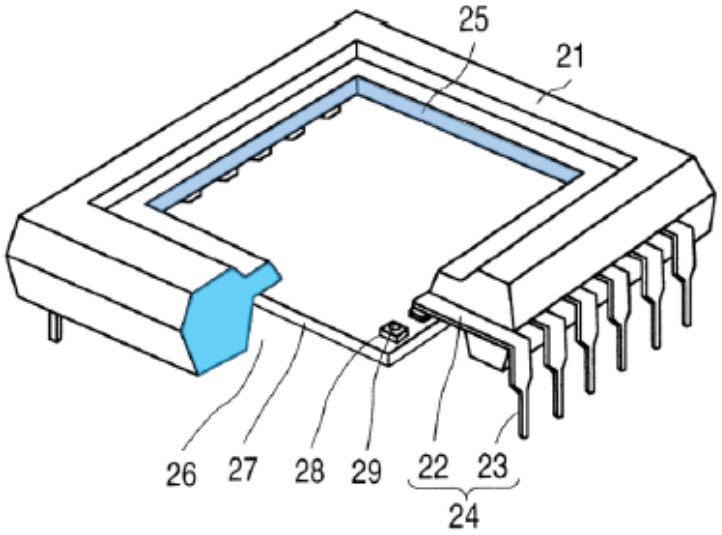
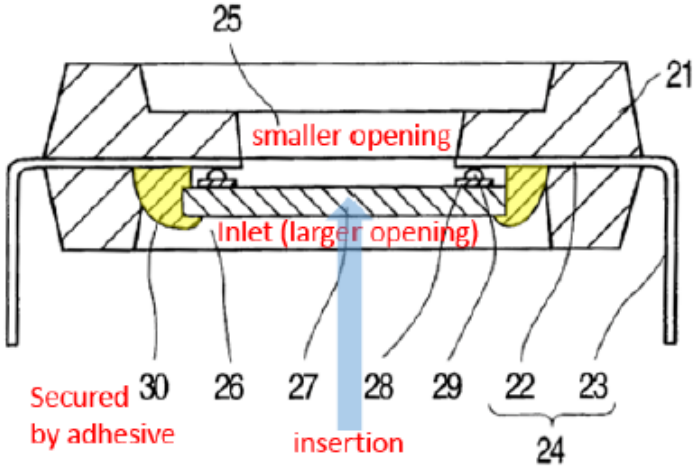


FIG. 2



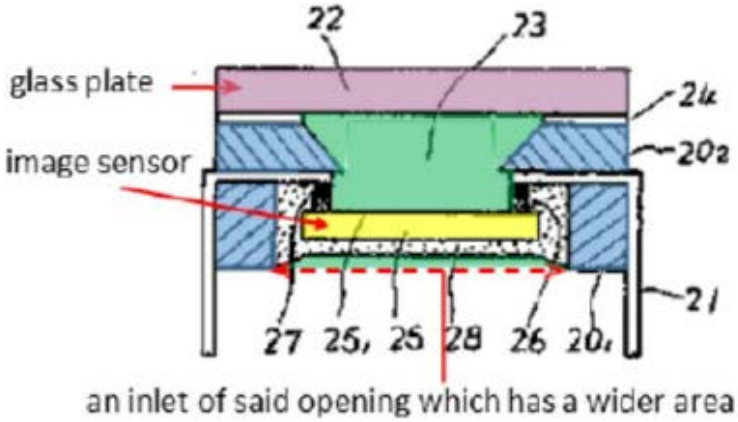
In FIG. 1, opening 26 has the wider opening area and opening 25 the smaller area.

POR at 22-23.

Yoshino Does Not Disclose a Device Mounted by Being Inserted from the Opening Having a Wider Area

Petitioner relies solely upon unsupported expert speculation that is improperly incorporated by reference.

Yoshino itself provides no information about the relative areas, and specifically the dimension into the page, of the openings Petitioner identifies.



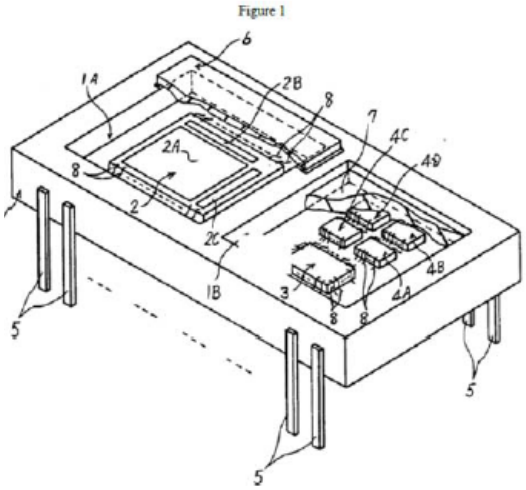
POR at 24-25.

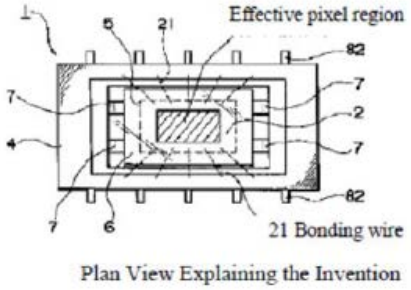
Yoshino Does Not Disclose a Device Mounted by Being Inserted from the Opening Having a Wider Area

Petitioner suggests "it is also at least obvious" that the relative areas are different, but provides no obvious analysis.

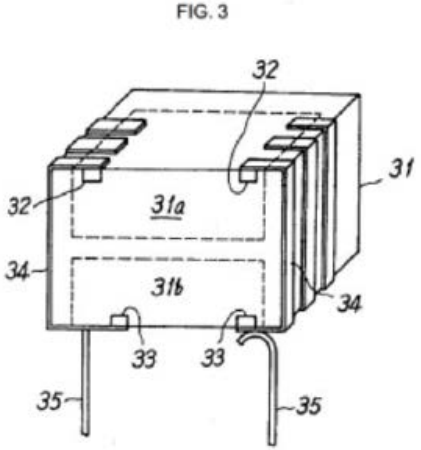
Petitioner's expert's declaration, which is improperly incorporated by reference, provides no analysis of the areas of the openings.

Moreover, Petitioner's references demonstrate that solid-state image sensor packages have variety of shapes and configurations, where cross-sections do not demonstrate the area of the opening.





Plan View Explaining the Invention

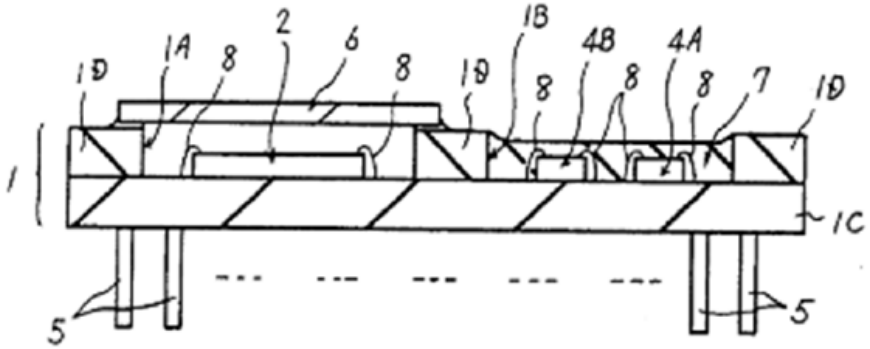


POR at 25-26

Ground 2: Claim 6 Is Not Obvious Over Yoshino and Izumi

A POSA would not be motivated to place Izumi's substrate and package divider in Yoshino's package.

Izumi's substrate (which includes imaging chip 2 and circuit chips 4A and 4B that are wire-bonded to the top of the substrate, and leads 5 that are fixed to the underside of the substrate) is not "inserted into the package from a wider opening thereof," but attached under the package.



POR at 32-33

A Person of Skil Would Not Look to Izumi's Very Different Design to Modify Yoshino

Izumi's imaging chip must be bonded to the substrate before wire-bonding contacts to the chip – thus the position of the chip is fixed before one could establish whether the optical position is correct.

But the '714 patent describes that the imaging chip can be moved in its package while operating to secure alignment before being locked in place with adhesive. *See* Afromowitz Decl. ¶ 43.

<u>Petitioner acknowledges this defect</u> by suggesting an extreme modification of Izumi so that the electrical wiring on the top surface of the substrate would connect the chips to electrode pads instead of pins so that chips could then connect to the inner leads of the lead frame in Yoshino.

POR at 33-34

Petitioner's Additional Modification of Izumi Also Fails

But Petitioner does not explain the suggested additional modification of Izumi in enough detail to demonstrate that it would have been obvious in 1995.

Further, a POSA would know that Yoshino's inner leads 21 could not be formed to reach Izumi's bond pads 8 that do not face the exterior of the package.

POR at 34-35

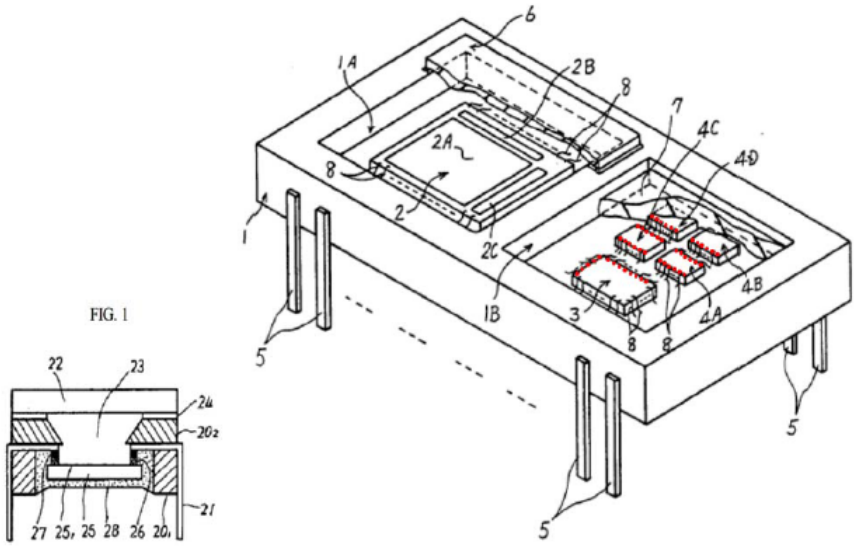


FIG. 1

Ground 3: Claim 7 Is Not Obvious Over Yoshino, Nagano, and Wakabayashi

A POSA would not be motivated to combine Nagano's substrate with Yoshino's package.

Nagano does not disclose or relate to an image sensor, but instead a single photodiode. *See* Afromowitz Dec. ¶52.

A person of ordinary skill in the art of image sensor design would simply not look to Nagano for prior art teaching.

Also, Nagano does not disclose wire bonds that would make use of Yoshino's package device advantageous.

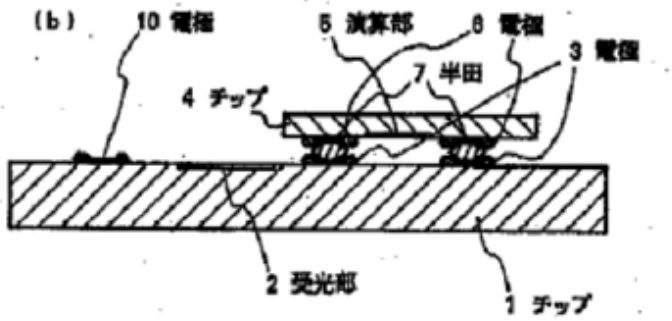
Yoshino would not benefit from the simple "computing part" of Nagano that processes the signal from a single photodiode.

POR at 37 & 40

Ground 3: Claim 7 Is Not Obvious Over Yoshino, Nagano, and Wakabayashi

Nagano does not disclose a "solid-state image sensing device," as required by the claim.

Instead, Nagano discloses "an optical signal that is picked up by the light receiving part 2," as illustrated in FIG. 1b.



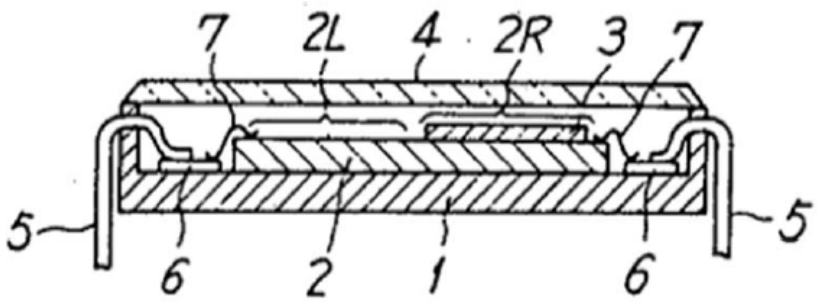
Patent Owner's expert confirms that a person of ordinary skill would not have found this to disclose an "image sensing device." *See* Afromowitz Dec. ¶62.

POR at 39

Ground 4: Claim 8 Is Not Obvious Over Yoshino, Izumi/Nagano, Hirosawa and Nita

None of the references disclose "wherein a shading film covers an entire upper surface of said substrate except an upper surface of the solid-state image sensing device."

Hirosawa's disclosure of a "light-shielding plate 8 [that] is provided to the section 2R" is deficient. There are other areas of the light detection surface 2L that would be exposed to light, including the transmission means between 2L and 2R and the contact pads around the edges.



POR at 41-43

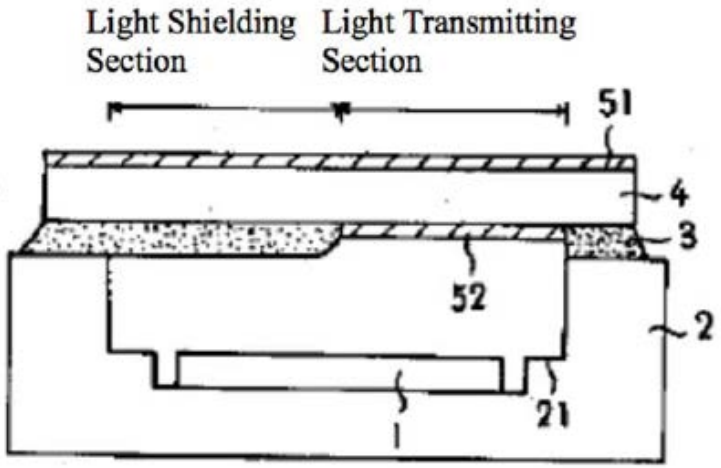
Ground 4: Claim 8 Is Not Obvious Over Yoshino, Izumi/Nagano, Hirosawa and Nita

Nita's disclosure of an "adhesive layer (3) on the glass lid" is deficient because of open space between the chip and the adhesive layer that allows light to impinge on parts of the chip. Petitioner's expert described this problem in another context. *See* Guidash Dep. 43:18-44:6

Q: When you said stray reflections from pieces of the package onto the image sensing area, what is that?

A: A specific example would be light enters the -- or transmits through the cover glass and the opening in the package. The image sensor in that particular package had -- has -- and wire bonds disposed in a part of the package that typically sensors of this type were not disposed in. Light would hit the portions of the wire bonds would be reflected up to the cover glass, reflected back down, reflected off of the wire bond or ball bond in many directions, and end up being incident on the imaging array.

FIG. 3



POR at 44-45

Grounds 5-11 Fail for the Same Reasons as Ground 1

Petitioner relies on its analysis of Yoshino of claim 1 for these grounds on claims 9-13 and 15-16.

Thus, for the reasons previously argued, grounds 5-11 also fail.

POR at 45-46

Grounds 12 and 15: Claim 1 Is Not Obvious Over Wakabayashi

This ground fails because Wakabayashi, like Yoshino, does not disclose "a solid-state image sensing device mounted in said package by being inserted from an inlet of said opening which has a wider area."

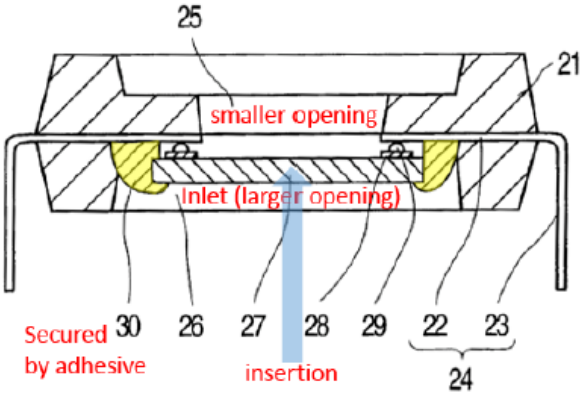
Wakabayashi discloses no information about the area of the opening in the package, or other structure of its leadframe, such as whether leads are provided on two or four sides, the pitch between leads, whether the package is designed for multiple substrates, etc.

POR at 45-46

Wakabayashi Does Not Disclose an Image Sensing Device Being Secured to Package Via an Adhesive

As illustrated in Fig. 2 of the ’714 patent, the image sensing device is glued into place in inlet cavity 26.

FIG. 2



Wakabayashi’s use of resin to “reinforce” the bump joints and prevent “the penetration of dust from the outside” is not disclosure of an adhesive.

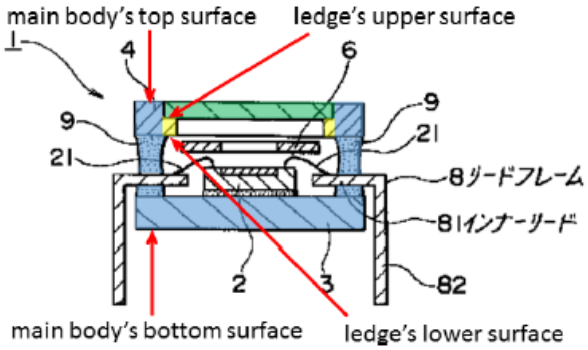
Yoshino describes prior art in which the image sensor 3 “is secured . . . via a conductive adhesive (4).”

POR at 50-51

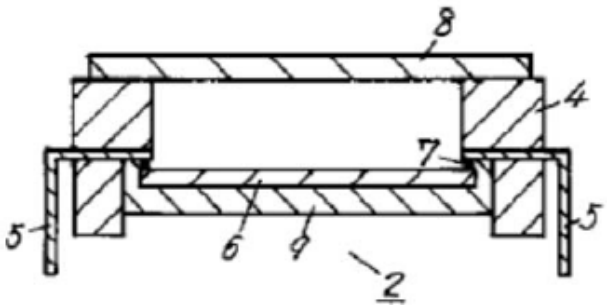
Grounds 13-14: Claim 2 Is Not Obvious Over Wakabayashi and Fujii

A person of ordinary skill would not be motivated to add Fujii's ledges to Wakabayashi's package.

Fujii annotated by Petitioner



Wakabayashi



Fujii does not claim that the ledge improves the design, and Petitioner does not explain why a POSA would be motivated to use the ledge in Wakabayashi.

Such a combination would provide no design advantages. *See* Afromowitz Decl. ¶95

POR at 52-53