

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

THERMALTAKE TECHNOLOGY CO., LTD. and
THERMALTAKE INC. (a.k.a. THERMALTAKE USA)
Petitioners,

v.

LIAN LI INDUSTRIAL CO., LTD., and CHEN, CHIEN-HAO,
Patent Owners.

IPR2024-01230
U.S. Patent No. 10,690,336

**PETITION FOR *INTER PARTES* REVIEW OF
U.S. PATENT NO. 10,690,336**

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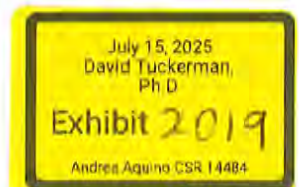


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EXHIBIT LIST

<i>Exhibit No.</i>	<i>Description</i>
1001	U.S. Patent No. 10,690,336 B1 to Chen
1002	File History for U.S. Patent No. 10,690,336 B1 to Chen
1003	Taiwanese Patent Application No. 107217659 U, filed on December 26, 2018
1004	Declaration of Dr. Andrew Wolfe (“Wolfe Decl.”)
1005	<i>Curriculum Vitae</i> of Dr. Andrew Wolfe
1006	Japanese Publication No. 2018041147A to Tsuji et al. (“Tsuji”) published March 15, 2018
1007	Certified Translation of Tsuji
1008	U.S. Patent No. 10,082,286 B1 to Huang issued September 15, 2018 (“Huang”)
1009	U.S. Publication No. 2008/0124234 A1 to Echazarreta (“Echazarreta”)
1010	U.S. Publication No. 2008/0279694 A1 to Chou et al. (“Chou”)
1011	U.S. Publication No. 2015/0233391 A1 to Liu (“Liu”)
1012	U.S. Publication No. 2017/0314777A1 to Lai (“Lai”)
1013	Japanese Publication No. 2005051085A to Hasegawa (“Hasegawa”)

<i>Exhibit No.</i>	<i>Description</i>
1014	Certified Translation of Hasegawa
1015	Complaint for Patent Infringement, <i>Lian Li Industrial Co., Ltd., and, Chen, Chien-Hao v. Thermaltake Technology Co., Ltd. and Thermaltake Inc. (a.k.a. Thermaltake USA)</i> , No. 2:23-cv-07470-HDV-MARx (C.D. Cal.) (the “California Action”)
1016	Waiver of Service (Dkt. No. 22 of the California Action)
1017	Returned Summons (Dkt. No. 12 of the California Action)
1018	Disclosure of Asserted Claims and Infringement Contentions in the California Action, dated March 6, 2024
1019	Scheduling Conference and Order Setting Pretrial and Trial Schedule (Dkt. No. 37 of the California Action)
1020	<i>Ex Parte</i> Reexamination Request No. 90/019,565 (the “Axpertec Reexamination”)
1021	Finding of substantial new question of patentability in the Axpertec Reexamination, dated July 18, 2024
1022	Joint Claim Construction and Prehearing Statement (Dkt. No. 43 of the California Action)

I. MANDATORY NOTICES

A. Real Party-In-Interest (37 C.F.R. §42.8(b)(1))

Petitioners Thermaltake Technology Co., Ltd. and Thermaltake Inc. (a.k.a. Thermaltake USA) (“Thermaltake” or “Petitioners”) are real parties-in-interest.

B. Identification of Related Matters (37 C.F.R. §42.8(b)(2))

U.S. Patent No. 10,690,336 (the “’336 Patent”) is the subject of a co-pending civil litigation, *Lian Li Industrial Co., Ltd., and, Chen, Chien-Hao v. Thermaltake Technology Co., Ltd. and Thermaltake Inc. (a.k.a. Thermaltake USA)*, No. 2:23-cv-07470-HDV-MAR (C.D. Cal.) (the “California Action”), filed by Patent Owner and its exclusive licensee, Lian Li Industrial Co., Ltd. (“Lian Li”). Ex[1015]. In the California Action, Petitioner Thermaltake Technology Co., Ltd. sent a waiver of service on September 22, 2023. Ex[1016] (Dkt. No. 22 of the California Action). Petitioner Thermaltake Inc. was served on September 13, 2023, at the earliest. Ex[1017] (Dkt. No. 12 of the California Action). Patent Owner and its exclusive licensee Lian Li have asserted Claims 1-3 and 5 of the ’336 Patent against Thermaltake. Ex[1018] (Disclosure of Asserted Claims and Infringement Contentions). A schedule was entered in the California Action on February 21, 2024, which set trial for April 15, 2025. Ex[1019] (Dkt. No. 37 of the California Action).

Patent Owner and its exclusive licensee have also asserted the '336 Patent in *Lian Li Industrial Co., Ltd. et al. v. Phanteks Europe et al.*, No. 2:23-cv-07471-HDV-MAR (C.D. Cal.).

The '336 Patent is also the subject of co-pending *ex parte* reexamination No. 90/019,565 requested by Axpertec Inc. (a.k.a. Phanteks USA) (the "Axpertec Reexamination") on July 2, 2024, challenging Claims 1-5 of the '336 Patent. Ex[1020]. On July 18, 2024, the Examiner found that a substantial new question of patentability had been raised and granted the Axpertec Reexamination. Ex[1021]. The Examiner found the following references raised substantial questions of patentability: Japanese Patent Application Publication No. JP2018041147A to Tsuji et al.; Chinese Utility Model Patent No. CN207064277U to Tsai; U.S. Patent Application Publication No. 2008/0279694 to Chou et al; and U.S. Patent Application Publication No. 2017/0314777 to Lai. *Id.* An initial office action has not yet issued.

C. Counsel and Service Information (37 C.F.R. §§42.8(b)(3) & (b)(4))

Petitioners designate the following Lead and Backup Counsel. Concurrently filed with this Petition is a Power of Attorney for appointing the following Lead and Backup Counsel, per 37 C.F.R. § 42.10(b). Service via hand-delivery may be made at the postal mailing addresses below. Petitioners consent to electronic service by

email at the following address: Case-ThermaltakeIPRMembers@Pillsburylaw.com.

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D. Payment of Fees (37 C.F.R. §42.103)

Petitioners authorize the Patent and Trademark Office to charge Deposit Account No. 033975 for the petition fee and for any other required fees.

II. INTRODUCTION

Petitioners hereby petition to institute *inter partes* review (“IPR”) of Claims 1-5 (“Challenged Claims”) of U.S. Patent No. 10,690,336 (the “’336 Patent,” Ex[1001]), and cancel those claims as unpatentable under 35 U.S.C. § 103.

The prior art references presented in this Petition—Tsuji (Ex[1006]-[1007]), Huang (Ex[1008]), Echazarreta (Ex[1009]), Chou (Ex[1010]), Liu (Ex[1011]), Lai (Ex[1012]) and Hasegawa (Ex[1013]-[1014])—disclose an illumination fan connectable with at least another illumination fan for a computer and therefore establish that Claims 1-5 of the ’336 Patent are obvious. None of the prior art presented in this Petition was cited or discussed during original prosecution of the applications that led to the ’336 Patent.

Accordingly, Claims 1-5 of the ’336 Patent are invalid under 35 U.S.C. § 103 and should be cancelled.

III. STATEMENT OF PRECISE RELIEF REQUESTED FOR EACH CHALLENGED CLAIM/REQUIREMENTS FOR INTER PARTES REVIEW

This Petition complies with all statutory and regulatory requirements 37 C.F.R. §§ 42.103-105 and 42.15 and should be accorded the filing date of this Petition pursuant to 37 C.F.R. §42.106.

A. Grounds for Standing (37 C.F.R. § 42.104(a))

Petitioners certify that the ’336 Patent is available for IPR and that Petitioners

are not barred or estopped from requesting IPR of the Challenged Claims on the grounds identified in this Petition.

B. Claims for Which Review Is Requested (37 C.F.R. § 42.104(b))

Petitioners respectfully request review of Claims 1-5 of the '336 Patent pursuant to 37 C.F.R. § 42.300 and cancellation of those claims as unpatentable.

C. Statutory Grounds of Challenge

Claims 1-5 of the '336 Patent are unpatentable under 35 U.S.C. § 103 because they are obvious, as shown in the grounds below.

Ground	Invalidity	Exhibit(s)
1	Claims 1-3 would have been obvious over Tsuji (Ex[1006]-[1007]) in view of Huang (Ex[1008]) under 35 U.S.C. § 103	1006, 1007, 1008
2	Claim 4 would have been obvious over Tsuji in view of Huang (Ex[1008]) and further in view of Echazarreta (Ex[1009]) under 35 U.S.C. § 103.	1008, 1009
3	Claim 5 would have been obvious over Tsuji (Ex[1006]-[1007]) in view of Huang (Ex[1008]) and further in view of Chou (Ex[1010]) or Liu	1006, 1007, 1008, 1010, 1011

Petition for *Inter Partes* Review of
U.S. Patent No. 10,690,336

Ground	Invalidity	Exhibit(s)
	(Ex[1011]) under 35 U.S.C. § 103	
4	Claims 1-2 would have been obvious over Lai (Ex[1012]) in view of Hasegawa (Ex[1013]-[1014]) under 35 U.S.C. § 103	1012, 1013, 1014
5	Claim 3 would have been obvious over Lai (Ex[1012]) in view of Hasegawa (Ex[1013]-[1014]) and further in view of Huang (Ex[1008]) under 35 U.S.C. § 103	1012, 1013, 1014, 1008
6	Claim 4 would have been obvious over Lai (Ex[1012]) in view of Hasegawa (Ex[1013]-[1014]) further in view of Echazarreta (Ex[1009]) under 35 U.S.C. § 103	1012, 1013, 1014, 1009
7	Claim 5 would have been obvious over Lai (Ex[1012]) in view of Hasegawa (Ex[1013]-[1014]) in view of Chou (Ex[1010]) or Liu (Ex[1011]) under 35 U.S.C. § 103	1012, 1013, 1014, 1010, 1011

IV. CLAIM CONSTRUCTION

Patent Owner has contended in the co-pending California Action that all claim terms in the '336 Patent should be accorded their plain and ordinary meaning. Ex[1022] at 1-4. For the purposes of this Petition, Petitioners also give the claim terms in the '336 Patent their ordinary and customary meaning that they would have to a person having ordinary skill in the art at the time of the alleged invention ("PHOSITA"). Petitioners' interpretation of the claim terms is further explained for each claim limitation in relation to the prior art discussed in Grounds 1-7, below.¹

V. A PERSON HAVING ORDINARY SKILL IN THE ART

A PHOSITA with respect to the '336 Patent would have a Bachelor's degree (or equivalent) in Electrical Engineering, Mechanical Engineering, or a comparable subject, and would be generally familiar with the state of cooling and lighting technology for electronic devices. Ex[1004] (Declaration of Dr. Andrew Wolfe),

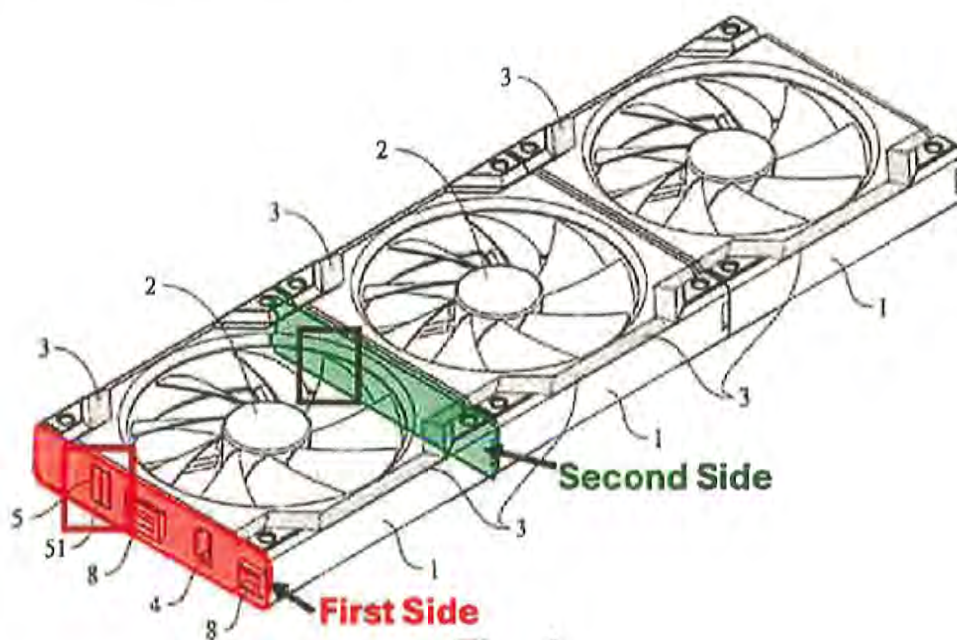
¹ Petitioners reserve the right to address any claim construction positions taken by the Patent Owner in its Preliminary Response, including under 37 C.F.R. § 42.108(c). Petitioners further reserve their right to pursue different claim construction positions in the California Action, including as part of their defense that the claims are invalid under 35 U.S.C. § 112, which cannot be presented here.

¶ 27. Alternatively, a PHOSITA would possess equivalent additional formal education such as graduate studies, or work experience, to replace formal education.
Id.

VI. OVERVIEW OF THE '336 PATENT

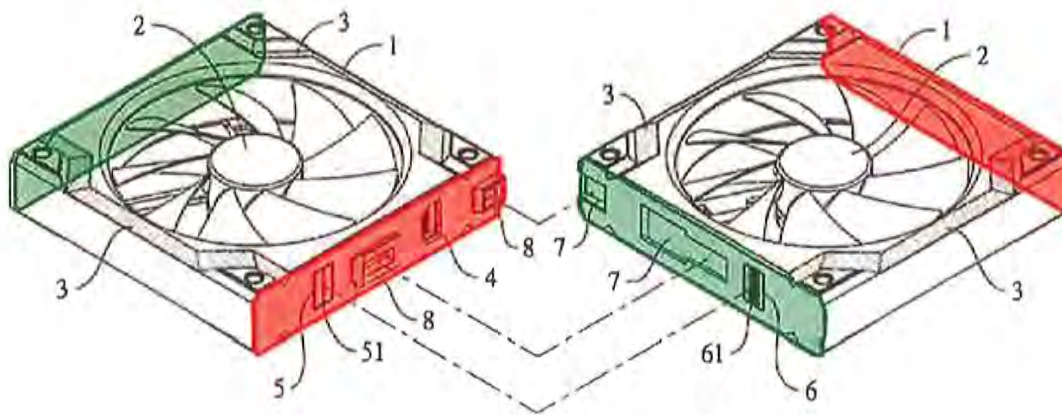
A. Purported Invention Of The '336 Patent

The '336 Patent concerns an illumination fan for a computer, which includes a body and a fan in center of the body, an illumination area on at least two sides of the fan at the top of the body, a power socket and a first connector on one side of the body, and a second connector on another side of the body. Ex[1001], Abstract. Figure 3 shows three fans connected, with the connectors on the first and second sides of the first fan box-outlined:



'336 Patent, Fig. 3 (annotated showing a first side highlighted in *red* and a second side highlighted in *green*, and first and second connectors box-outlined)

Figure 2 shows two separate fans when they are disconnected from each other:



'336 Patent, Fig. 2 (annotated showing a first side highlighted in *red* and a second side highlighted in *green*)

The '336 Patent discloses that the power socket is electrically connected with the first connector, the second connector, the fan, and the illumination area. *Id.* The illumination fan is connectable, both electrically and mechanically, with another illumination fan. *Id.*, 2:61-3:3, 3:7-22. The '336 Patent explains that, as a result of the electrically connected fans, the fan and the illumination area of the fans are driven into rotation and illumination. *Id.*, Abstract, 3:4-6.

B. Priority Date For The '336 Patent

The '336 Patent was filed on May 6, 2019 as U.S. Serial App. No. 16/403,867

(“the ’867 application”), and purports to claim foreign priority to Taiwanese Patent Application No. 107217659 U (“TW659” or “Taiwanese Patent Application”), filed on December 26, 2018. Ex[1003]. Accordingly, it appears that the effective filing date for Claims 1-5 of the ’336 Patent is no earlier than December 26, 2018.

However, the Taiwanese Patent Application did not include Figures 4 and 5 as in the ’867 application. See Ex[1003]. Thus, Petitioners submit that Claim 5 of the ’336 Patent is not entitled to the December 26, 2018 priority date of the Taiwanese Patent Application. As described in the ’336 Patent, “FIG. 4 is a schematic diagram depicting two bodies before being assembled in accordance with another embodiment of the present invention. FIG. 5 is a schematic diagram depicting two bodies after being assembled in accordance with another embodiment of the present invention.” Ex[1001], 2:47-52.

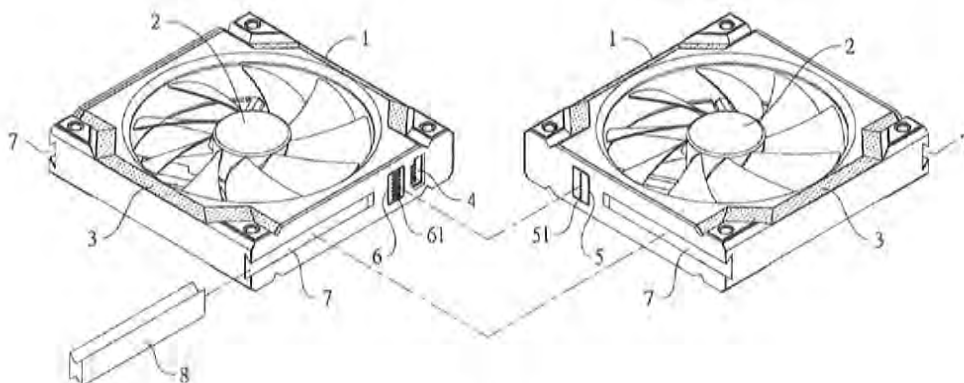
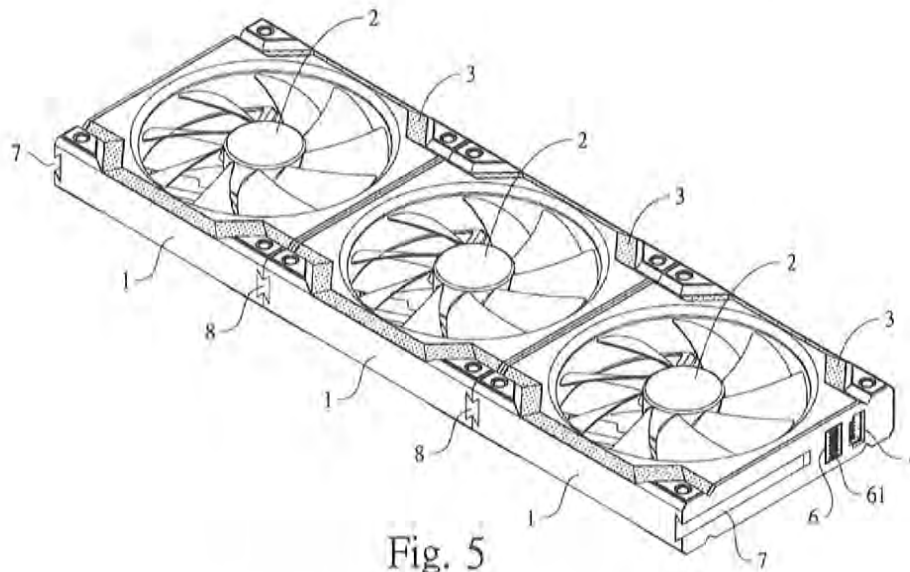


Fig. 4



Figures 4 and 5 of the '336 Patent

The '336 Patent discloses that, “[w]ith regards to combining two bodies 1, another approach is shown in FIGS. 4 and 5, wherein grooves 7 are provided on two sides of a body 1, and an engaging block 8 is used to simultaneously engage with the grooves 7 on one side of each of two bodies 1, allowing the two bodies 1 to be combined together.” Ex[1001] at 3:23-28 (emphasis added). This language is mirrored by the language of Claim 5, reciting in relevant part, “wherein a groove is provided on two sides of the body of the illumination fan, and the body of the illumination fan is connected with the body of another illumination fan by respectively engaging an engaging block with one of the grooves on the sides of the body of the illumination fan and one of the grooves on the sides of the body of

another illumination fan,” which appears to be directed to these features as shown in Figures 4 and 5. *Id.*, Claim 5. (Emphasis added). That is, the embodiment illustrated in Figures 4 and 5, and recited in Claim 5, use a separate and distinct engaging block 8, i.e., an engaging block 8 that is a separate structure from the illumination fan or its housing. The engaging block 8 (highlighted in blue, below) is shown and described as being configured to engage, on one of the sides of the block 8, a groove on one side of one fan (highlighted in yellow below) and to engage, on another side of the block 8, another groove on one side of another fan (highlighted in green):

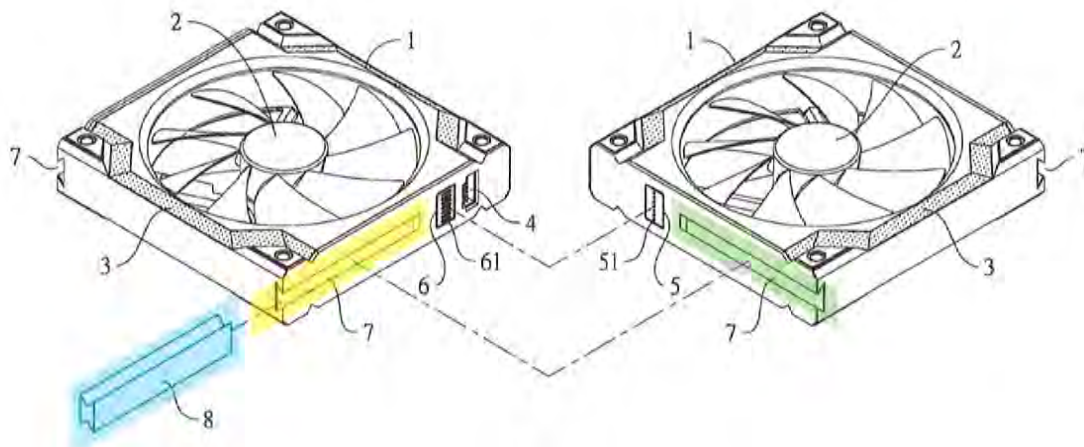


Fig. 4

Figure 4 of the '336 Patent (annotated)

This arrangement is in contrast to the embodiment illustrated in Fig. 2 of the '336 Patent, where adjacent fans are directly connected. This embodiment includes an arrangement wherein “a groove 7 is provided at one side of the body 1,

while an engaging block 8 is provided on the other side, such that the groove 7 of one body 1 can be mated with the engaging block 8 of the other body 1, allowing the two bodies 1 to be combined together.” Ex[1001] at 3:18-22. The text and figures of the Taiwanese priority document are consistent with this direct connection approach as shown, for example, in Figures 1 and 2 which are substantially identical to Figures 1 and 2 of the ’336 Patent. *Compare* Ex[1001] and Ex[1003].

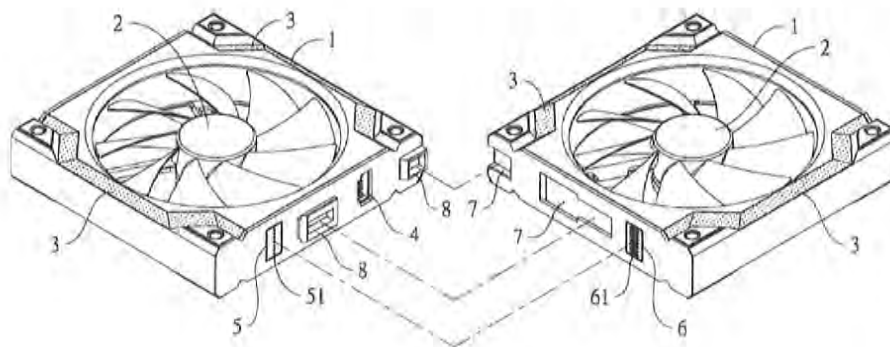


Fig. 2

Figure 2 of the '336 Patent

Accordingly, Petitioners submit that Claim 5 of the ’336 Patent is only entitled to the U.S. filing date of May 6, 2019.

C. Summary Of The Prosecution History

As noted above, the ’336 Patent was filed on May 6, 2019, purportedly claiming foreign priority to Taiwanese Patent Application No. 107217659 U, filed

on December 26, 2018. Ex[1003]. However, Petitioners submit that the effective filing date for Claims 1-4 of the '336 Patent is no earlier than December 26, 2018 and that the effective filing date for Claim 5 is no earlier than May 6, 2019.

The Applicant filed applications in Taiwan, Korea, and Germany, which correspond to the '867 application. No Information Disclosure Statement(s) ("IDS") were submitted to the U.S. Patent and Trademark Office at the time of filing or at any time during prosecution. *See* Ex[1002]. The first office action issued by the examiner was a Notice of Allowance dated April 13, 2020, allowing all of the pending claims as filed in the '867 application on May 6, 2019. The Notice of Allowance cited seven prior art references but none of the five claims were rejected. In the Reasons for Allowance, the examiner recites the entirety of Claim 1, as filed, stating:

The following is an examiner's statement of reasons for allowance:

Claim 1 recites an illumination fan connectable with another illumination fan including a power socket and a first connector on one side of a body of an illumination fan, and a second connector on another side of the body of the illumination fan, and when the first connector of the body of the illumination fan is connected with a second connector of a body of the other illumination fan, a fan and an illumination area of the body of the other illumination fan are respectively driven into rotation and illumination.

Claims 2-5 depend on claim 1.

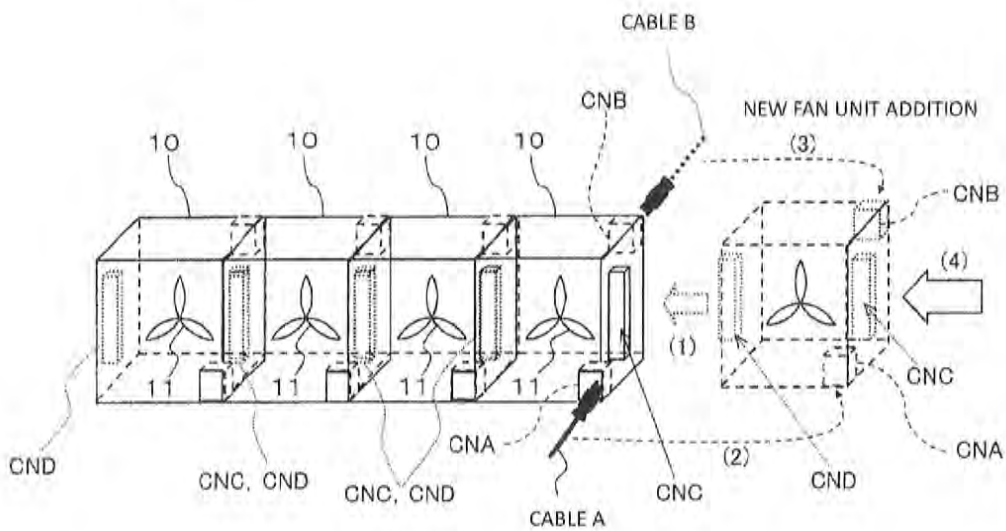
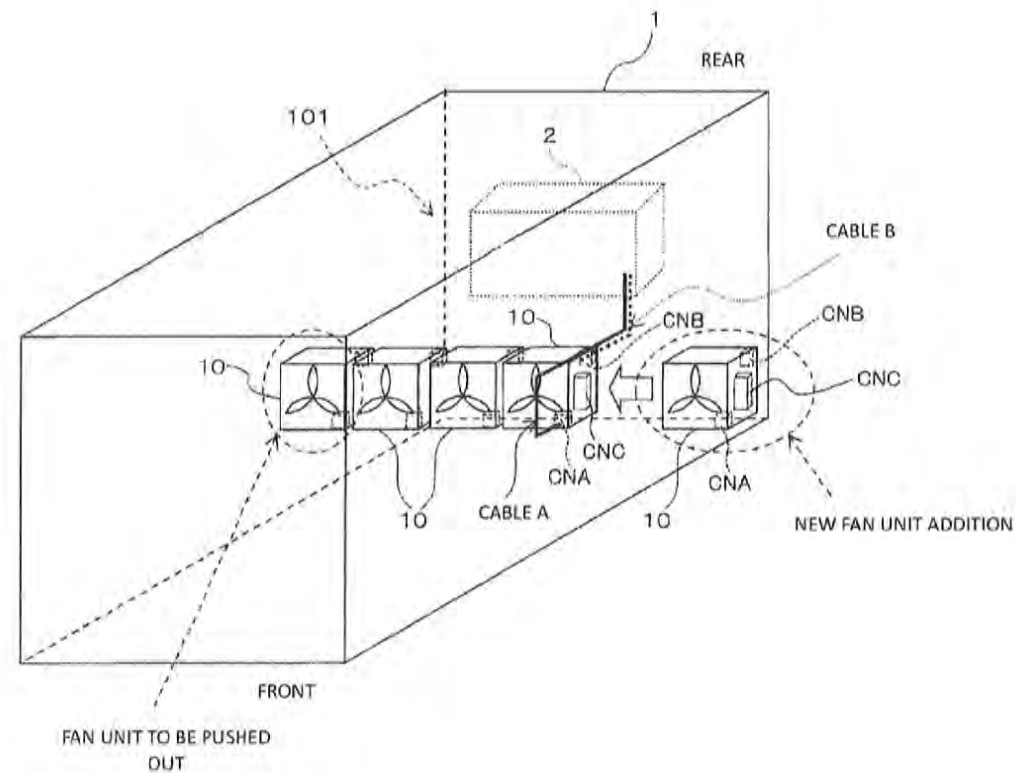
Ex [1002].

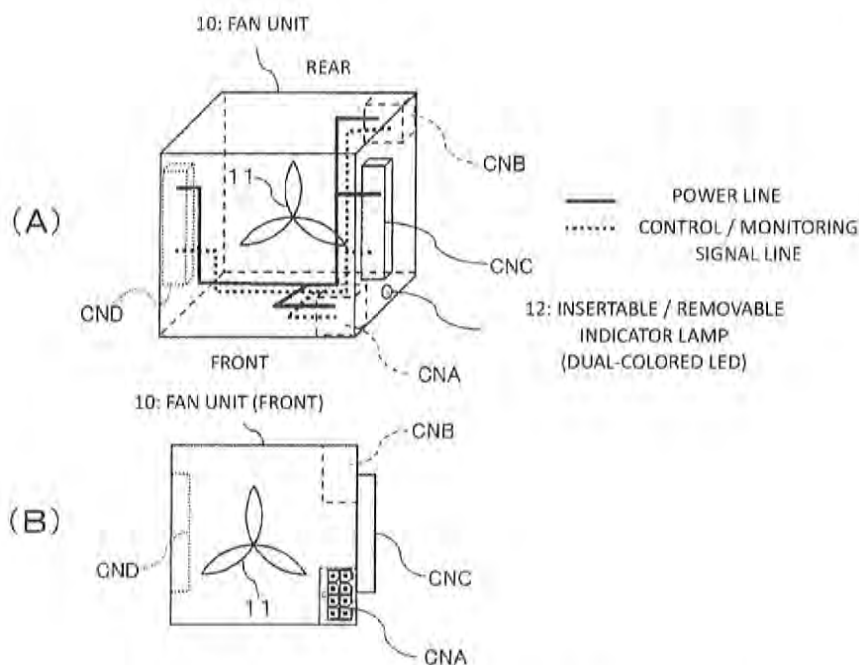
VII. OVERVIEW OF THE STATE OF THE ART

A. Japanese Patent Application Publication No. 2018041147A to Tsuji, et al. (“Tsuji”) (Ex[1006]-[1007])

Tsuji is a Japanese Publication filed by Fujitsu, Ltd. on September 5, 2016. Ex[1006] at 1. The original Tsuji is reproduced in Ex[1006], and the certified translation is included as Ex[1007]. Tsuji was published on March 15, 2018. Ex[1006] at 1. Tsuji is therefore prior art to the '336 Patent under at least 35 U.S.C. § 102(a).

Tsuji discloses plural fan units connected in series for cooling an electronic apparatus. Each fan unit has a control unit that gives an address for identifying the fan unit. Ex[1007], ¶ 0027.





FIGS. 5, 6, 7A and 7B of Tsuji (Ex[1007])

In the embodiment of FIGS. 5 to 7B, each fan unit 10 includes a cooling fan 11 that is rotationally driven by a motor. Two adjacent fan units propagate the pulse signal from one end side to the other end side, and supply power from one side (CNC) to the other end side (CND). *See* Ex[1007] at [0031] and FIGS. 5-11. Each fan unit 10 is connected to two or more power cables (cables A and B) that can supply power to a fan unit when the own fan unit is disposed on one end side of the plurality of fan units 10. Power supply connectors CNA and CNB are provided. *See id.* at [0031] and FIGS. 5-7B. A connector CNC (male) capable of active connection of the power supply and the control signal / monitoring signal is provided on the right side as viewed from the front of each fan unit 10. A connector CND (female)

capable of active connection of a power supply and a control signal / monitoring signal is positioned on and recessed from the left side as viewed from the front of each fan unit 10. Two adjacent fan units are connected so that power can be supplied and control signals / monitoring signals can be propagated by fitting the connector CNC of one fan unit I/O to the connector CND of the other fan unit.

B. U.S. Patent No. 10,082,286 to Huang (“Huang”) (Ex[1008])

Huang is a U.S. patent filed by Dynaeon Industrial Co., LTD. on January 24, 2018. It issued on September 25, 2018. Ex[1008]. Huang is therefore prior art to the '336 Patent under at least 35 U.S.C. § 102(a).

Huang is directed to a cooling fan that has a light-emitting effect, including light emitting elements and a light guide plate with a plurality of light guide strips. Ex[1008] at Abstract. It further includes a light diffuser connected to the light guide strips. *Id.* The fan blade assembly is mounted in a frame body such that light passes through the diffuser to form diffused light. *Id.*

C. U.S. Publication No. 20080124234 A1 (“Echazarreta”) (Ex[1009])

Echazarreta is a publication of a U.S. patent application filed by Jaime Echazarreta on November 2, 2006, and assigned to Comair Rotron, Inc. It was published on May 29, 2008. Ex[1009]. Echazarreta is therefore prior art to the '336 Patent under at least 35 U.S.C. § 102(a).

Echazarreta is directed to a fan tray assembly that has a component that includes a front wall, a back wall, two side walls, an inner wall defining a Venturi, and a motor housing suspended within the Venturi by one or more structural members. Ex[1009] at Abstract. It further includes modular fan tray units, according to another embodiment. *Id.* at Fig. 12. Each fan tray of a modular unit includes at least one rail on one side, and a complementary-shaped opening into which the side rail of another fan tray can be slid, thus forming a multi-fan tray. *Id.* at [0070]-[0071]. By these structural mechanisms, a fan tray assembly including any number of desired fans, arranged in a number of patterns, can be easily assembled by an end user or system administrator. *See id.*

D. U.S. Publication No. 20080279694 A1 (“Chou”)

Chou is a publication of a U.S. patent application filed by Delta Electronics Inc. on February 7, 2008. It was published on November 13, 2008. Ex[1010]. Chou is therefore prior art to the '336 Patent under at least 35 U.S.C. § 102(a).

Chou is directed to a fan and a fan assembly, with a circuit board arranged therein. The fan of Chou is provided in a fan frame that has at least two sliding rails or grooves in corners thereof for receiving a connecting member. Ex[1010] at Fig. 2, [0022]. The connecting member is a cover that is detachably disposed on the fan frame. Two fans may be connected in series together via a common connector

member sliding into aligned rails or grooves to form a fan assembly. Ex[1009], Fig. 4, [0025]-[0026].

E. U.S. Publication No. 20150233391 A1 (“Liu”)

Liu is a publication of a U.S. patent application filed by Asia Vital Components (China) Co. Ltd., on February 18, 2014. It was published on August 20, 2015. Ex[1011]. Liu is therefore prior art to the '336 Patent under at least 35 U.S.C. § 102(a).

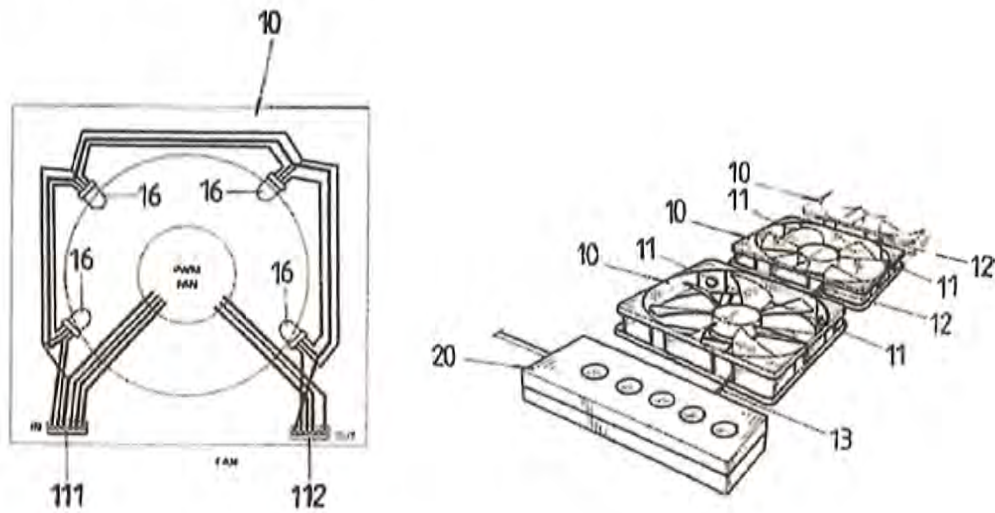
Liu is directed to a connection structure for a fan-series assembly that has a first fan and a second fan. Each fan module may have multiple connection sections or grooves on two sides. Liu also teaches that an assembling member is formed with assembling sections, which may be used to connect with one of the grooves on the sides of the body of one fan and one of the grooves on the sides of the body of another fan. Ex[1011] at [0033], [0035] and Figures 4A, 4B. The faces of the fans may be connected by means of a slide rail.

F. U.S. Publication No. 20170314777A1 to Lai (“Lai”) (Ex[1012])

Lai is a publication of a U.S. patent application filed by In-Win Development, Inc. on April 29, 2016. It was published on November 2, 2017. Ex[1012]. Lai is therefore prior art to the '336 Patent under at least 35 U.S.C. § 102(a).

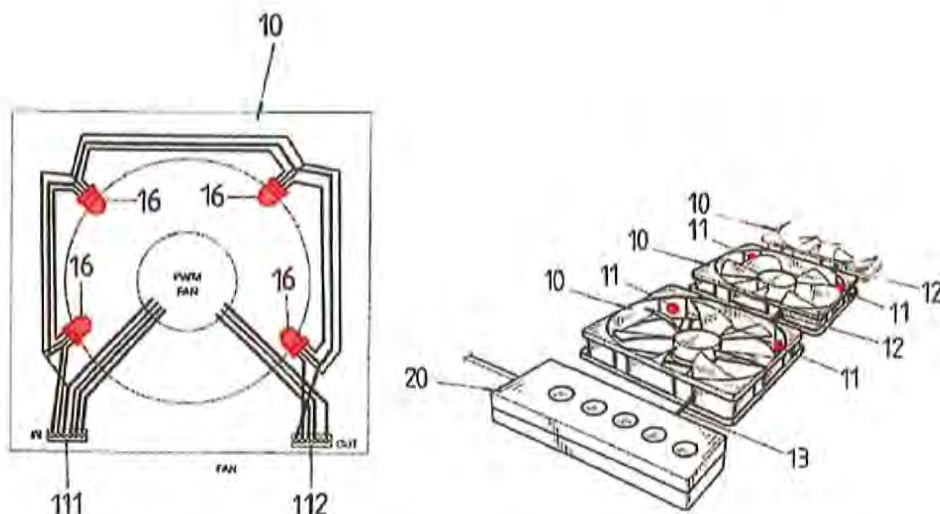
Lai is directed to an LED fan controller device that connects multiple LED

fans. Ex[1012] at [0003]. Lai's LED fans 10 are linked to one another using a single transmission line, using a single input 111 and a single output 112 in each LED fan 10. *Id.* at [0011]-[0012], FIGS. 2-3:



FIGS. 2 and 3 of Lai

The LED fans 10 also include multiple LED lights 16, located on the sides of the fan:



FIGS 2 and 3 of Lai (annotated, showing RGB LEDs 16 highlighted in red)

Therefore, Lai discloses illuminated cooling fans that are daisy-chained (connected in series) and that transmit both power and control signals for the lighting and fan motors via single connections between each fan. Ex. 1004, ¶¶ 58-61.

G. Japanese Patent Application Publication No. 2005051085A to Hasegawa (“Hasegawa”) (Ex[1013]-[1014])

Hasegawa is a Japanese Patent Application that was published on February 24, 2005. Ex[1014]. The original Hasegawa is reproduced in Ex[1013], and the certified translation is included as Ex[1014]. Hasegawa is therefore prior art to the '336 Patent under at least 35 U.S.C. § 102(a).

Hasegawa discloses “[p]lural air-cooling Fan Units 601 ... coupled ... to configure a large air-cooling fan unit,” wherein the air-cooling Fan Units “cool[] down electronics.” Ex[1014] at [0001], [0114]. Hasegawa further discloses each

Fan Unit 601 as having Connectors 25 on opposite sides of the Fan Unit 601 body:

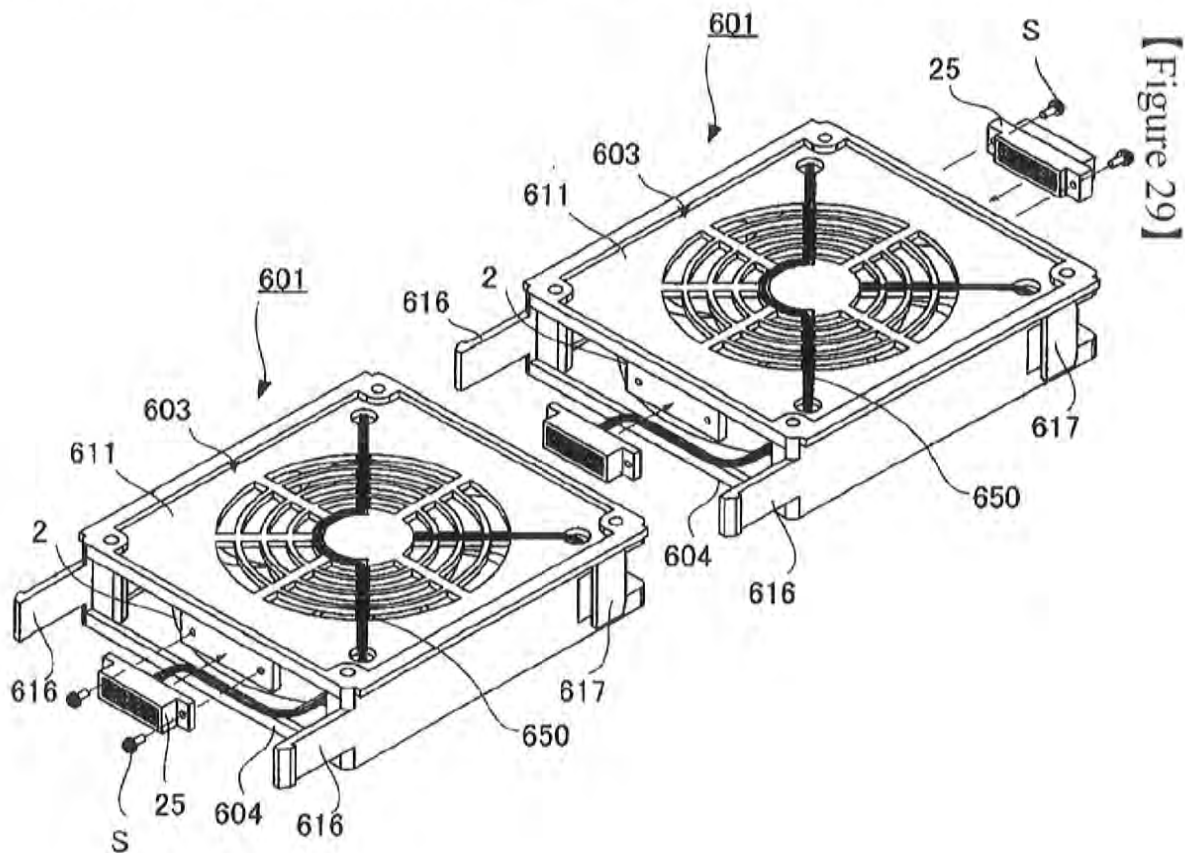


Figure 29 of Hasegawa

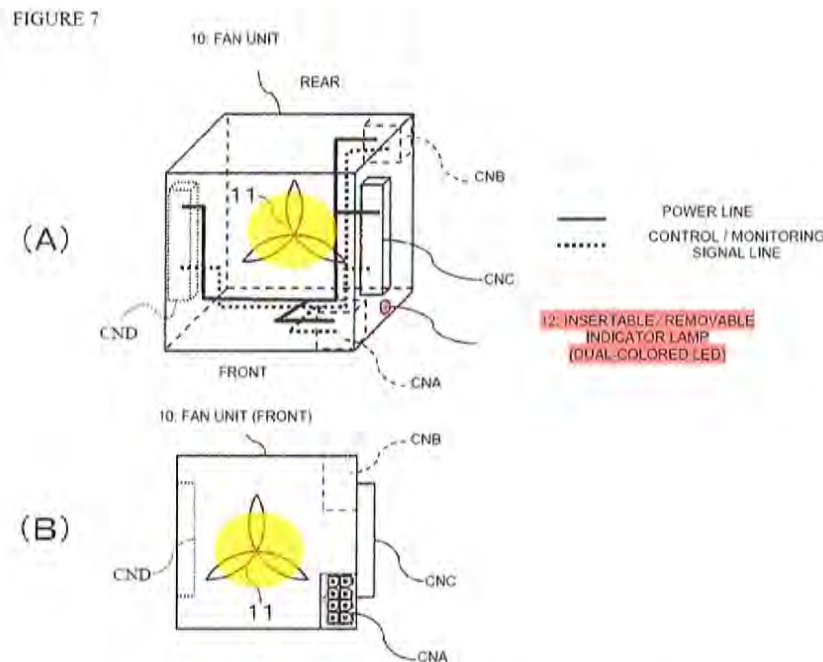
VIII. GROUND 1: CLAIMS 1-3 ARE OBVIOUS UNDER §103 BASED ON TSUJI IN VIEW OF HUANG

A PHOSITA would have understood that Tsuji (Ex[1006]-[1007]) in view of Huang (Ex[1008]) teaches or suggests each and every limitation of Claims 1-3 and therefore renders those claims obvious.

A. Independent Claim 1

Preamble: An illumination fan connectable with at least one illumination fan for a computer, comprising:

To the extent that the preamble is limiting, Tsuji teaches or suggests the subject matter thereof. Ex[1004], ¶ 64. For example, Tsuji discloses a fan unit 10 that is “a fan connectable with at least one fan for a computer.” *See, e.g.*, Ex[1007] at FIGS. 5-7B.



FIGS. 7A-7B of Tsuji, annotated

The fan unit 10 includes a cooling fan 11 (highlighted in yellow), and it includes an indicator lamp 12 (highlighted in red above), which is an LED that lights up in green or yellow to indicate a state of the fan unit. *Id.* at [0040], [0046], [0050],

[0057], [0064], [0066], [0097], [0136].

Fan unit 10 is also “connectable with at least one [other] fan for a computer,” as claimed. FIGS. 5-6 of Tsuji illustrate “a plurality of the serially-connected fan units 10 units that cools the electronic apparatus 101.” *Id.* at [0026].

FIGURE 5

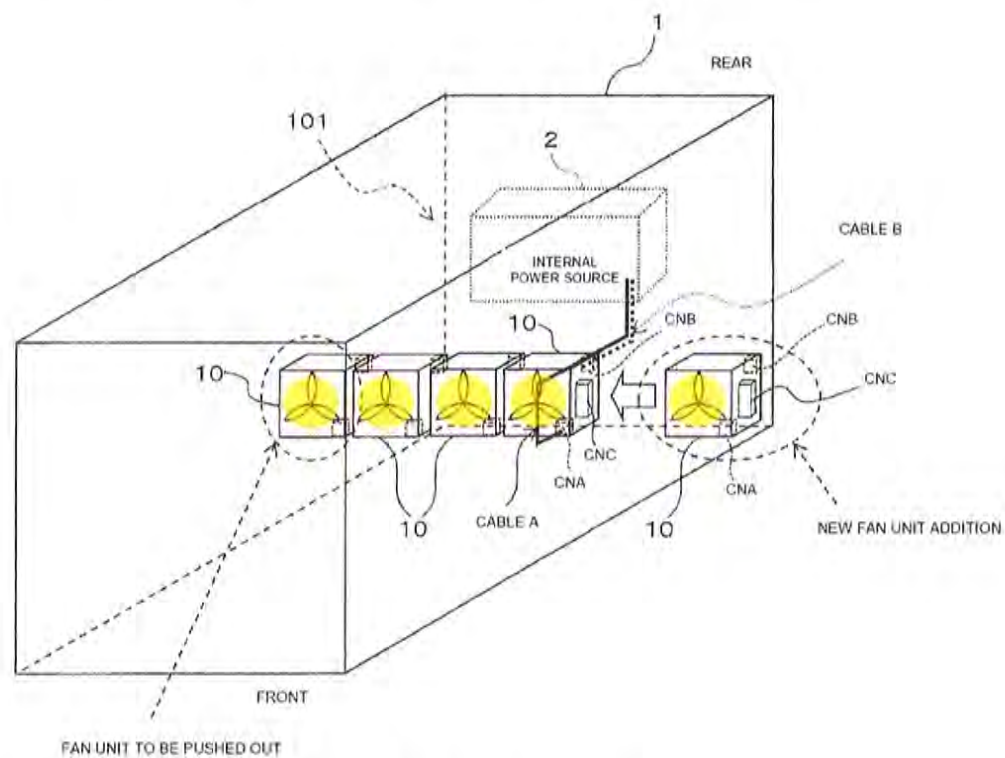


FIG. 5 of Tsuji, annotated

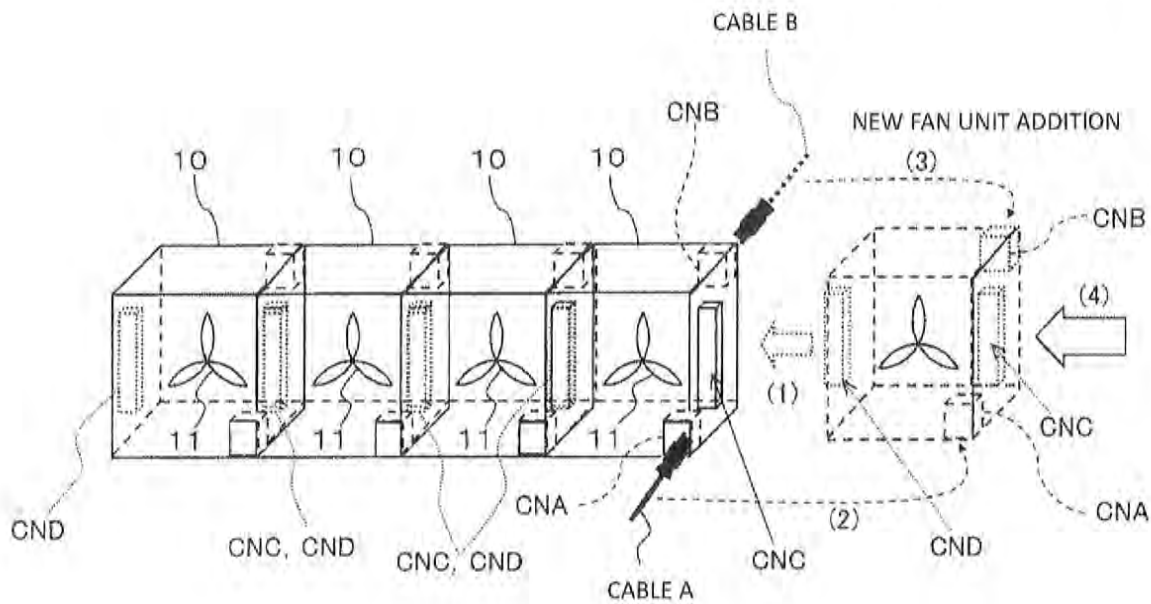


FIG. 6 of Tsuji

Tsuji discloses the fan units 10 being connectable with one another, stating “the plurality of fan units 10 is connected in a daisy chain form by using a serial interface such as I2C.” *Id.* at [0020] (emphasis added). Additionally, “two adjacent fan units 10 among the plurality of the fan units 10 are connected via inter-fan connectors CNC and CND that transmit the pulse signal from one end side to the other end side, and supplies power from one end side to the other end side (refer to FIGS. 5 to 11).” *Id.* at [0031], [0037]-[0039].

Finally, Tsuji's fans are “for a computer,” as recited, because Tsuji discloses using fan units 10 to cool an electronic device that is a server, i.e., a computer, such as server 1 and server 100 in the figures. *See id.* at [0017], [0025], [0026]. A

PHOSITA would understand a server to be “a computer.” Ex[1004], ¶ 64. Tsuji describes server 1 as an electronic device that includes a CPU and runs computer programs. Ex[1007] at [0068], [0073].

To the extent one asserts that the Tsuji LED lamp does not disclose an illumination fan, it would have been obvious to a person of ordinary skill in the art to modify Tsuji’s fan unit to be an “illumination fan.” Cooling fans including a light-emitting effect were well-known prior to the filing date of the ’336 Patent. Huang, filed January 24, 2018, discloses such a cooling fan, wherein “[a] fan used in a computer is mainly used to discharge the thermal energy released by the operation of a host computer to the outside. The conventional host computer is often placed in a corner because of its monotony. In order to increase the visibility of the host computer, there are many transparent or light-emitting cases available in the market that can render the host computer different light changes, a variety of cooling fans, heat-conducting water drains and the like which can emit different light changes are provided in the host computer so as to enhance the visibility of the host computer through different light changes.” Ex[1008] at 1:12-22.

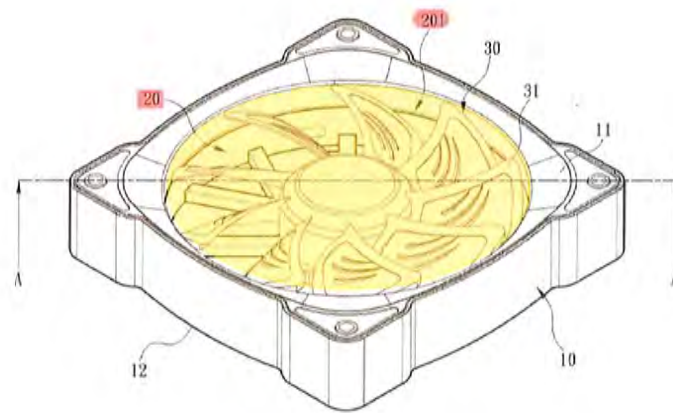


Fig. 1

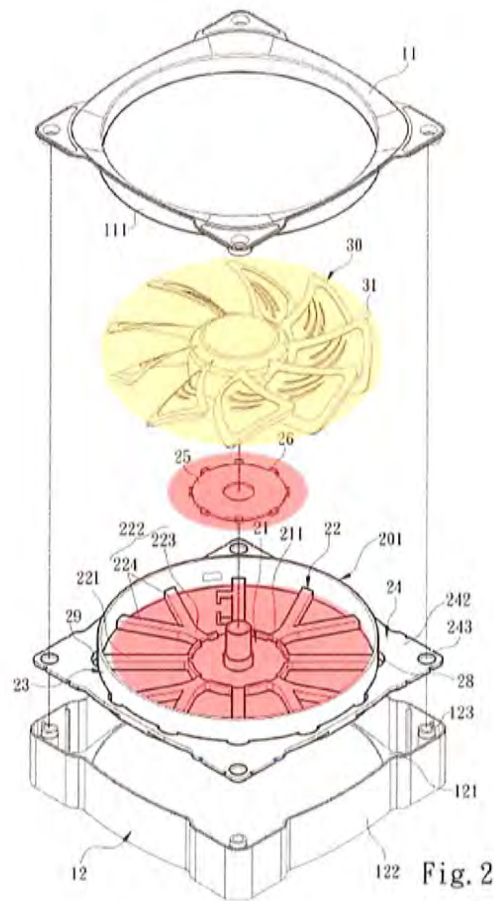


Fig. 2

FIGS. 1-2 of Huang, annotated

A person of ordinary skill in the art at the time of the '336 Patent would have been motivated to combine Tsuji with Huang. Tsuji and Huang are analogous art, as both patents are directed towards the structure and operation of computer cooling fans that include a mounting frame, rotating fan blades, and lights intended to be visible to a user. Ex[1004], ¶ 70; Ex[1008] at Abstract, 1:6-9.

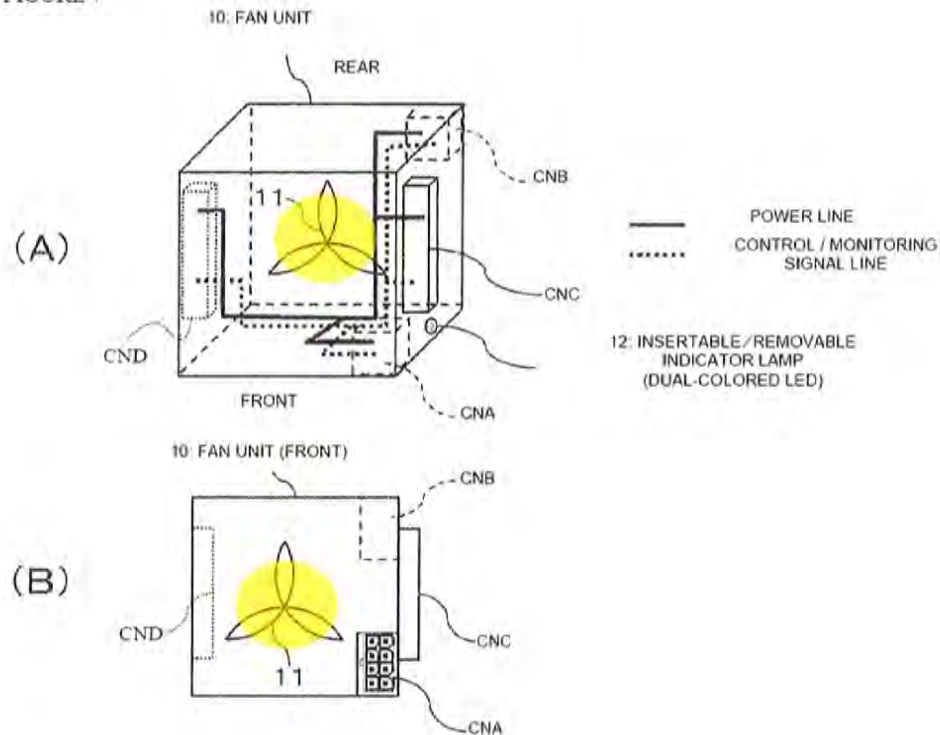
Combining Tsuji with Tsai would have involved combining Tsuji's known computer fan unit 10 with the known light emitting arrangement of Huang, according to known methods of computer fan construction. Ex[1004], ¶ 70. A top-viewable, diffused light as taught in Huang is a familiar item to a PHOSITA and can be incorporated into the Tsuji fan in the same manner as it is incorporated into the Huang fan. *Id.* A PHOSITA would have a good reason (e.g., larger, more uniform illumination) to pursue this known option and it would lead to anticipated success. *Id.* Additionally, the positioning of the light on the top of the fan, visible from two sides, is one of a finite number of identified, predictable solutions to placing the light. *Id.*

For the reasons above, the illumination fan as recited in the preamble of Claim 1 would have been obvious based on Tsuji in combination with Huang. Ex[1004], ¶¶ 64-65.

1[a]: a body, provided with a fan in center of the body,

Tsuji discloses this limitation. Ex[1004], ¶¶ 66-67. Specifically, Tsuji discloses a fan unit 10 that has a body (shown as a box in the figure below) and “a cooling fan 11.” See Ex[1007] at [0027], FIGS. 7A-7B. As shown in FIGS. 7A-7B, each fan unit 10 includes a fan 11 (in yellow) located substantially in the center of the body.

FIGURE 7



FIGS. 7A and 7B of Tsuji, annotated

Therefore, Tsuji discloses this claim limitation.

1[b]: an illumination area on at least two sides of the fan at top of the body,

Tsuji teaches an indicator lamp 12 on the side surface of the fan at the top of the body. Ex[1007] at [0135]-[0136] and Figures 5, 7A (copied below; highlighted in red).

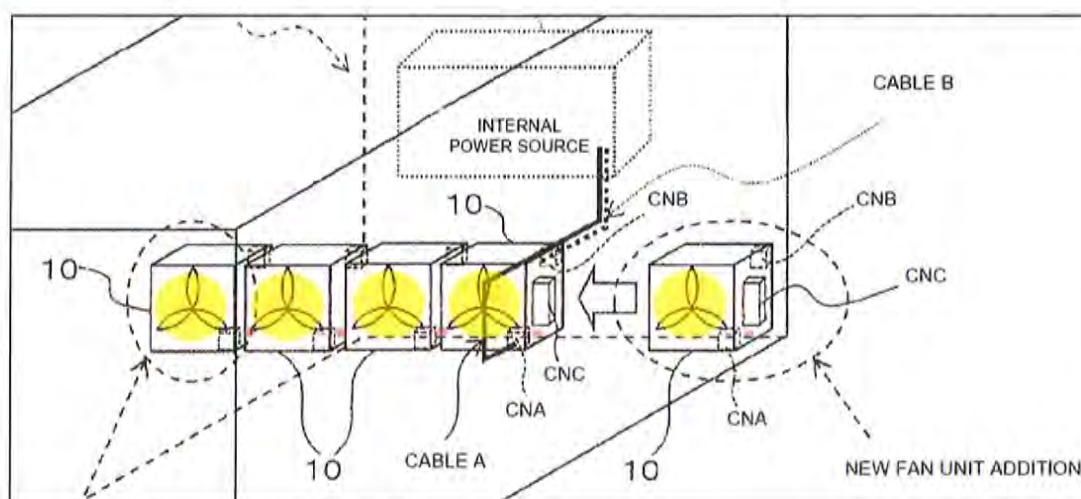
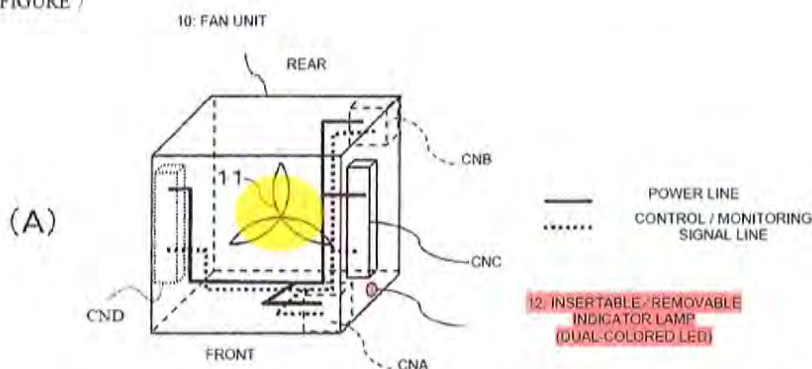


FIGURE 7



FIGS. 5 (copied in part) and 7A of Tsuji, annotated

To the extent that Tsuji does not disclose that the illumination area is on at least two sides of the fan, it would have been obvious to place an additional indicator

lamp on a second side. Ex[1004], ¶ 68. Tsuji already teaches that it may be beneficial to have the indicator lamp visible from an additional location as the fans are connected during hot-swaps. *Id.* at [0135]-[0136] and Figures 8-12 (illustrating an embodiment using an external panel display).

It would have been obvious to a PHOSITA to include additional indicator lights on different sides (“at least two sides”) of the fan body so that they can be viewed from multiple perspectives. Ex[1004], ¶ 69. The skilled artisan could modify the control circuit illustrated in Figure 15 in order to drive two or more LEDs without undue experimentation. *Id.* It further would have been obvious to place these indicators on the top of each of the two sides, for improved visibility, without requiring any technical adaptation. *Id.*

Additionally, it would have been obvious to modify Tsuji to incorporate the teachings of Huang with respect to the light emitting assembly 20, light emitting elements 21, and light diffusing elements 22, 23, 24. *Id.*, ¶ 70. The rationale for combining Huang with Tsuji is discussed above.

Therefore, limitation [b] of Claim 1 is either obvious in view of Tsuji alone, or obvious over Tsuji in view of Huang. *See also* Ex[1004], ¶¶ 68-72.

1[c]: a power socket and a first connector on one side of the body, and a second connector on another side of the body,

Tsuji teaches a power socket and a first connector on one side of the body.

See Ex[1004], ¶¶ 73-75. For example, Tsuji teaches that “two adjacent fan units among the plurality of the fan units transmit the pulse signal from one side to the other side, and are connected via an inter-fan unit connector that supplies power from one end to the other end.” Ex[1007], claim 5.

Likewise, claim 6 of Tsuji describes the same power connection: “[t]he electronic device as claimed in Claim 5, wherein each fan unit among the plurality of the fan units includes a power connector to which two or more power cables that can supply power to its own fan unit are connected when its own fan unit is arranged on one end side of the plurality of the fan units.” *Id.*, claim 6.

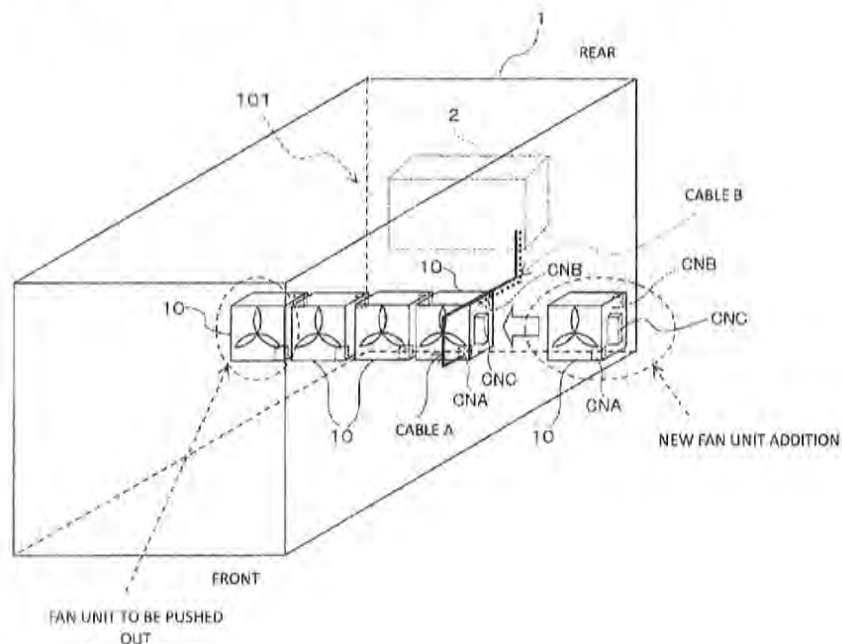


FIGURE 6

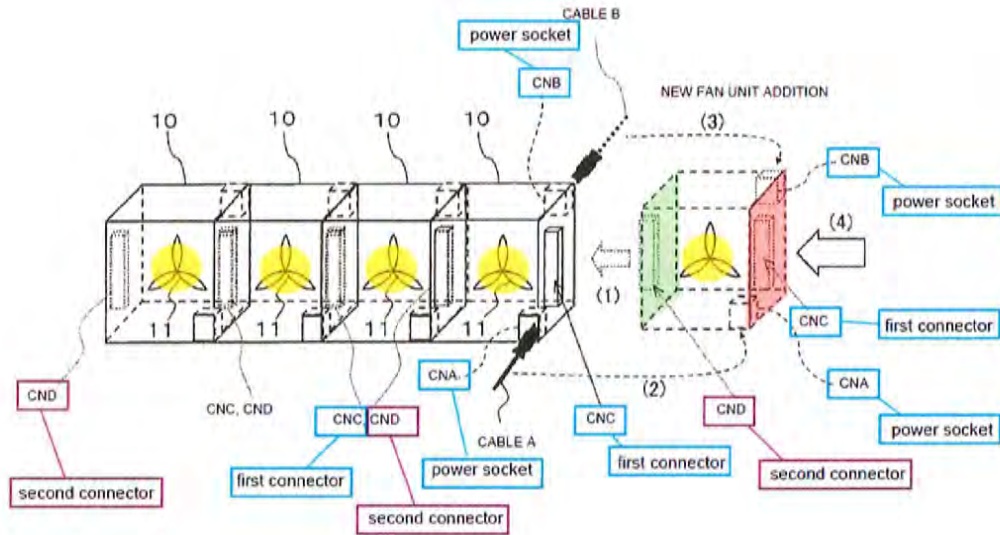
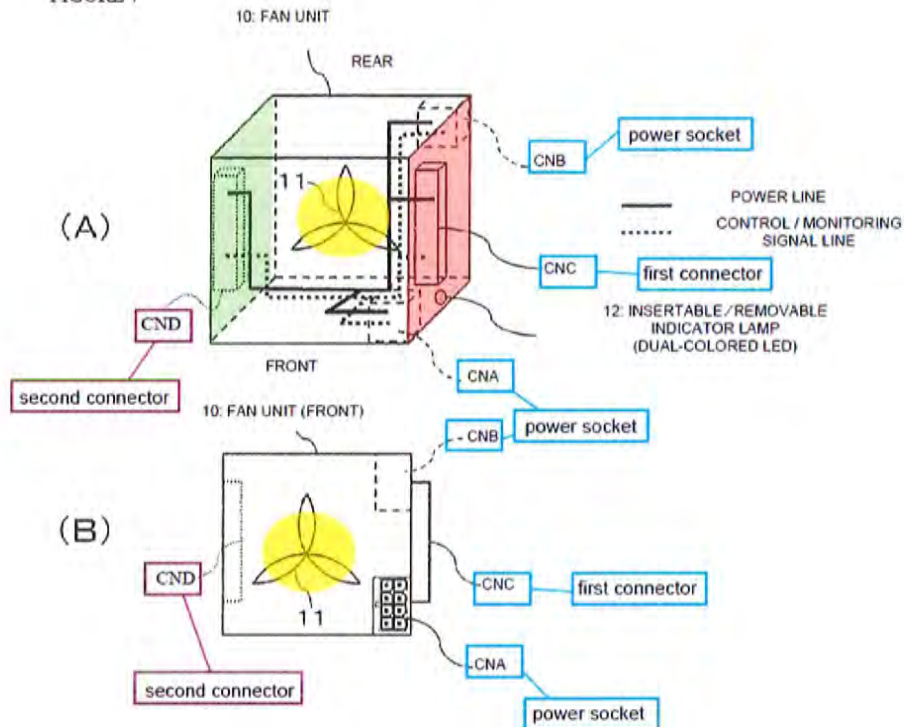


FIGURE 7



Figures 5-7 of Tsuji, annotated

The power sockets are shown as connectors CNA and CNB (in blue box) in Figures 5-7 (above) and Figure 14. Each includes power (VCCA or VCCB) and ground (GND). *Id.* at Fig. 14. A PHOSITA would understand these to be power sockets since they receive a male end part plug from cables A and B. *Id.* at [0039]; Ex[1004], ¶ 75. Finally, a first connector CNC (in blue box) is provided on one side of the body and a second connector CND (in purple box) is provided on another side of the body as shown at least in Figures 5-7 and Figure 14. *See also id.* Therefore, Tsuji discloses this claim limitation. *Id.*, ¶¶ 73-75.

1[d]: wherein the power socket is electrically connected with the first connector, the second connector, the fan and the illumination area, such that when the power socket on the one side of the body is supplied with power, the fan and the illumination area of the body are respectively driven into rotation and illumination and when the first connector of the body is connected with a second connector of a body of another illumination fan, a fan and an illumination area of the body of another illumination fan are respectively driven into rotation and illumination.

Tsuji discloses this limitation. Ex[1004], ¶¶ 76-83. Figure 14 of Tsuji illustrates that the power socket is electrically connected with the first connector, the second connector, the fan, and the illumination area. As shown in the highlighted version of Figure 14 below, yellow portions show that the ground GND from each power socket (CNA, CNB) is electrically connected to the first connector CNC and the second connector CND. Green portions show that a voltage VCC from the power

sockets CNA, CNB is electrically connected to the first connector CNC and the second connector CND. *See also* Ex[1004], ¶ 76.

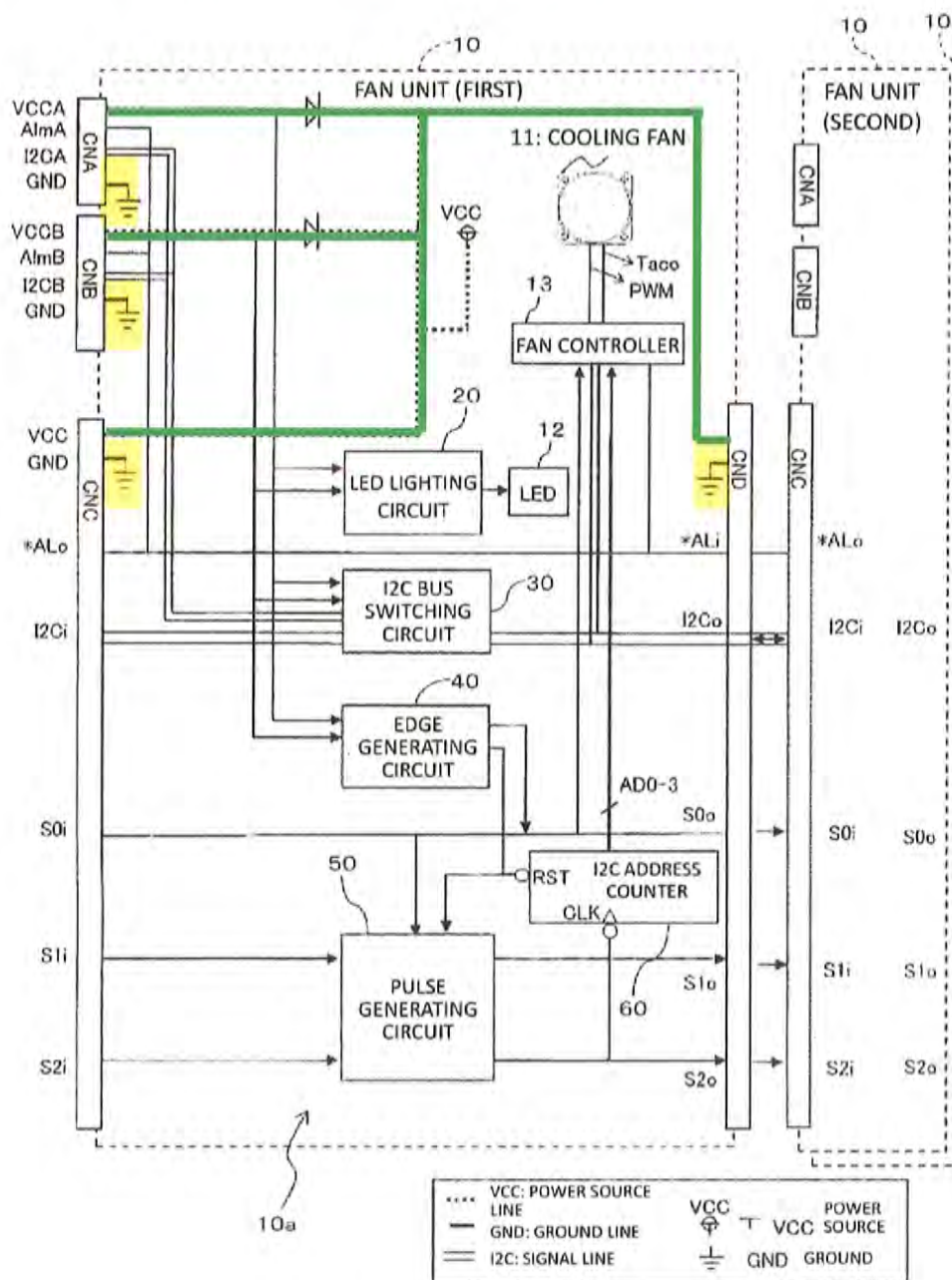


Figure 14 of Tsuji

The power and ground signals are also connected to the illumination area through LED lighting circuit 20 and LED 12, as shown in Figures 14 (above) and 15 (reproduced below). As can be seen, VCC connects directly to the LEDs and GND connects through LED lighting circuit 20. Ex[1004], ¶ 77; Ex[1007], Figure 15.

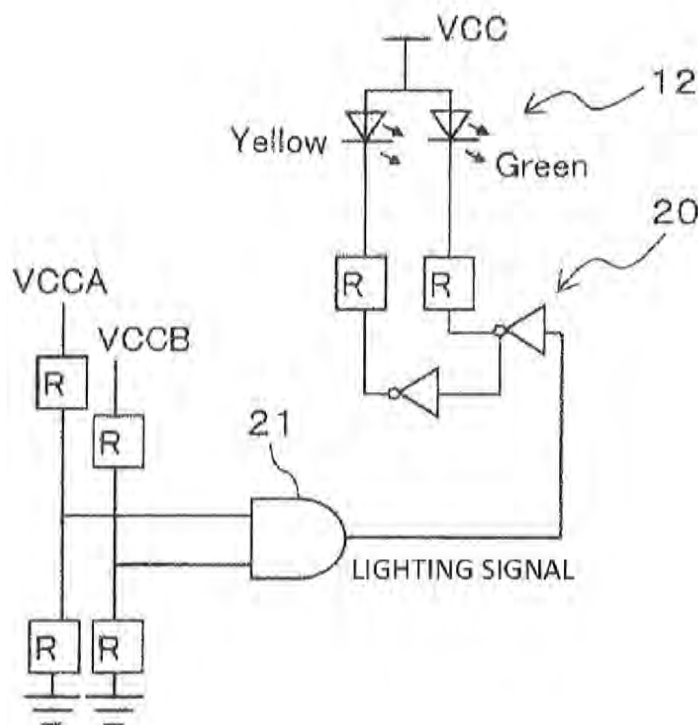


Figure 15 of Tsuji

A PHOSITA would have understood that when power is supplied to the LEDs and the fan 11, they will be driven respectively into illumination and rotation. Ex[1004], ¶¶ 78-81. As taught in Tsuji, power is supplied through the fan controller 13 to the cooling fan 11, and the controller responds to speed control commands

from the I2C signals that are also connected from the power controller to the fan controller. This is illustrated in Figures 14 and 20. *See also* Ex[1007] at [0076], [0081]. Fan 11 is directly connected to a PWM signal. *Id.*, Figure 20, S15, [0124], [0131]. A PHOSITA would understand that at least one of the PWM signals would directly correspond to VCC or ground in the normal implementation and it would at least be obvious to implement it in this manner. Ex[1004], ¶ 78.

The signals controlling each fan are passed from one fan unit to the next when the first connector of the body is connected with a second connector of a body of another illumination fan. *Id.*, ¶ 79. “The power is supplied to the serially-connected plurality of fan units 10 from the power supplying unit 2 via the cables A and B and the connectors CNA, CNB, CNC, and CND explained above in a sequence. Moreover, the management unit 7 (I2C master; refer to FIGS. 8 to 13) and the fan controllers 13 of the plurality of fan units 10 (I2C slaves; refer to FIGS. 12 and 13) are connected in a daisy chain form by a serial interface such as I2C. Accordingly, the control signal (pulse signal) from the management unit 7 or the adjacent fan unit 10 is transmitted to the serially-connected plurality of fan units 10 via the cables A and B and the connectors CNA, CNB, CNC, and CND explained above. Therefore, fan unit 10 can be hot-swapped without having to stop the system (server 1).” Ex[1007] at [0041].

Likewise, when power is supplied to the power socket, one of the LEDs will be driven into illumination. Ex[1004], ¶ 80. A PHOSITA would understand from the Figure 15 circuit that if both VCCA and VCCB are powered, the green LED will illuminate. *Id.* If only one of VCCA or VCCB is powered, the yellow LED will illuminate. *Id.* “Accordingly, when the cables A and B are respectively connected to the connectors CNA and CNB, that is, the cables A and B is in the insertable / removable state (the state in which the power supply is not interrupted even when one of the cables is removed), the insertable / removable indicator lamp 12 is controlled to be in the green color state. On the other hand, when only one of the cables A and B is connected to the connector CNA and CNB (hereinafter, a state in which the power supply is interrupted when the cable is removed), the insertable / removable indicator lamp 12 is controlled to be in the yellow color state.” Ex[1007] at [0098].

B. Dependent Claim 2

Preamble: The illumination fan connectable with at least one illumination fan for a computer of claim 1,

As explained above for Claim 1, Tsuji alone or Tsuji in view of Huang teaches each and every limitation of Claim 1, rendering it obvious.

2[a]: wherein an electrically conductive terminal is provided in the first connector, and an electrically conductive contact surface is provided in the second connector for being electrically connected with the electrically conductive terminal,

A PHOSITA reading Tsuji would understand that the first connector, which is shown to provide transmission of electrical signals, includes conductive terminals corresponding to the signals illustrated in Figure 14 and described in the corresponding portions of the specification. Ex[1004], ¶ 86. CNC is a male multi-conductor connector, which is coupled to connector CND as shown in Figures 5-7. Because Figure 14 shows seven signals transmitted via connector CNC, a PHOSITA would understand that at least seven electrically conductive terminals are present in the connector. *Id.* The specification describes individual terminals on connector CNC. *See, e.g.,* Ex[1007] at [0094], [0115] (describing Alo terminal of CNC and Ali terminal of CND and S0i terminal of CNC and S0o terminal of CND, respectively).

Similarly, the second connector CND would be understood by a PHOSITA to include at least seven corresponding electrically conductive contact surfaces corresponding to the same set of signals shown in Figure 14. Ex[1004], ¶ 87.

2[b]: such that when the first connector of the body of the illumination fan is connected with the second connector of the body of another illumination fan, the fan and the illumination of the body of another illumination fan are respectively driven into rotation and illumination.

In view of the discussion of 1[d] above, this limitation is rendered obvious in view of Tsuji. Ex[1004], ¶¶ 88-92.

Figures 14 and 19 respectively show a block diagram of the configuration of fan units 10, and a time chart explaining the operational signals performed when the fans are serially connected. As seen in Figure 19, when the first connector of the body of the illumination fan is connected with the second connector of the body of another illumination fan, the fan and the illumination area of the body of another illumination fan are respectively driven into rotation and illumination. Ex[1004], ¶ 88. Power and control signals are supplied from connector CND to connector CNC to enable illumination and cooling under normal operation. *Id.*

Furthermore, Figure 15 indicates that the yellow LED is illuminated when VCC is present even if neither CNA nor CNB is connected or powered. *Id.*, ¶ 89.

To the extent that Tsuji fails to teach or suggest this feature, Huang teaches that illumination is provided when the fan module is connected to a power source. Ex[1008] at 5:64-6:47.

To the extent that the fans do not begin to rotate until the appropriate signals are received to start rotation, Figures 18 and 19 indicate that the normal, expected

operation taught by Tsuji includes generating signals to start the rotation of each fan shortly after power is supplied. Ex[1004], ¶ 91. Figure 20 corroborates that this is the case. *Id.* Additionally, it would be obvious to a PHOSITA to simply substitute a basic fan circuit that rotates at a fixed speed whenever power is present. *Id.*

Tsuji in view of Huang thus teaches each and every limitation of Claim 2, rendering Claim 2 obvious. Ex[1004], ¶¶ 88-92.

C. Dependent Claim 3

Preamble: The illumination fan connectable with at least one illumination fan for a computer of claim 1,

As explained above for Claim 1, Tsuji alone or Tsuji in view of Huang teaches each and every limitation of Claim 1, rendering it obvious.

3[a] wherein when the body of the illumination fan is connected with the body of another illumination fan, the illumination areas of the two bodies form a continuous illumination area.

Huang teaches that the light element forms an illumination area at the top of the fan on at least two sides. Ex[1004], ¶¶ 94-98. In at least some embodiments, “the light 27 emitted from the plurality of light-emitting elements 26 is uniformly diffused into the first diffused light 271, the second diffused light 273 and the third diffused light 274 through the plurality of linearly arranged first light guide strips 221, the plurality of Y-shaped second light guide strips 222, the plurality of first diffusion portions 28, 281 and the second diffusion portions 282, such that the single

upper cover 11 or the entire frame body 10 can present a uniform light-emitting state via the first diffused light 271, the second diffused light 273 and the third diffused light 274, thereby increasing the visibility when the cooling fan is use.” Ex[1008] at 8:4-15. That is, the entire upper cover [11] or the entire frame body may be illuminated. Ex[1004], ¶ 95.

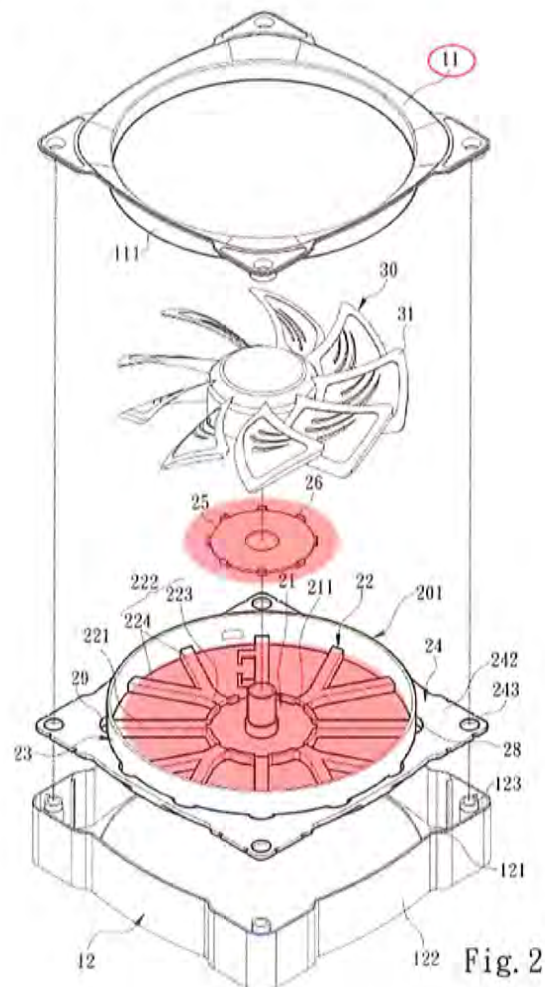


FIG. 2 of Huang, annotated

When the bodies of two adjacent fans are connected, as shown in Tsuji Figures 3-7, the body of the first illumination fan would be touching the body of the second illumination fan, such that the upper covers would be touching. *Id.*, ¶¶ 95-96. Because the entire upper cover of each fan may be illuminated, the pair of fans together would form a single continuous illumination area. *Id.*

Even if the upper covers of the proposed combination of Tsuji and Huang would result in a small gap between them, it would have been obvious to use the light guides and diffusers of Huang to obtain a continuous illumination area. *Id.*, ¶97. Huang even suggests this result, stating that “the entire frame body can present a uniform light-emitting state,” which is a beneficial effect of the technical solution provided in Huang. *See* Ex[1008] at 3:20-29.

For the reasons above, the combination of Tsuji and Huang renders Claim 3 obvious. Ex[1004], ¶¶ 94-98.

IX. GROUND 2: CLAIM 4 IS OBVIOUS UNDER §103 OVER TSUJI AND HUANG IN VIEW OF ECHAZARRETA

Tsuji (Ex[1006]-[1007]) in view of Huang (Ex[1008]) and Echazarreta (Ex[1009]) renders Claim 4 obvious.

Preamble: The illumination fan connectable with at least one illumination fan for a computer of claim 1,

As explained above for Claim 1, Tsuji alone or Tsuji in view of Huang teaches

each and every limitation of Claim 1, rendering it obvious.

4[a]: wherein a groove is provided on one side of the body of the illumination fan, while an engaging block is provided on another side thereof to be engaged into the groove, such that when the groove of the body of the illumination fan is engaged with the engaging block of the body of another illumination fan, the body of the illumination fan is connected with the body of another illumination fan.

Echazarreta teaches the use of a groove and engaging block. Ex[1004], ¶ 101.

Specifically, Echazarreta discloses that a groove is provided on one side of the body of the illumination fan, e.g. opening 1202 (side rail receiver) and/or opening 1204 (front rail receiver). Ex[1009] at [0070]. Echazarreta also discloses an engaging block provided on another side thereof to be engaged into the groove, in the form of side rail 454 (shown in green, below) and the unnumbered similar side rail shown in Figure 12. *Id.* Echazarreta further explains that “on the other side, the fan tray 1200 defines a complementary-shaped opening (also referred to as a side rail receiver or a mounting bracket receiver) 1202 (highlighted in yellow, below), into which the side rail 454 of another fan tray (not shown) can be slid, thus forming a multi-fan tray. Preferably, the side rail 454 and the opening 1202 interlock when the side rail 454 is slid into the opening 1202.” *Id.* This satisfies the remainder of this limitation. Ex[1004], ¶¶ 101.

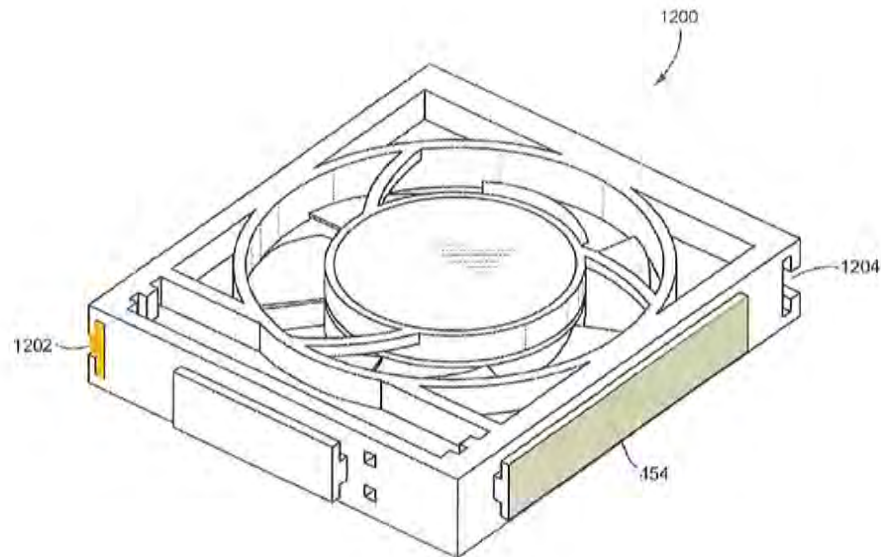


FIG. 12

Figure 12 of Echazarreta

A PHOSITA would have found it obvious to incorporate the groove and engaging block from Echazarreta into the fan module described above with respect to Claim 1. Ex[1004], ¶ 100. Tsuji, as modified by Huang, is a fan module with a substantially round fan structure within a substantially square mounting frame. *Id.*, and Huang, Figure 1. Echazarreta is also a fan module with a substantially round fan structure within a substantially square mounting frame. *Id.*; Ex[1009] at Figure 12. Moreover, Tsuji includes a male connector that is inserted into a female connector within the side of the frame in order to connect two fan bodies together. *See* discussion of 2[a], above. It would be well within the capabilities of a PHOSITA

to add Echazarreta's groove and engaging block to the fan frame of Tsuji, as modified by Huang without substantial experimentation and with a highly predictable expectation of success. Ex[1004], ¶ 100. Tsuji, as modified by Huang suggests connecting fan blocks. *Id.* Echazarreta provides an express motivation to do so using his technique: "Casting these pieces together reduces the complexity and cost of manufacturing the fan trays." Ex[1009] at Abstract. Moreover, a PHOSITA would understand that this is a simple and quick mechanism for connecting fan blocks as suggested by Tsuji. Ex[1004], ¶ 100.

Tsuji, in light of Huang and Echazarreta, thus teaches each and every limitation of Claim 4 rendering it obvious. Ex[1004], ¶¶ 100-102.

X. GROUND 3: CLAIM 5 IS OBVIOUS UNDER §103 OVER TSUJI AND HUANG IN VIEW OF CHOU OR LIU

A PHOSITA would have understood that Tsuji (Ex[1006]-[1007]) in view of Huang (Ex[1008]) and further in view of Chou (Ex[1010]) or Liu (Ex[1011]) teaches or suggests each and every limitation of Claim 5 and therefore renders it obvious.

Preamble: The illumination fan connectable with at least one illumination fan for a computer of claim 1,

The combination of Tsuji and Huang is an illumination fan connectable with at least one illumination fan for a computer as recited in Claim 1, as explained above for Claim 1 in Ground 1.

5[a] wherein a groove is provided on two sides of the body of the illumination fan, and the body of the illumination fan is connected with the body of another illumination fan by respectively engaging an engaging block with one of the grooves on the sides of the body of the illumination fan and one of the grooves on the sides of the body of another illumination fan.

Tsuji and Huang in view of Chou

The combination of Tsuji, Huang, and Chou renders [5a] obvious. Ex[1004], ¶¶ 104-110.

Chou discloses a fan utilized in a fan assembly. Ex[1010] at Title and Abstract. Chou discloses that each fan 2 has a frame 24 with at least two sliding rails 246 disposed on the corners thereof. Ex[1010] at [0022]. A PHOSITA would understand such sliding rails 246 on each fan to be “grooves” on the sides of the body of each fan module. Ex[1004], ¶¶ 104-105. Chou also discloses an “engaging block” in the form of a connecting member 26 that is designed to engage rails 246 on the sides of each fan frame 24. *Id.*, ¶ 06; Ex[1010] at Fig. 2. Specifically, one of the grooves on the sides of the body of one fan and one of the grooves on the sides of the body of another fan may be respectively connected to each of the sidewalls 261 of connecting member 26. *Id.* at [0022], Figures 2 and 4.

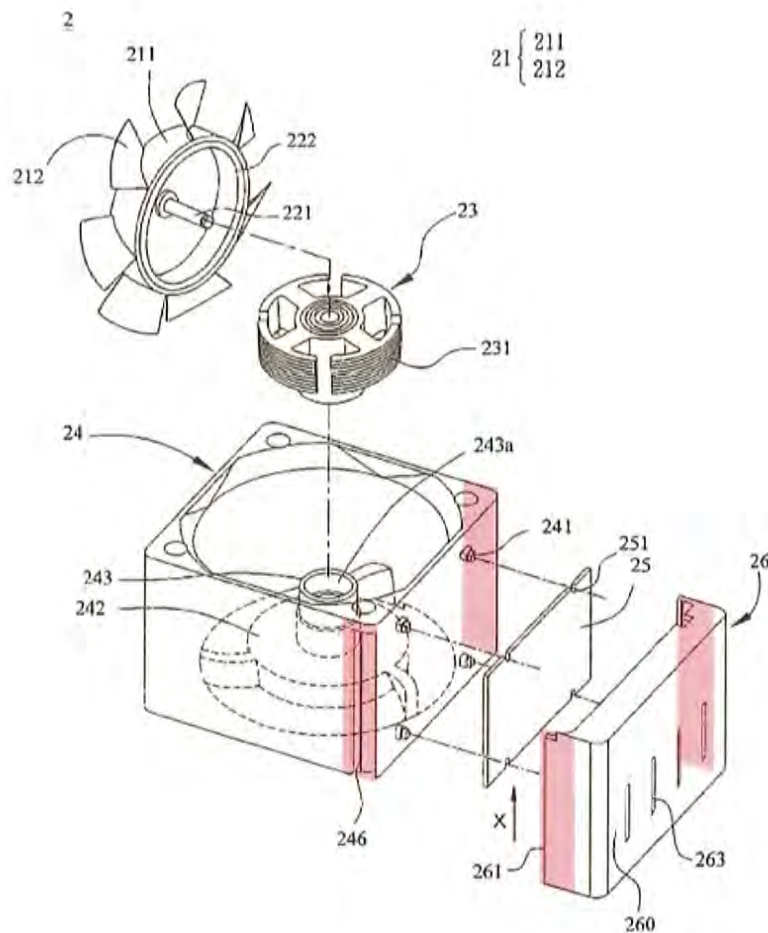


Fig. 2 of Chou (annotated)

Fig. 4 of Chou refers to connecting two fans 2 in series by sliding a common connector member 46 into grooves 246 to form a fan assembly. Ex[1004], ¶106; Ex[1010] at Fig. 4, [0025]-[0026].

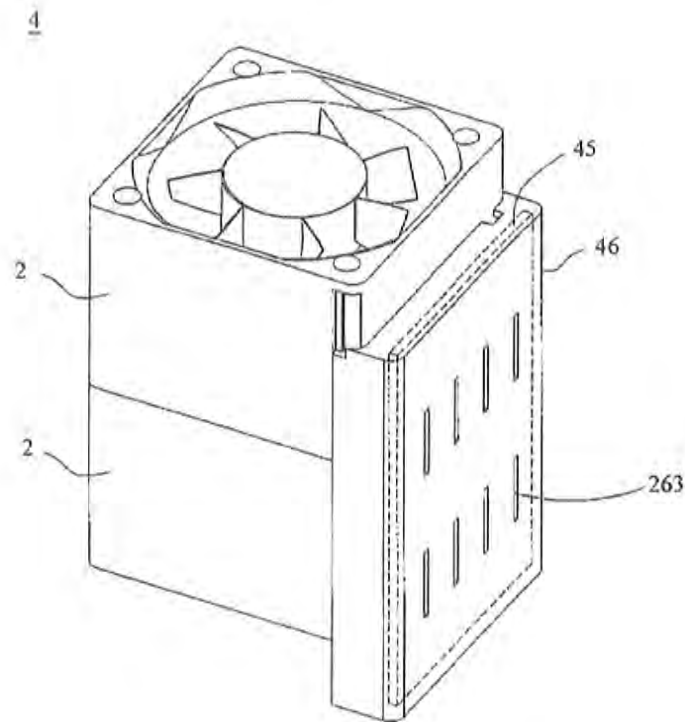


FIG. 4 of Chou

A PHOSITA would have been motivated to combine Chou with Tsuji and Huang. Ex[1004], ¶ 104. Chou is analogous prior art to Tsuji and Huang as well as to the '336 Patent. *Id.* Chou provides an express motivation to connect fan blocks. *Id.* Accordingly, it would have been obvious to modify the Tsuji-Huang illumination fan to include grooves on two sides and an engaging block that engages the grooves to connect the fans, as disclosed in Chou. *Id.* The combination would have involved applying Chou's known technique of providing a connector member 46 (an engaging block) to engage sliding rails 246 (grooves) on two sides of a fan body, for the known

Liu teaches that each fan module, in a fan-series assembly, can have connection sections 214 on two sides. Sections 214 may include mortises, which would be understood by a PHOSITA to be a type of “groove.” Ex[1004], ¶ 108. Liu also discloses an assembling member 5 with multiple assembling sections 53. *Id.*, ¶ 109. Such sections 53 are used to connect with connection sections 214 on the side of the body of one fan and another connection sections 214 on the side of the body of another fan. Ex[1011] at [0033], [0035], Figures 4A, 4B (copied below). Accordingly, assembling sections 53 of Liu act as an “engaging block” as understood by a PHOSITA. Ex[1004], ¶ 109.

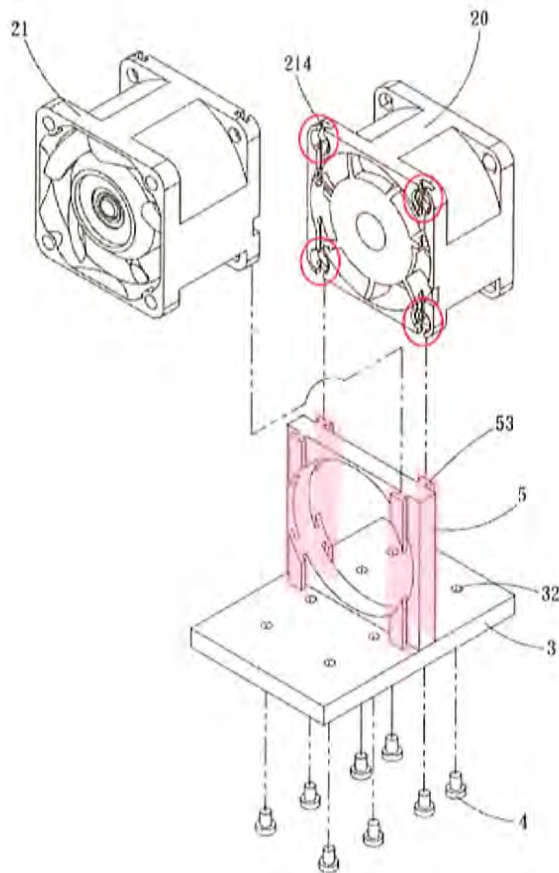


Fig. 4A

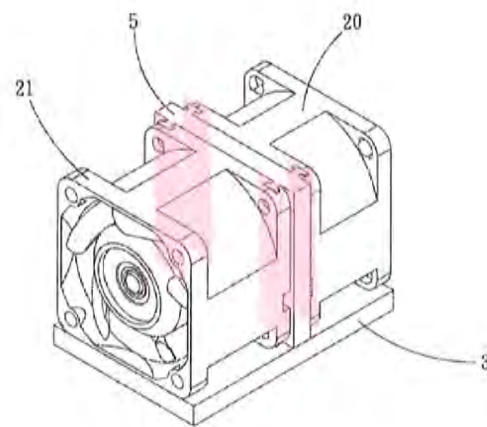


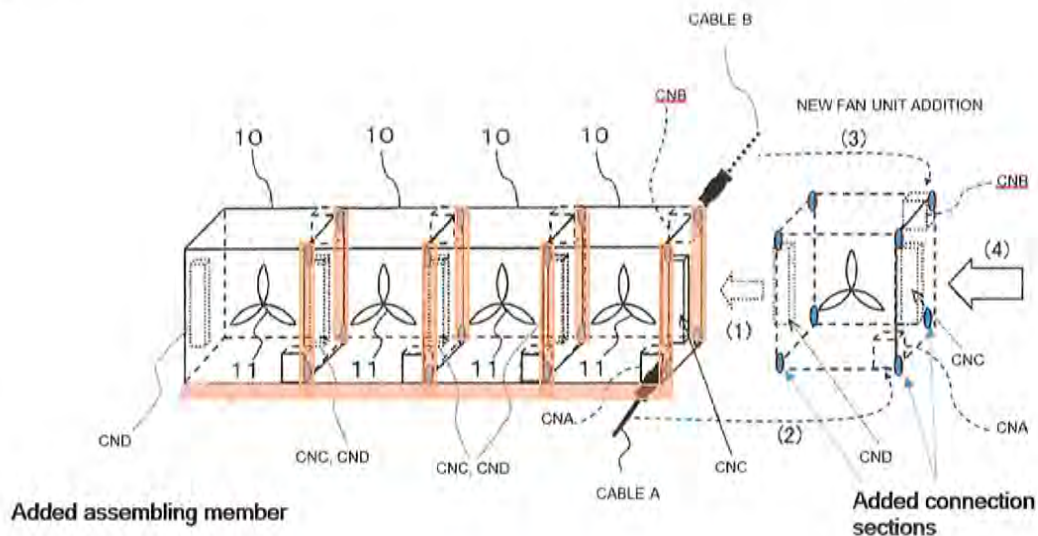
Fig. 4B

FIGS. 4A and 4B of Liu (annotated)

A PHOSITA would have been motivated to combine Liu with Tsuji and Huang. Ex[1004], ¶ 107. Liu is analogous prior art to Tsuji and Huang as well as to the '336 Patent. *Id.* Liu provides an express motivation to connect fan blocks. *Id.* Thus, it would have been obvious modify the Tsuji-Huang illumination fan to include grooves on two sides and an engaging block that engages the grooves to

connect the fans, as disclosed in Liu. *Id.* The combination would have involved applying Liu's assembling member 5 (an engaging block) to engage connection sections 214 (grooves) on two sides of a fan body, for the known Tsuji-Huang illumination cooling fans. The combination would have yielded predictable results of aligning the Tsuji-Huang fans for assembling and connecting fans with each other, while still allowing Tsuji's connectors CNC and CND to be aligned with one another for connection. *Id.* An example of the combination of Chou with Tsuji-Huang is shown below:

FIGURE 6



Modifications to FIG. 6 of Tsuji

For the reasons above, the combination of Tsuji and Huang in view of either Chou or Liu renders Claim 5 obvious. Ex[1004], ¶¶ 107-110.

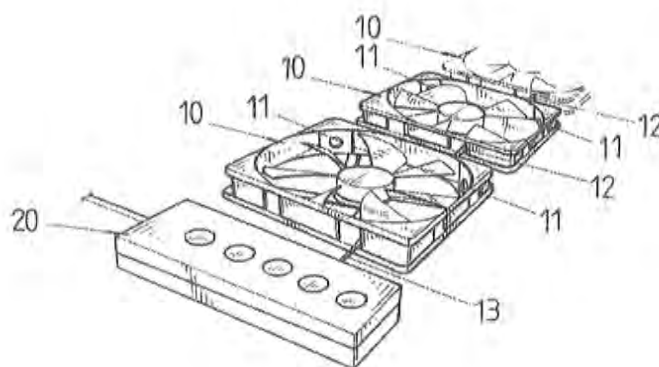
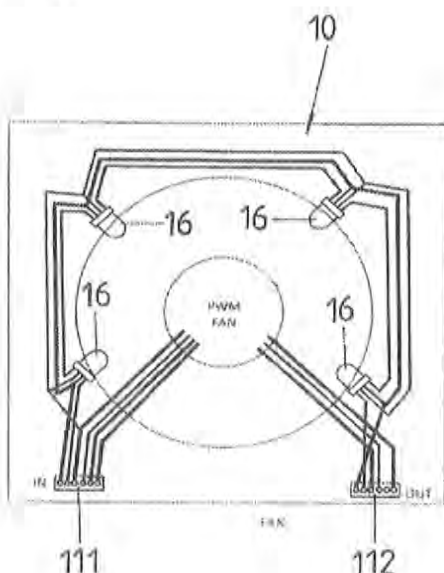
XI. GROUND 4: CLAIMS 1-2 ARE OBVIOUS UNDER 35 U.S.C. § 103 OVER LAI IN VIEW OF HASEGAWA.

A PHOSITA would have understood that Lai (Ex[1012]), alone or in view of Hasegawa (Ex[1013]-[1014]), teaches or suggests each and every limitation of Claims 1-2 and therefore renders those claims obvious.

A. Independent Claim 1

Preamble: An illumination fan connectable with at least one illumination fan for a computer, comprising:

To the extent that the preamble is limiting, Lai discloses an illumination fan connectable with at least one illumination fan for a computer. *See* Ex[1004], ¶ 111. Lai discloses speed-adjustable fans, each having LED lights, that are connected to one another using a single transmission line. Ex[1012] at [0011], [0012], FIGS. 2 and 3.



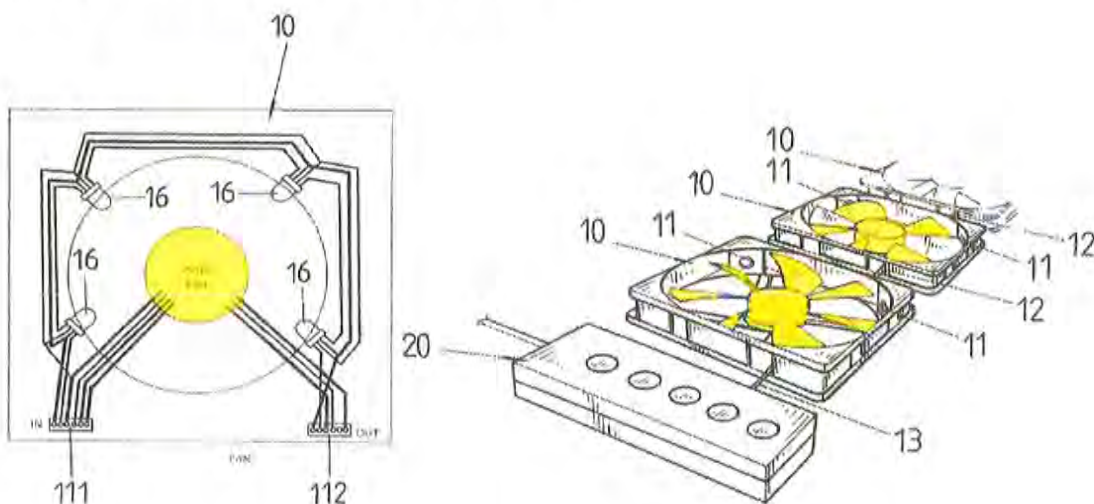
FIGS. 2 and 3 of Lai

As illustrated above, LED fan 10 in Lai is an “illumination fan” as claimed because it includes multiple addressable RGB (Red-Green-Blue) LED lights 16, and includes a PWM (Pulse Width Modulation) fan. Ex[1012] at [0011], [0015]. As shown above in FIG. 3, the LED fan 10 is connectable to another LED fan 10.

For these reasons, Lai discloses an “illumination fan” as recited in the preamble of Claim 1 and as discussed for the limitations below. *See also* Ex[1004], ¶ 111.

1[a]: a body, provided with a fan in center of the body,

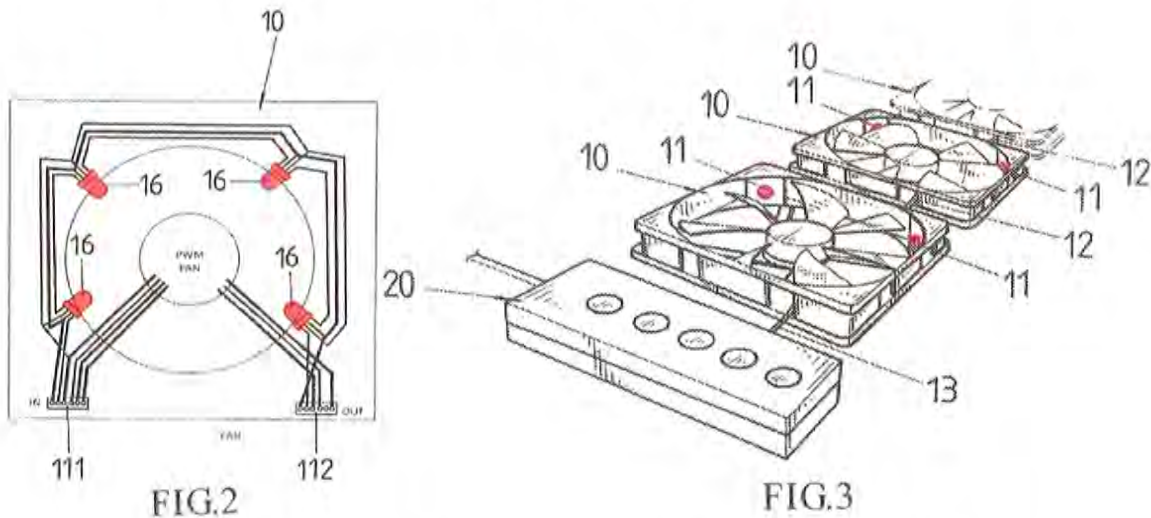
Lai discloses “a body, provided with a fan in center of the body.” Ex[1004], ¶ 112. As illustrated below, Lai discloses an LED fan 10 body with a fan motor and blades (highlighted in yellow) that are located in the center of the fan body. Ex[1012], annotated FIGS. 2 and 3 below.



Accordingly, Lai discloses this claim limitation. *See also* Ex[1004], ¶ 112.

1[b]: an illumination area on at least two sides of the fan at top of the body,

Lai discloses LED fan 10 having a plurality of RGB LEDs. Ex[1012] at [0011] (“each LED fan 10 ... is provided with various addressable RGB (Red-Green-Blue) LEDs”). Lai discloses positioning LEDs (for example, LEDs 16 in FIG. 2, and LEDs 11 in FIG. 3, highlighted in red below) on at least two sides of LED fan 10. Ex[1012], annotated FIGS. 2 and 3, below:



Ordinary RGB LEDs would be known by a PHOSITA to have a wide viewing area. Ex[1004], ¶ 114. Moreover, Lai states that the purpose of LEDs 16 is to provide decorative lighting, which would be understood to be visible from outside the housing when LED fans 10 are normally mounted. Ex[1012] at [0011], claim 1; *see also* Ex[1004], ¶ 114.

To the extent it is argued or found that Lai does not disclose an illumination area at top of the fan body, it would have been obvious to a PHOSITA to mount LEDs 16 on a different surface of LED fans 10 or pointing in a different direction. Ex[1004], ¶ 115. Lai already indicates that lights should be visible from outside, including from the top, of the fan body. *Id.* There are no physical limitations that prevent or discourage moving them to the top surface. *Id.* Wire lengths would not need to substantially change and there are no obstacles to avoid. *Id.* Electronics modules are commonly available in a choice of light configurations, e.g. top or corner or side lights, to facilitate wiring. *Id.*

Accordingly, Lai discloses and/or renders obvious “an illumination area on at least two sides of the fan at top of the body.” *See also* Ex[1004], ¶¶ 113-115.

1[c]: a power socket and a first connector on one side of the body, and a second connector on another side of the body,

Lai discloses “a power socket and a first connector on one side of the body and a second connector on another side of the body.” Ex[1004], ¶¶ 116-120. Lai discloses LED fan 10 having a single input 111 (in blue box) on a first side (highlighted in red) and a single output 112 (in purple box) on a second side (highlighted in green). Ex[1012] at Abstract, [0003], [0011]-[0013], annotated FIGS. 2 and 3, below:

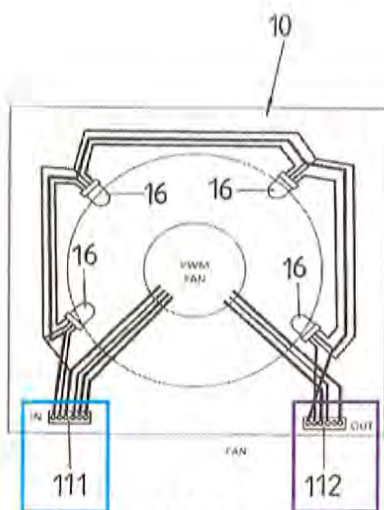


FIG. 2

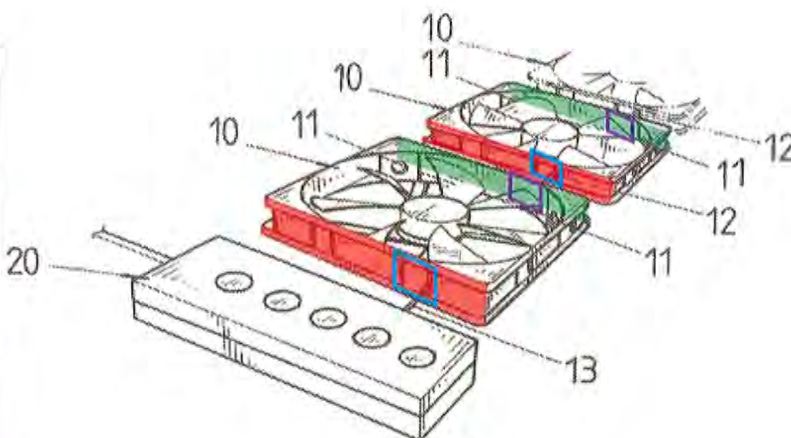


FIG. 3

Single input 111 (in blue box) includes a “power socket” as claimed. Single input 111 receives power and includes power connections for the LEDs and PWM fans. Ex[1012] at [0011], [0013]-[0014], FIGS. 2, 4 and 5. Specifically, single input 111 comprises 6 connectors, including a ground connector that is connected to both the PWM fan and LEDs, and two VCC connectors that are connected to the LEDs (for example, LEDs 11 in FIG. 4 and LEDs 16 in FIG. 5) and control motors 15 that are electrically linked to the PWM fan via controller 20, respectively. Ex[1012] at [0011], [0013]-[0014], FIGS. 2 (annotated above), 4 and 5 (annotated below).

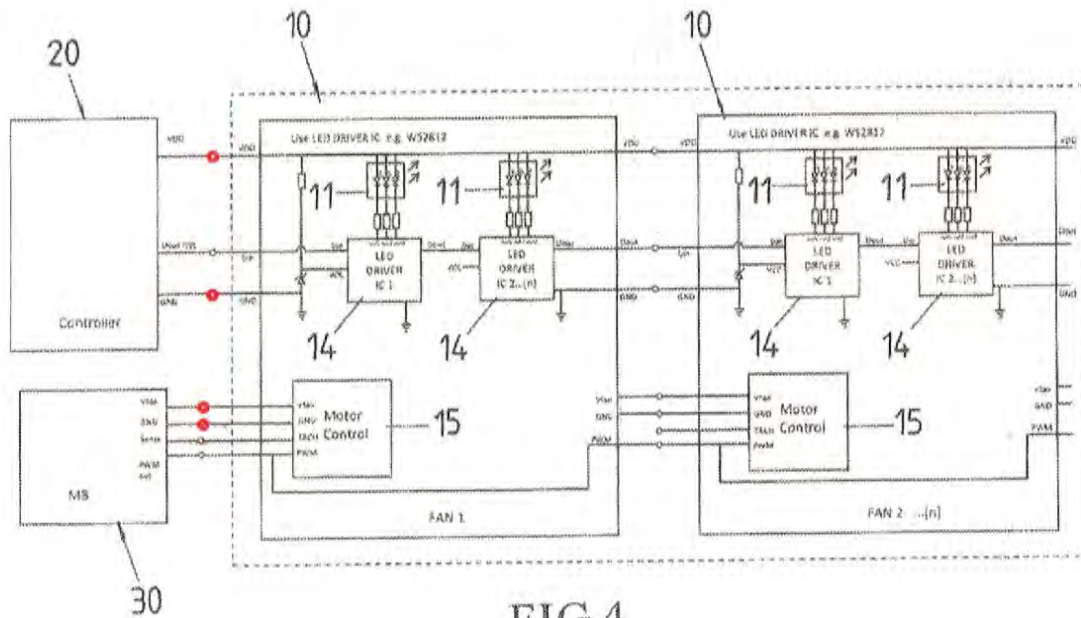


FIG. 4

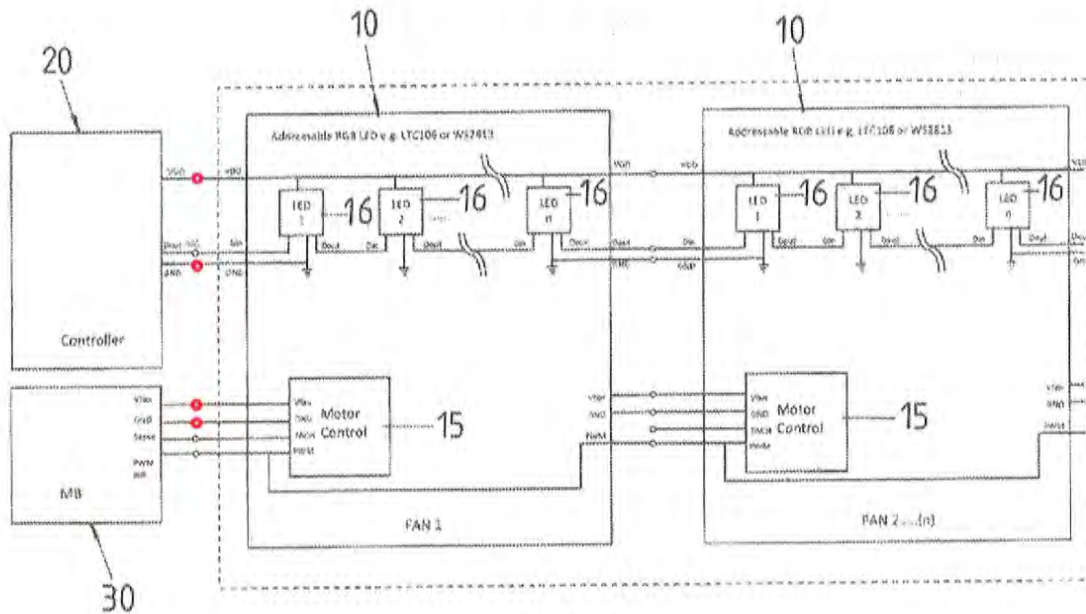
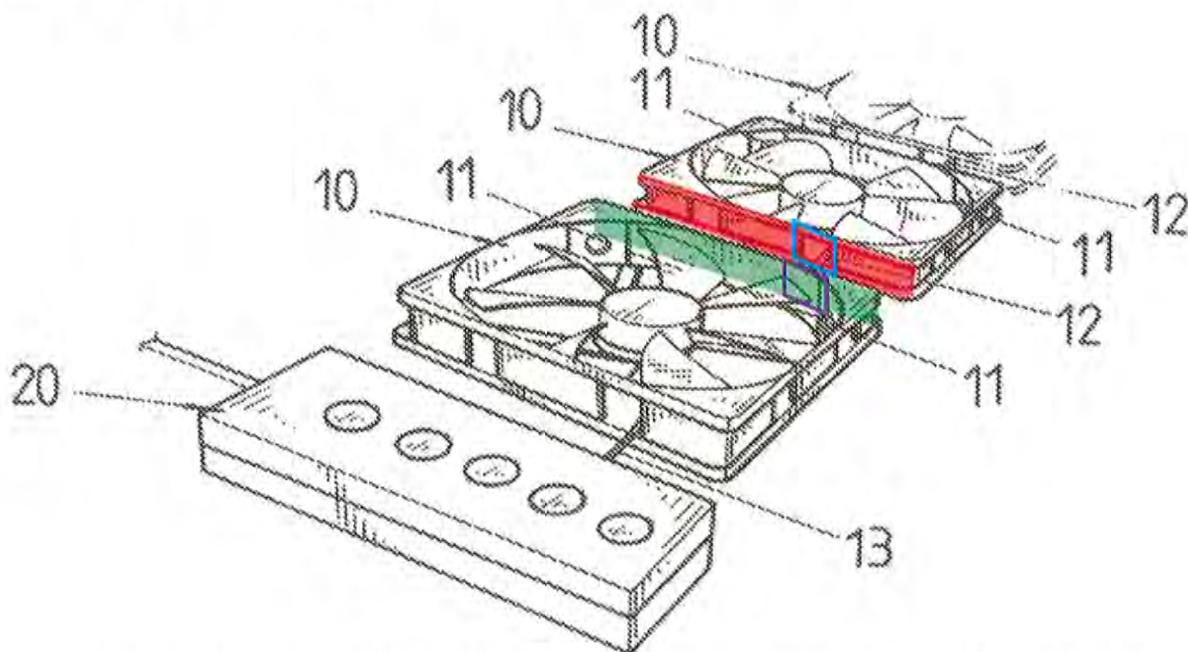


FIG. 5

To the extent it is argued or found that the VCC and ground terminals are not a “socket,” it would have been obvious to a PHOSITA to use a socket-type power

connector, which was common in the art and often used for fans. *See* Ex[1004], ¶ 116. They would be a trivial substitute for a connector that was not considered a “socket.” *Id.* Both male and female connectors are commonly available and for low-voltage applications can be interchangeable as to which is on the cable and which is on the device. *Id.*

Single input 111 (in blue box) further includes a “first connector on one side of the body,” as claimed. Single input 111 of one LED fan 10 is used in conjunction with a transmission line 12 to connect or link the LED fan 10 to another LED fan 10. *See* Ex[1012] at [0011]-[0012], annotated FIG. 3:



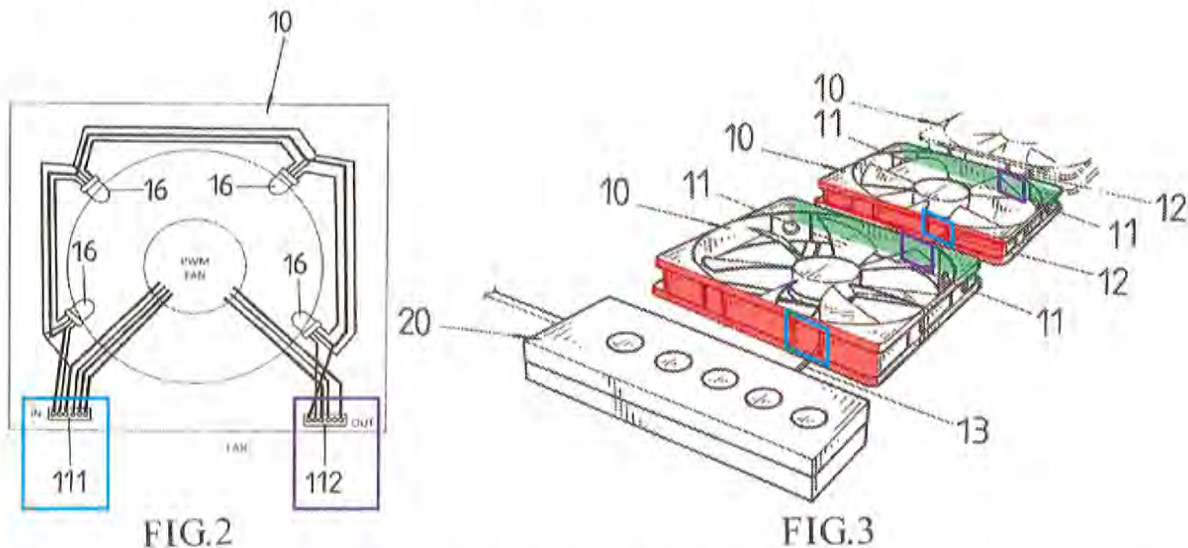
The first connector of Lai comprises the remaining connectors (the LED data signal, the PWM signal, and the sense signal) out of the six connectors of single

input 111. *See* Ex[1004], ¶ 116. Alternatively, it would be obvious to include separate VCC and ground signals on the first connector. *Id.* FIGS. 4-6 of Lai all illustrate two sets of ground and power connections on one side of the fan body. *Id.* It would be obvious therefore to have two connectors on the same side, both having the power and ground signals and the control signals. *Id.* Either one could be the power socket and the other would be the first connector. *Id.*

To the extent it is argued or found that the “power” socket” and “first connector” require separate structures, it would be obvious to a PHOSITA to separate a set of VCC and ground terminals of Lai into a separate housing for the same reasons stated above. *Id.* A plurality of signals can be combined onto a single connector housing or split between two as a matter of simple design choice. *Id.* Accordingly, Lai discloses a “power socket and a first connector on one side of the body” as shown by single input 111. *Id.*

Lai further discloses a “second connector on another side of the body.” *See* Ex[1004], ¶¶ 117-118. Ex[1012] at [0011]-[0012], annotated FIGS. 2-3. LED fans 10 are connected, or linked, when single input 111 of an LED fan 10 is connected to single output 112 of another LED fan 10. Ex[1012] at [0011]-[0012], annotated FIG. 3 below. Although the schematic in FIG. 2 of Lai shows both single input 111 and single output 112 on the same side, FIG. 3 of Lai shows LED fans 10 are connected

or linked together with a transmission line 12 extending from single input 111 positioned (in blue box) on a first side (highlighted in red) of one LED fan 10 to single output 112 (in purple box) on a second side (highlighted in green) of another LED fan 10. Ex[1012] at [0011]-[0012], annotated FIG. 3 below:

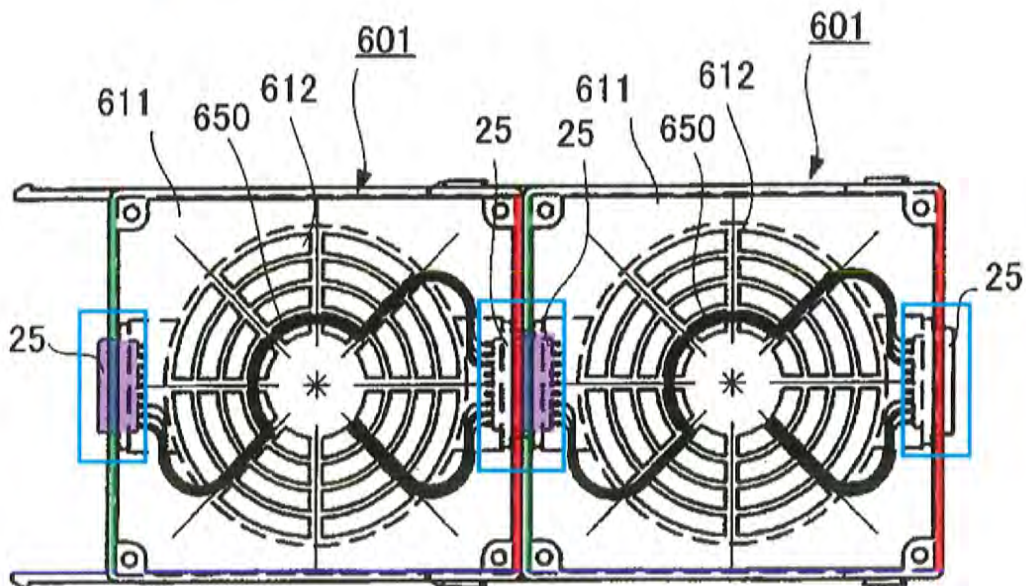
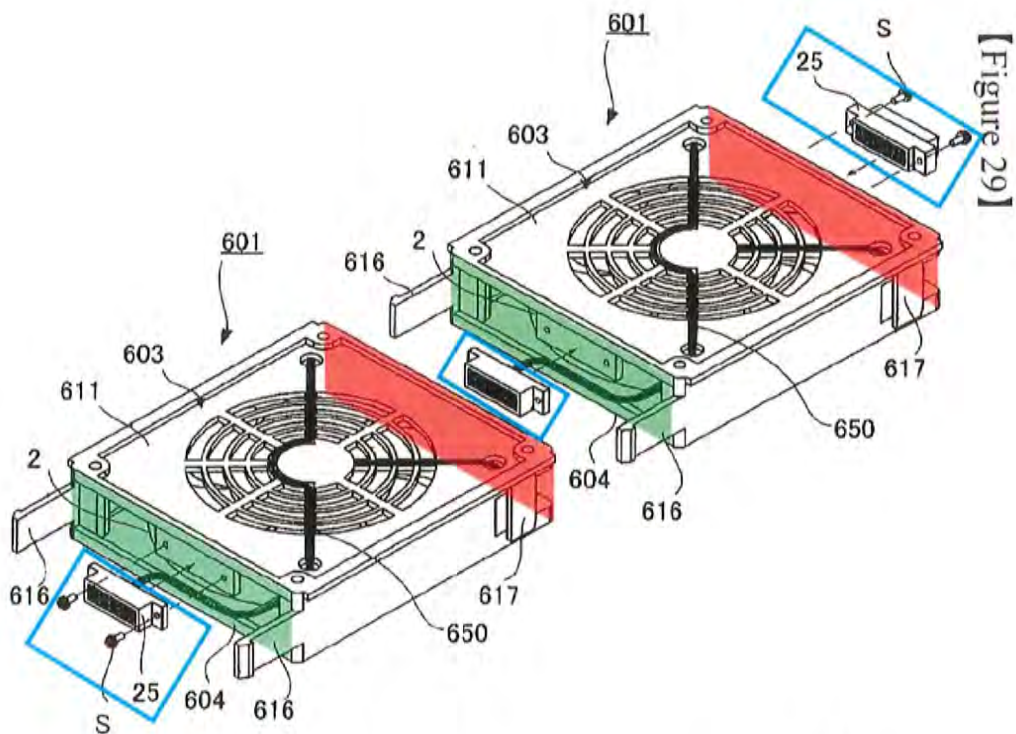


To the extent it is argued or found that Lai does not disclose connectors on two sides of the fan body, it would have been obvious to a PHOSITA that the connectors can be moved to opposite edges of the fan body without any substantial impact to the structure or operation of the fan of Lai. Ex[1004], ¶ 118. Lai already indicates that the two connectors should be near opposition corners—one near the left corner and the other near the right corner, as shown above in FIG. 2. *Id.* There are no physical limitations that prevent or discourage moving them around from the corners to the sides. *Id.* Wire lengths would not need to substantially change and

there are no obstacles to avoid. *Id.* Electronics modules are commonly available in a choice of connector configurations, e.g. top or bottom or side connectors, to facilitate wiring. *Id.* Side-mounted connectors would reduce or eliminate the cabling required to connect adjacent fans as suggested in FIG. 3 of Lai. *Id.*

Furthermore, a PHOSITA would be motivated to modify Lai to have a first connector (single input 111) on one side of a fan body, and a second connector (second input 112) on the opposite side of the fan body, based on the configuration of connectors for serial connection of fans as disclosed in Hasegawa. Ex[1004], ¶ 119.

Hasegawa discloses “[p]lural air-cooling Fan Units 601 ... coupled ... to configure a large air-cooling fan unit,” wherein the air-cooling Fan Units 601 “cool[] down electronics.” Ex[1014] at [0001], [0114]. Hasegawa further discloses each Fan Unit 601 having Connectors 25 on opposite sides of the Fan Unit 601 body. *See* Ex[1014] at annotated Figures 29 and 31(b) (showing a first side highlighted in red, a second side highlighted in green, Connector 25 in blue box, the second connector of Hasegawa highlighted in purple).



(b)

As shown above, Hasegawa discloses positioning Connectors 25 on opposite sides of Fan Unit 601 body such that one Fan Unit 601 can be electrically connected to another Fan Unit 601. *See also* Ex[1014] at [0115], [0119] (“Connector 25 configure at the tip [of Fan 2 comprising air-cooling Fan Unit 601]”). Connector 25 (highlighted in purple) on the second side (highlighted in green) of the Fan Unit 601 body is a “second connector on another side of the body” as claimed. Ex[1004], ¶119.

It would have been obvious to a PHOSITA to combine Lai and Hasegawa. *Id.* Hasegawa is analogous to Lai, and both references are analogous art to the '336 Patent. *Id.* Both prior art references, as well as the '336 Patent, are in the same field of endeavor of cooling fans for electronic devices, and provide details for connecting multiple cooling fans in chain that transmit power for the fan motors via single connections between the fans. *See, e.g.,* Ex[1012] at Abstract, [0001], [0003], [0011]-[0012]; Ex[1014] at [0114], [0119], Figures 29-31. Both describe fans in generally rectangular/square housings with input and output connectors for daisy-chain connection of the fan modules. Ex[1004], ¶ 119.

The combination of Lai and Hasegawa would have appeared similar to FIG. 3 of Lai, but with visible connectors on the fan body sides and not just visible transmission lines:

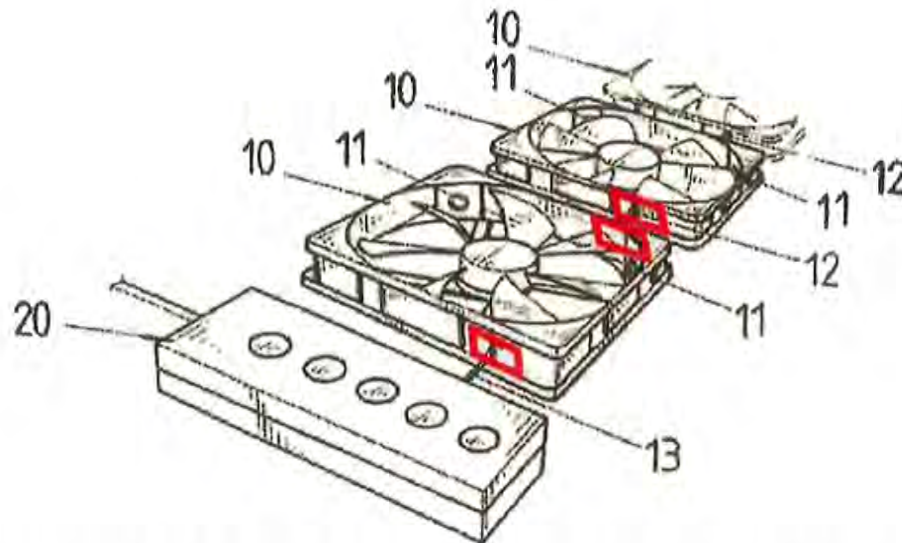


FIG. 3 of Lai (modified to position connectors on sides of the LED fan 10 body as shown in red boxes)

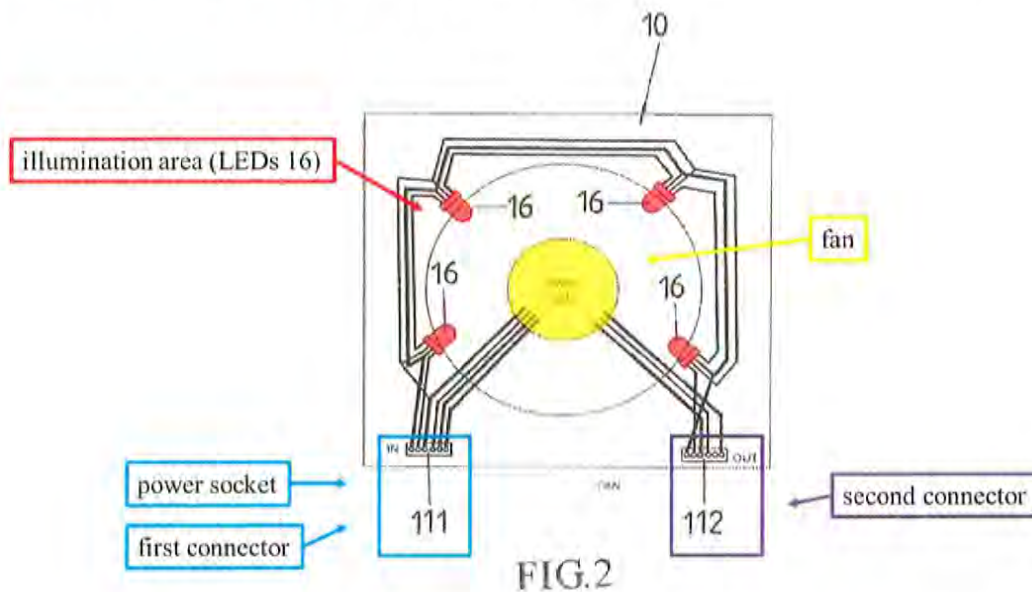
Ex[1004], ¶120.

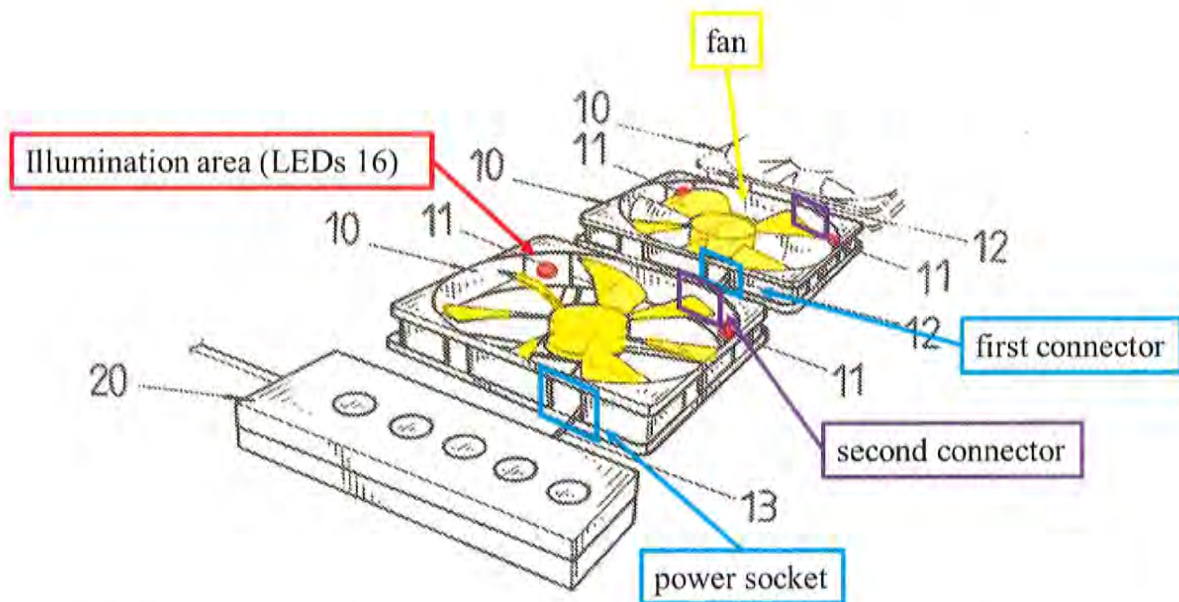
The combination would have involved applying Hasegawa's known technique of placing cooling fan connectors on opposite sides of a fan body, to the known LED fans of Lai, to yield predictable results of connecting the fans in series (as shown above in FIG. 3, annotated). *Id.*

Accordingly, Lai, alone or in combination with Hasegawa, discloses a "second connector on another side of the fan body." *See also* Ex[1004], ¶¶ 117-120.

1[d]: wherein the power socket is electrically connected with the first connector, the second connector, the fan and the illumination area, such that when the power socket on the one side of the body is supplied with power, the fan and the illumination area of the body are respectively driven into rotation and illumination, and when the first connector of the body is connected with a second connector of a body of another illumination fan, a fan and an illumination area of the body of another illumination fan are respectively driven into rotation and illumination.

As explained for limitations [a]-[c] of Claim 1, Lai, alone or in combination with Hasegawa, discloses single input 111 comprising a power socket and a first connector on one side of the fan body, a second connector (single output 112) on another side of the fan body, a fan, and an illumination area (LEDs 16 or LEDs 11), as illustrated below in annotated FIGS. 2 and 3:





Lai discloses that the power socket is electrically connected with the first connector, the second connector, the fan, and the illumination area. *See* Ex[1012], annotated FIG. 2 above. In particular, the ground line (GND) and VCC signal are electrically connected to the first connector with the first connector (single input 111), the second connector (single output 112), the fan and the illumination area (LEDs 16 or LEDs 11). *See* Ex[1012] at [0012]-[0015], annotated FIGS. 4-6 below; *see also* Ex[1004], ¶ 121.

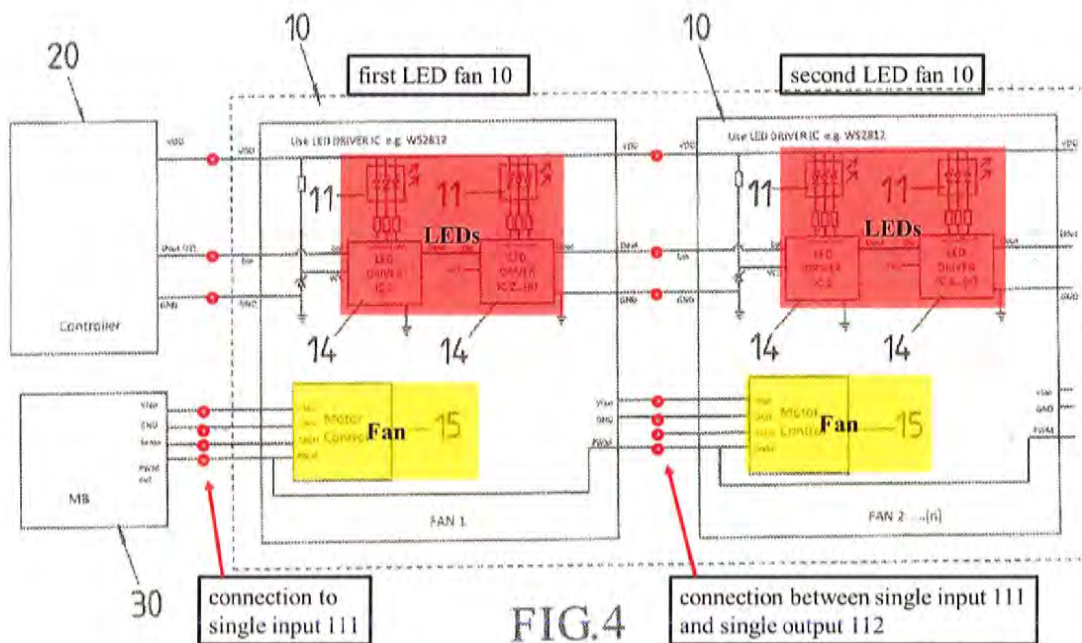
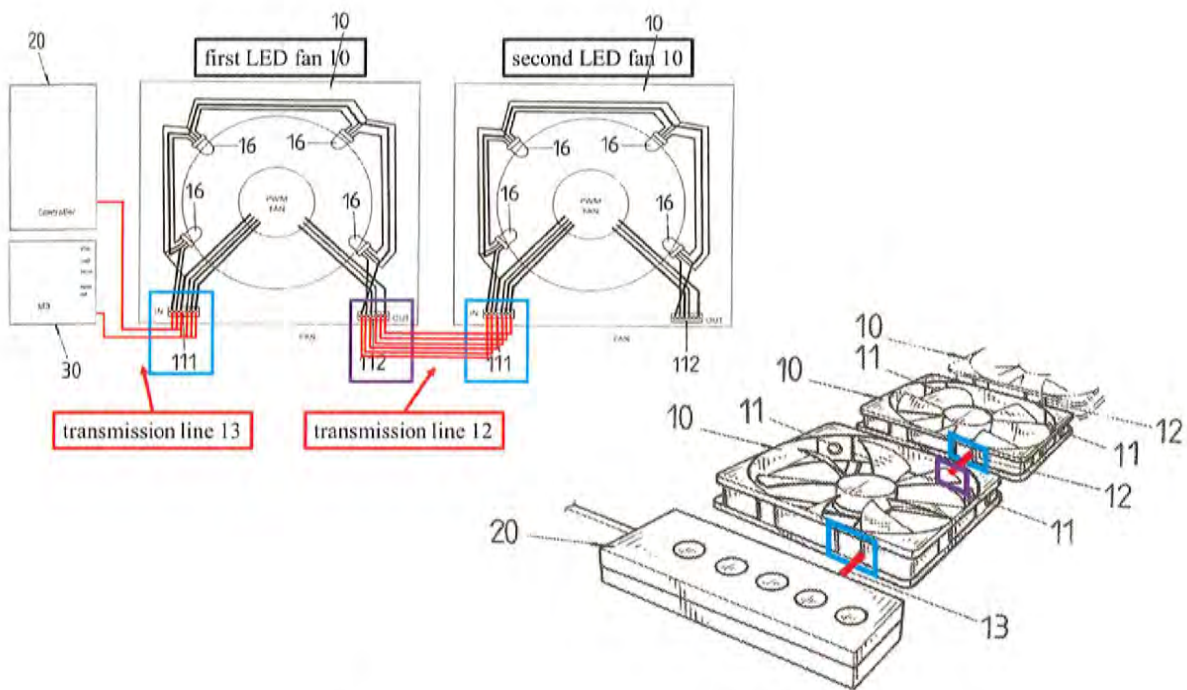
Lai further discloses that when the power socket of single input 111 is supplied with power, the fan and the illumination area of LED fan 10 are respectively driven into rotation and illumination, and when the first connector of single input 111 of an LED fan 10 is connected with single output 112 of another LED fan 10,

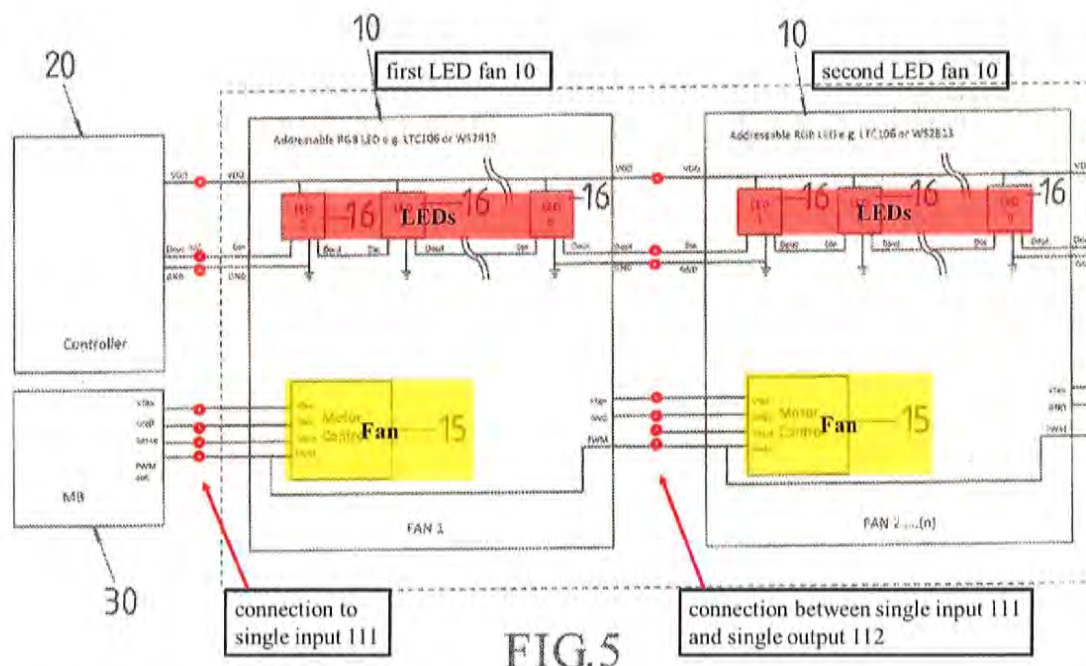
the fan and illumination area (LEDs 16 or LEDs 11) of another LED fan 10 are respectively driven into rotation and illumination. *See* Ex[1004], ¶¶ 122-126.

As illustrated below, Lai discloses “an LED fan controller device that links multiple LED fans” that “adjust[s] each individual LED light on multiple LED fans while simultaneously control all fan[.]” Ex[1012] at [0003], [0011], [0016]; *see also* Ex[1012] at Abstract, claims 1 and 3, [0001], [0012].

Lai explains that conventional fans can be connected in a series, and Lai clearly intends to serially connect fans in a manner such that when connected together, the fans all spin when powered and the lights all illuminate. *See* Ex[1012] at [0002] and Ex[1004], ¶¶ 122-124.

For example, Lai discloses an LED fan controller device that links in serial at least two LED fans 10, wherein when the power socket of single output 111 of the first LED fan 10 is connected (via single transmission line 13), the fan (control motor 15) receives power and control from motherboard 30, and the illumination area (LEDs 16 or LEDs 11) from controller 20. Ex[1012] at [0013]-[0014], annotated FIGS. 2-5 below.





Lai in another embodiment discloses that when the power socket of single output 111 of the first LED fan 10 is connected (via single transmission line 13), the fan (control motor 15) and illumination area (LEDs 11) both receive power and control from controller 20. Ex[1012] at [0015], annotated FIGS. 2, 3 and 6 below.

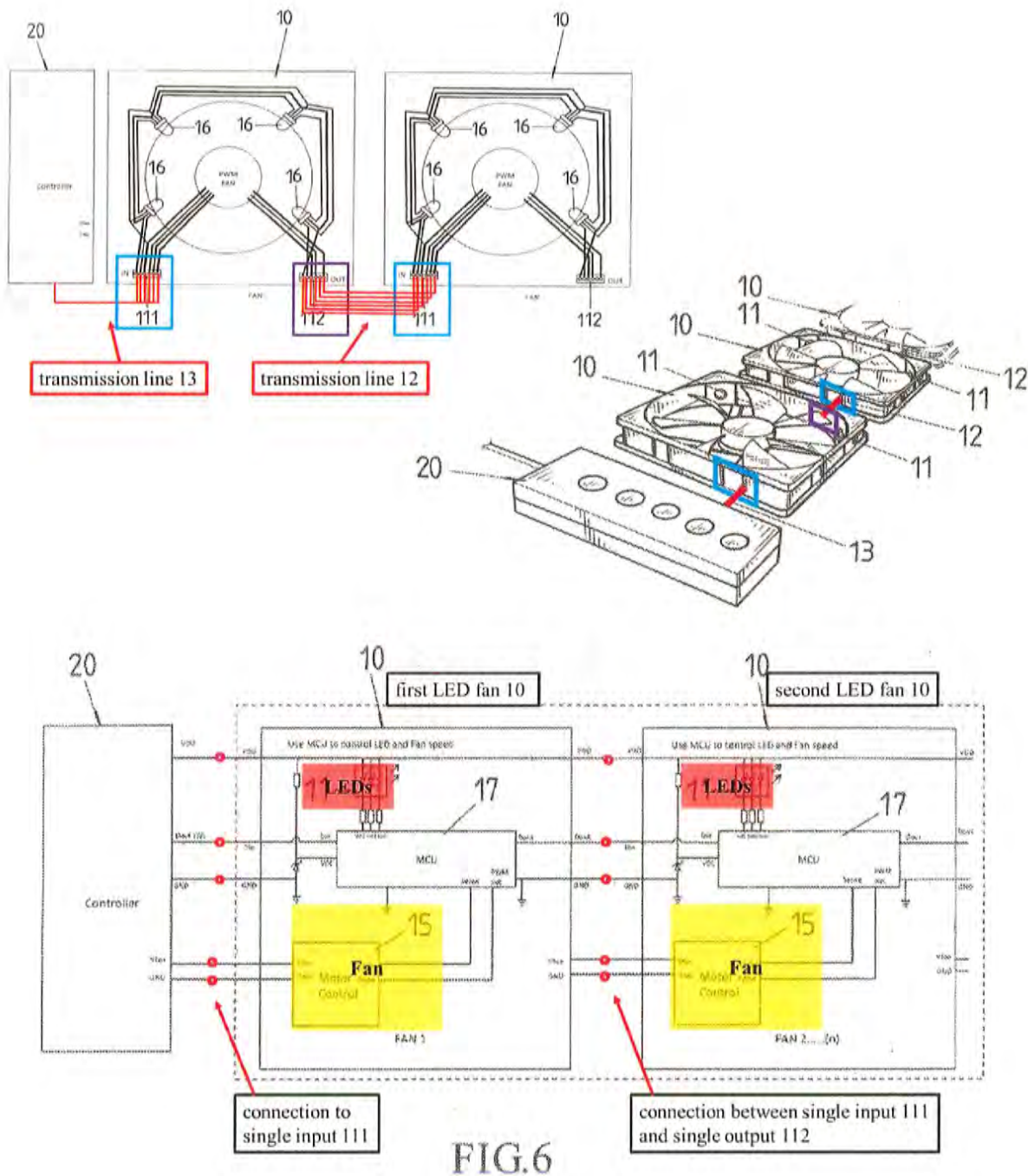


FIG. 6

Additionally, in all embodiments Lai discloses serial connections of at least two LED fans 10 through single connections extending from single input 111 of one

LED fan 10 to single output 112 of another LED fan 10 via a single transmission line 12. As illustrated above, when single input 111 and single output 112 are connected, the fan and illumination area of the second LED fan 10 are electrically connected to receive power and control. As stated above, Lai discloses that the serial connection of at least two LED fans 10 “adjust[s] each individual LED light on [the] LED fans while simultaneously control all fan speeds too.” Ex[1012] at [0016].

To the extent that it is argued or found that Lai requires an RGB control signal and a PWM signal to illuminate and rotate, respectively, it would have been obvious to have a default illumination value and rotation speed whenever power is applied. Ex[1004], ¶ 125. A PHOSITA would understand that complex lighting effects and primarily decorative and that simply lighting to a default illumination (such as the light turns on when power is applied) would generally suffice for any functional requirements. *Id.* Moreover, this simple alternative (turning on a light when power is applied) was well known and easy and cheap to implement. *Id.* Similarly, a PHOSITA would understand that reduced fan speeds (less than 100%) are primarily used to reduce noise and that the system can function, at least initially, at 100% fan speed. *Id.* Furthermore, a slower default fan speed such as 35% may be sufficient at power on since little heat is present at that time. *Id.* The simple alternative of turning on the fan when power is applied) was well known and easy and cheap to

implement. *Id.* Also, a typical computer fan defaults to full speed when power is applied and no PWM signal is provided, since in the case of a failure or loose connection it is preferable to have maximum cooling than to have none. *Id.* Additionally, it would have been obvious to substitute a fixed-speed fan and/or a fixed-illumination LED into this design as both were well-known at the time and had identical form factors to what is illustrated in Lai's embodiment. *Id.*

Accordingly, a PHOSITA would understand from the disclosures in the prior art discussed above that, when the power socket on the one side of the body is supplied with power, the fan and the illumination area of the body are respectively driven into rotation and illumination, and when the first connector of the body is connected with a second connector of a body of another illumination fan, a fan and an illumination area of the body of another illumination fan are respectively driven into rotation and illumination. *Id.*, ¶ 124. The mere act of connecting the fans in this manner and applying power provides power to the fans and illumination area, and Lai clearly indicates that the disclosed operations is that the fans would rotate, and the lights would illuminate, at this time. *Id.* A PHOSITA would understand that the required control signals are provided. *Id.*

Thus, Lai, alone or in combination with Hasegawa, renders obvious Claim 1. Ex[1004] at ¶ 126.

B. Dependent Claim 2

Preamble: The illumination fan connectable with at least one illumination fan for a computer of claim 1,

As explained above for Claim 1, Lai alone or Lai in view of Hasegawa teaches each and every limitation of Claim 1, rendering it obvious.

2[a]: wherein an electrically conductive terminal is provided in the first connector, and an electrically conductive contact surface is provided in the second connector for being electrically connected with the electrically conductive terminal,

A PHOSITA would understand that Lai discloses that the first connector (single input 111) includes multiple electrically conductive terminals and that the second connector (single output 112) includes an electrically conductive contact surface being electrically connected with the electrically conductive terminals of the first connector (single input 111). *See* Ex[1004], ¶ 128.

2[b]: such that when the first connector of the body of the illumination fan is connected with the second connector of the body of another illumination fan, the fan and the illumination of the body of another illumination fan are respectively driven into rotation and illumination.

In view of the discussion of 1[d] above, this limitation is rendered obvious over Lai. *See also* Ex[1004], ¶¶ 129-130.

XII. GROUND 5: CLAIM 3 IS OBVIOUS UNDER 35 U.S.C. § 103 OVER LAI IN VIEW OF HASEGAWA AND HUANG

Preamble: The illumination fan connectable with at least one illumination fan for a computer of claim 1,

As explained above for Claim 1 in Ground 4, Lai alone or Lai in view of

Hasegawa teaches each and every limitation of claim 1, rendering it obvious.

3[a]: wherein when the body of the illumination fan is connected with the body of another illumination fan, the illumination areas of the two bodies form a continuous illumination area.

As explained above for Claim 3[a] in Ground 1, Huang teaches that the light element forms an illumination area at the top of the fan on at least two sides. *See also* Ex[1004], ¶ 138. In at least some embodiments, “the light 27 emitted from the plurality of light-emitting elements 26 is uniformly diffused into the first diffused light 271, the second diffused light 273 and the third diffused light 274 ... such that the single upper cover 11 or the entire frame body 10 can present a uniform light-emitting state ..., thereby increasing the visibility when the cooling fan is used.” Ex[1008] at 8:4-15. That is, the entire upper cover or the entire frame body may be illuminated. Ex[1004], ¶ 138.

When the fans are connected, as shown in the Lai and Lai-Hasegawa combination, the bodies of the fans are touching. It would have been obvious to a PHOSITA to combine feature of Huang with Lai because Lai explains the purpose of its LEDs is to provide decorative lighting. Ex[1004], ¶¶ 136-137. As a result, the pair of fans together would form a single continuous illumination area. Ex[1004], ¶¶ 136-140.

Even if a small gap is provided between fans, it would have been obvious to extend the illumination area to close such a gap or extend to an overlapping portion of the cover. *Id.*, ¶ 140. Huang suggests this result, stating that “the entire frame body can present a uniform light-emitting state,” is a beneficial effect of the technical solution provided in Huang. *See* Ex[1008] at 3:20-29.

For the reasons above, the combination of Lai in view of Hasegawa and Huang renders Claim 3 obvious. Ex[1004], ¶¶ 131-141.

XIII. GROUND 6: CLAIM 4 IS OBVIOUS UNDER 35 U.S.C. § 103 OVER LAI AND HASEGAWA IN VIEW OF ECHAZARRETA

Preamble: The illumination fan connectable with at least one illumination fan for a computer of claim 1,

As explained above for Claim 1 in Ground 4, Lai alone or Lai in view of Hasegawa teaches each and every limitation of claim 1, rendering it obvious.

4[a]: wherein a groove is provided on one side of the body of the illumination fan, while an engaging block is provided on another side thereof to be engaged into the groove, such that when the groove of the body of the illumination fan is engaged with the engaging block of the body of another illumination fan, the body of the illumination fan is connected with the body of another illumination fan.

As explained above for Claim 4[a] in Ground 4, Echazarreta teaches the use of a groove and engaging block. Ex[1004], ¶ 144. Specifically, Echazarreta discloses that a groove is provided on one side of the body of the illumination fan, e.g. opening 1202 (side rail receiver) and/or opening 1204 (front rail receiver).

Ex[1009] at [0070]. Echazarreta also discloses an engaging block provided on another side thereof to be engaged into the groove, in the form of side rail 454 (shown in green, below) and the unnumbered similar side rail shown in Figure 12. *Id.* Echazarreta further explains that “on the other side, the fan tray 1200 defines a complementary-shaped opening (also referred to as a side rail receiver or a mounting bracket receiver) 1202 (highlighted in yellow, below), into which the side rail 454 of another fan tray (not shown) can be slid, thus forming a multi-fan tray. Preferably, the side rail 454 and the opening 1202 interlock when the side rail 454 is slid into the opening 1202.” *Id.* This satisfies the remainder of this limitation. Ex[1004], ¶ 144.

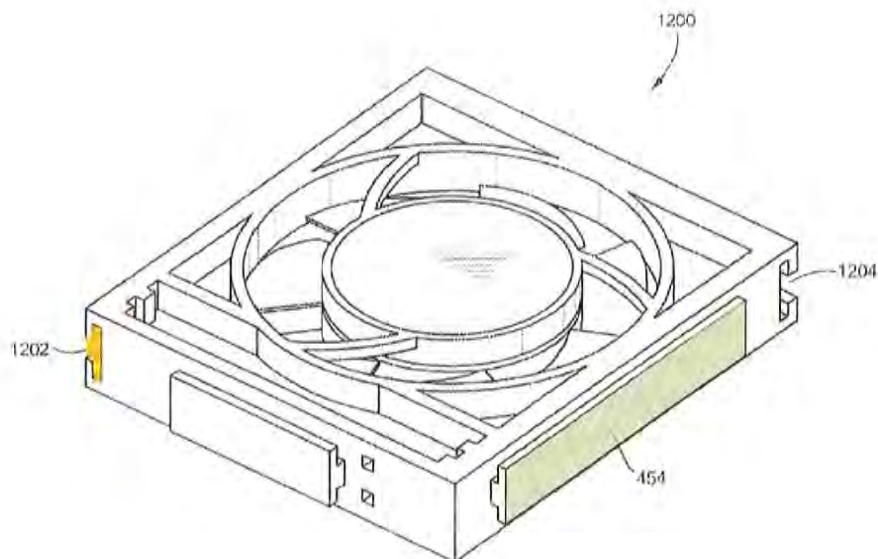


FIG. 12

Figure 12 of Echazarreta

A PHOSITA would have found it obvious to incorporate the groove and engaging block from Echazarreta into the fan module described above with respect to Claim 1. Ex[1004], ¶ 143. Lai, as modified in light of Hasegawa, is a fan module with a substantially round fan structure within a substantially square mounting frame. *Id.*, and Ex[1014] at Figures 29, 31(b). Echazarreta is also a fan module with a substantially round fan structure within a substantially square mounting frame. Ex[1004], ¶ 143; Ex[1009] at Figure 12. It would be well within the capabilities of a PHOSITA to add Echazarreta's groove and engaging block to the fan frame of Lai, as modified by Hasegawa, without substantial experimentation and with a highly predictable expectation of success. Ex[1004], ¶ 143. Lai, as modified in light of Hasegawa, teaches connecting fan blocks. *Id.* Echazarreta provides an express motivation to do so using this technique: "Casting these pieces together reduces the complexity and cost of manufacturing the fan trays." Ex[1009] at Abstract. Moreover, a PHOSITA would understand that this is a simple and quick mechanism for connecting fan blocks as suggested by Lai, as modified in light of Hasegawa. Ex[1004], ¶ 143.

Lai, as modified in light of Hasegawa and Echazarreta, thus teaches each and every limitation of Claim 4, rendering it obvious. Ex[1004], ¶¶ 143-145.

XIV. GROUND 7: CLAIM 5 IS OBVIOUS UNDER 35 U.S.C. § 103 OVER LAI IN VIEW OF HASEGAWA AND FURTHER IN VIEW OF CHOU OR LIU

Preamble: The illumination fan connectable with at least one illumination fan for a computer of claim 1,

As explained above for Claim 1 in Ground 4, Lai alone or Lai in view of Hasegawa teaches each and every limitation of Claim 1, rendering it obvious.

5[a] wherein a groove is provided on two sides of the body of the illumination fan, and the body of the illumination fan is connected with the body of another illumination fan by respectively engaging an engaging block with one of the grooves on the sides of the body of the illumination fan and one of the grooves on the sides of the body of another illumination fan.

Lai and Hasegawa in view of Chou

The combination of Lai, Hasegawa, and Chou renders [5a] obvious. Ex[1004] at ¶¶ 147-149.

As discussed above for Claim 5[a] in Ground 3, Chou discloses a fan utilized in a fan assembly wherein each fan 2 has a frame 24 with at least two sliding rails 246 disposed on the corners thereof. Ex[1010] at [0022]. A PHOSITA would understand such sliding rails 246 on each fan to be “grooves” on the sides of the body of each fan module. Ex[1004], ¶ 148.

Chou also discloses an “engaging block” as a connecting member 26 that is designed to engage rails 246 on the sides of each fan frame 24. *Id.*, ¶133; Ex[1010] at Fig. 2. Specifically, one of the grooves on the sides of the body of one fan and

one of the grooves on the sides of the body of another fan may be respectively connected to each of the sidewalls 261 of connecting member 26. *Id.* at [0022], Figures 2 and 4.

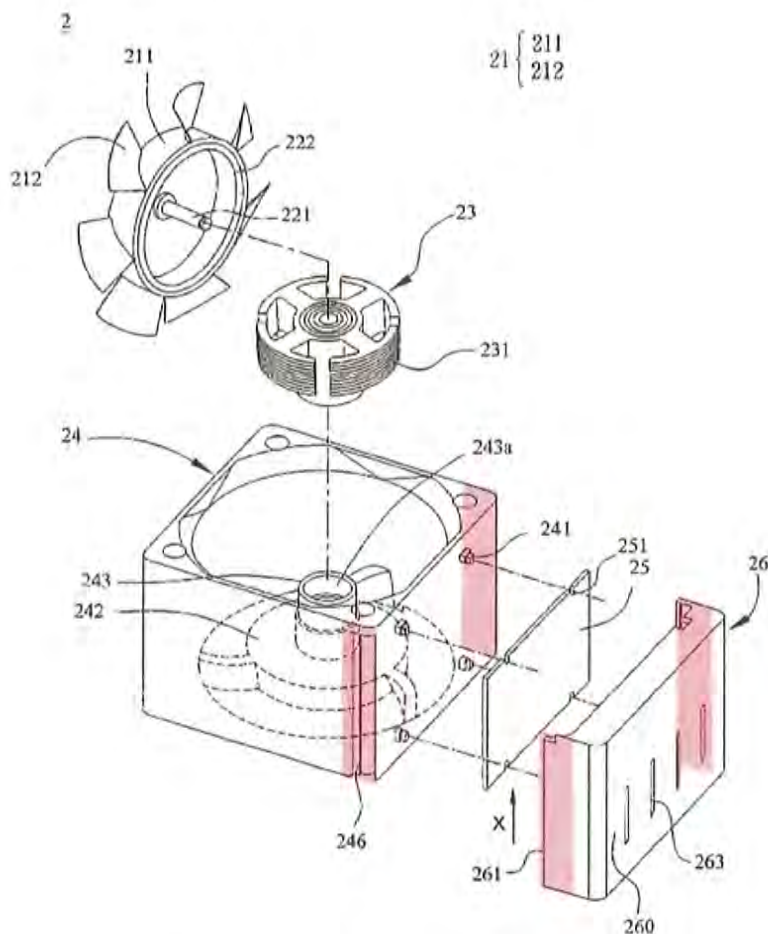


Fig. 2 of Chou (annotated)

Fig. 4 of Chou refers to connecting two fans 2 in series by sliding a common connector member 46 into grooves 246 to form a fan assembly. Ex[1004], ¶149 and Ex[1009] at Fig. 4, [0025]-[0026].

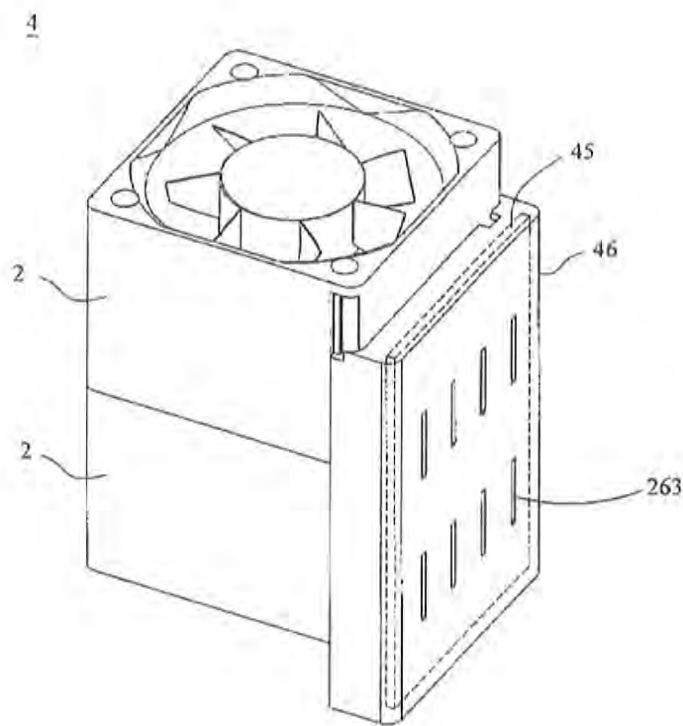


FIG. 4 of Chou

A PHOSITA would have been motivated to combine Chou with Lai and Hasegawa. Chou is analogous prior art to Lai and Hasegawa as well as the '336 patent. Ex[1004], ¶ 147. Chou provides an express motivation to connect fan blocks. *Id.* Accordingly, it would have been obvious to modify the Lai-Hasegawa illumination fan to include grooves on two sides and an engaging block that engages the grooves to connect the fans, as disclosed in Chou. *Id.*, ¶¶ 147-149. The combination would have involved applying Chou's known connector member 46 (an engaging block) to engage sliding rails 246 (grooves) on two sides of a fan body,

for the known Lai-Hasegawa illumination cooling fans. *Id.* The combination would have yielded the predictable result of aligning the Lai-Hasegawa fans, such that they are linked together. *Id.* An example of the combination of Chou with Lai-Hasegawa is shown below:

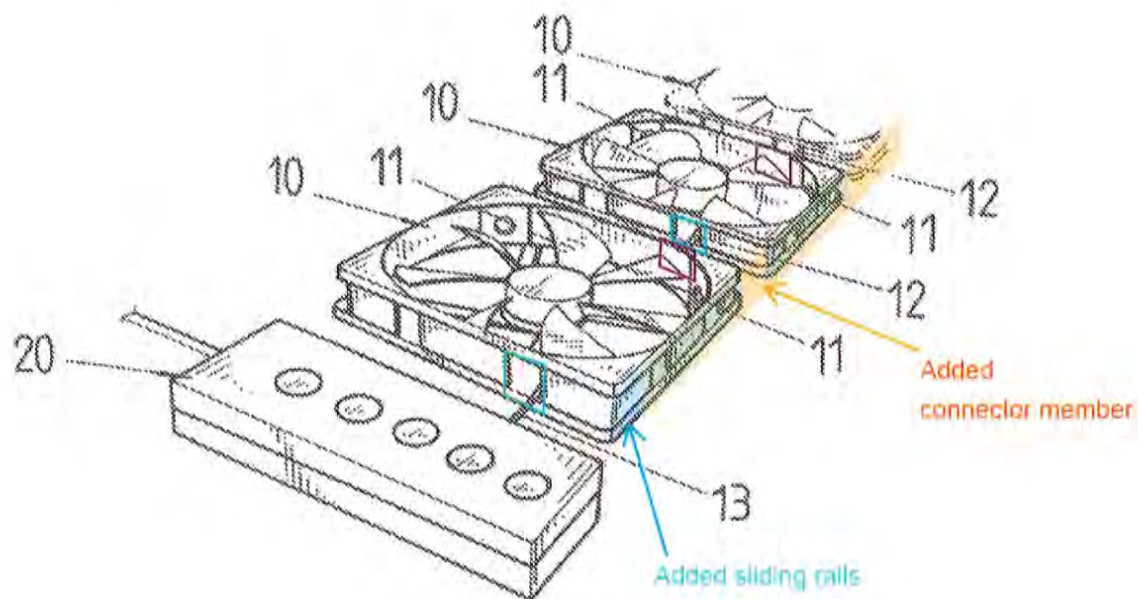


FIG. 3

Modifications to FIG. 3 of Liu

Lai already discloses linking LED fans together and thus only minor modifications would have been needed to add grooves to the bodies of the Lai-Hasegawa fan bodies. *Id.*

Alternatively, Lai and Hasegawa in view of Liu

The combination of Lai, Hasegawa, and Liu renders [5a] obvious. Ex[1004]

at ¶¶ 150-153.

Liu teaches that each fan module, in a series fan assembly, can have connection sections 214 on two sides. Sections 214 may include mortises which are understood by definition to a PHOSITA to be a type of “groove.” Ex[1004], ¶ 151. Liu also discloses an assembling member 5 with multiple assembling sections 53. Such sections 53 are used to connect with connection sections 214 on the side of the body of one fan and another connection sections 214 on the side of the body of another fan. Ex[1011] at [0033], [0035] and Figures 4A, 4B (copied and annotated below). Accordingly, assembling sections 53 of Liu act as an “engaging block” as understood by a PHOSITA. Ex[1004], ¶ 152.

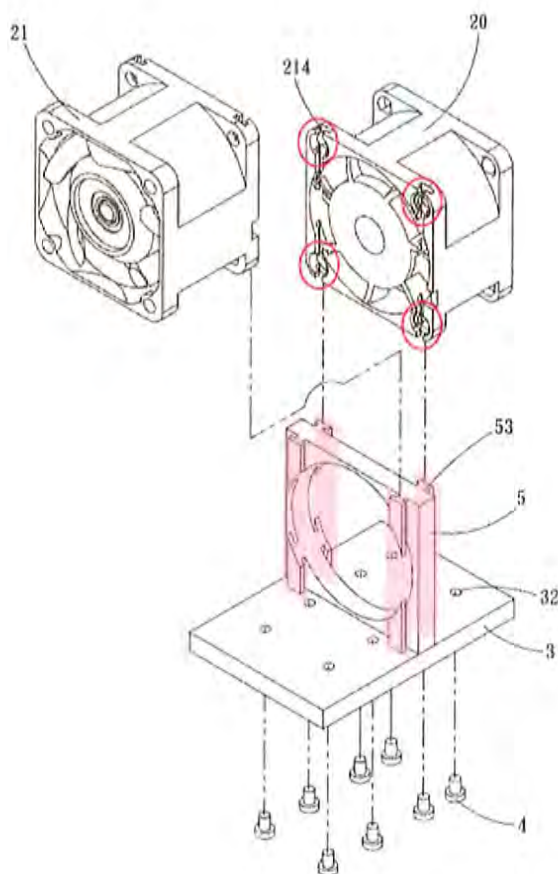


Fig. 4A

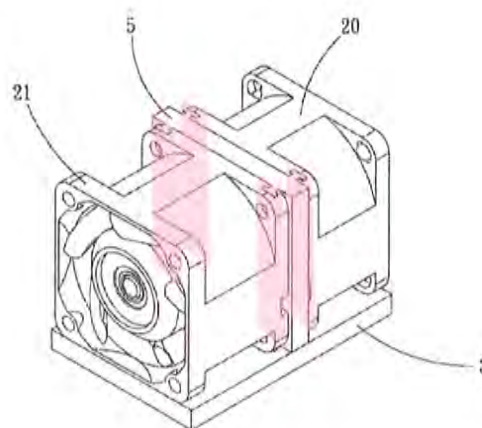


Fig. 4B

FIGS. 4A and 4B of Liu (annotated)

A PHOSITA would have been motivated to combine Liu with Lai and Hasegawa. Ex[1004] at ¶ 150. Liu is analogous prior art to Lai and Hasegawa as well as to the '336 Patent. *Id.* Liu provides an express motivation to connect fan blocks. *Id.* Thus, it would have been obvious modify the Lai-Hasegawa illumination fan to include grooves on two sides and an engaging block that engages the grooves

to connect the fans, as disclosed in Liu. *Id.* The combination would have involved applying Liu's assembling member 5 (an engaging block) to engage connection sections 214 (grooves) on two sides of a fan body, for the known Lai-Hasegawa illumination cooling fans. Ex[1004] at ¶¶ 150-152. The combination would have yielded the predictable results of aligning the Lai-Hasegawa fans for connection to each other. *Id.* An example of the combination of Chou with Tsuji-Huang is shown below:

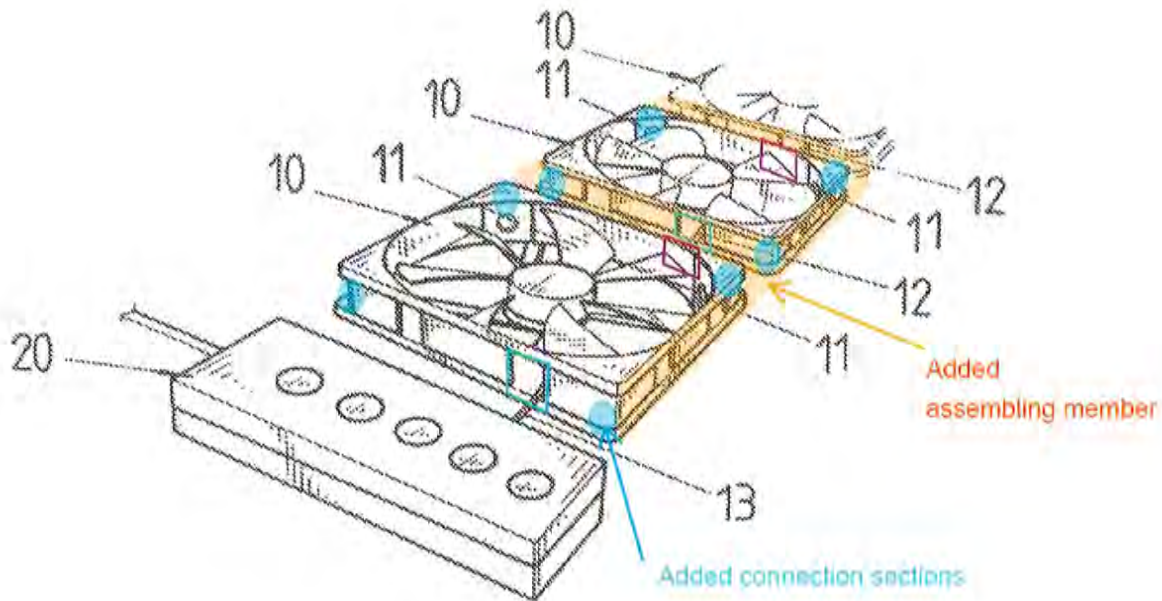


FIG.3

Modifications to FIG. of Lai

For the reasons above, the combination of Lai and Hasegawa in view of either

Chou or Liu renders Claim 5 obvious. Ex[1004] at ¶¶ 146-153.

XV. DISCRETIONARY DENIAL IS NOT APPROPRIATE

A. The Board Should Not Deny Institution Under §314(a).

1. General Plastic

The Board should decline to exercise its discretion to deny institution based on the co-pending Axpertec Reexamination (Control No. 90/019,565). The factors set forth in *General Plastic Industrial Co., Ltd. v. Canon Kabushiki Kaisha*, IPR2016-01357, Paper 19 (Sep. 6, 2017) (precedential) (“*General Plastic*”) confirm that this Petition should be considered on the merits.

With respect to the first *General Plastic* factor, the fact that Petitioners were not a party, real party-in-interest, or privy to the Axpertec Reexamination, and this is Petitioners’ first challenge to the ’336 Patent, “weighs especially heavily against a discretionary denial.” *Unified Patents, Inc. v. Certified Measurement, LLC*, IPR2018-00548, Paper 7, at 7-8 (PTAB Sep. 5, 2018).

The second to fifth factors “bear little relevance” here because Petitioners have never before challenged the ’336 Patent. *Id.* (“Once resolution of factor 1 indicates that Petitioner had not previously filed a petition against the same patent, factors 2-5 bear little relevance unless there is evidence in the record of extenuating circumstances.”). There are no extenuating circumstances.

As to the sixth factor, instituting this Petition would be no more a burden on resources than instituting any other petition. And for the seventh factor, there is no readily identifiable roadblock for the Board to issue a final determination within the statutory one-year limit.

Indeed, the Board has previously held that the existence of a prior reexamination is insufficient to require a discretionary denial under *General Plastic*. See *Samsung Elecs. Co., Ltd. v. Netlist, Inc.*, IPR2022-00615, Paper 20, at 21-22 (PTAB Oct. 19, 2022); *Kyocera Corp. v. Softview LLC*, IPR2013-00004, Paper No. 11, page 2 (PTAB Dec. 21, 2012).

2. Fintiv

The Board should decline to exercise its discretion to deny institution based on the co-pending California Action. The factors set forth in *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020) (precedential) (“*Fintiv* factors”) favor institution.

The first *Fintiv* factor favors institution, or is at a minimum neutral, because the potential of a stay exists in the California Action if this proceeding is instituted, especially as this Petition challenges all asserted claims. Judges in the Central District routinely stay cases pending IPR. See, e.g., *Vivint, Inc. v. SkyBell Techs., Inc.*, No. CV 21-9472-GW-GJSX, 2022 WL 18587113 (C.D. Cal. Nov. 9, 2022)

(“where a review has been instituted already, this weighs in favor of a stay”).

Regarding the second *Fintiv* factor, trial in the California Action is set for April 15, 2025, before the final written decision. In light of the Board’s holistic analysis, however, the trial date is not determinative. *See, e.g., Netnut Ltd. v. Bright Data Ltd.*, IPR2021-01492, Paper 12, at 9-16 (PTAB Mar. 21, 2022) (instituting review with related litigation trial date six months before the final written decision); *CoolIT Sys., Inc. v. Asetek Danmark A/S*, IPR2021-01195, Paper 10, at 11-14 (PTAB Dec. 28, 2021) (same by five months; *Sand II* stipulation); *Align Tech., Inc. v. 3Shape A/S*, IPR2021-01313, Paper 11, at 16-19 (PTAB Feb. 10, 2022) (same by four months; *Sand II* stipulation). Thus, in view of the other factors, Factor 2 does not warrant denial.

Under the third *Fintiv* factor, the Board considers Petitioners’ timing, which weighs in favor of institution. *Fintiv*, Paper 11 at 11. Petitioners moved with speed and diligence in bringing this IPR—only about four months after infringement contentions were served March 6, 2024. *CoolIT*, Paper 10 at 11-12 (finding petitioner acted diligently where it filed petition five months after patent owner identified asserted claims); *Fintiv*, Paper 11 at 11. The Board also considers “the amount and type of work already completed in the parallel litigation[.]” *Fintiv*, Paper 11 at 9. The parties have not briefed claim construction, have not filed

dispositive motions, and have not begun expert discovery. *See Protect Animals with Satellites LLC, v. OnPoint Sys., LLC*, IPR2021-01483, Paper 11, at 14-15 (PTAB Mar. 4, 2022); *Fintiv*, Paper 11 at 9-10; *Netnut*, Paper 12 at 11.

The fourth *Fintiv* factor weighs in favor of institution or is, at a minimum, neutral. As discussed above, the California Action is in its early stages. Petitioner will file in the parallel district court litigation a stipulation that, if IPR is instituted, it will not pursue in the parallel litigation any ground that is raised or that could have reasonably been raised in an IPR. This favors institution. *Sand Revolution II, LLC, v. Cont'l Intermodal Grp. – Trucking LLC*, IPR2019-01393, Paper 24, at 12 (PTAB Jun. 16, 2020).

Also, despite Petitioners being the defendants in the California Action (*Fintiv* factor five)—something out of Petitioners' control—other circumstances weigh against discretionary denial (*Fintiv* factor six). For one, the strength of the merits in the proposed invalidity grounds favors institution. *Fintiv*, 14-15. This Petition relies upon materially different and non-cumulative references not applied during prosecution.

Accordingly, the *Fintiv* factors favor instituting this IPR.

B. The Board Should Not Deny Institution Under 35 U.S.C. § 325(d)

Discretionary denial under Section 325(d) is not appropriate here because this

Petition does not present the same or substantially the same prior art or arguments previously presented to the Office during prosecution. *Advanced Bionics, LLC v. Med-El Elektromedizinische Geräte GmbH*, IPR2019-01469, Paper 6, at 8 (PTAB Feb. 13, 2020) (precedential). This Petition raises invalidity challenges based on non-cumulative prior art that was not cited or considered during prosecution.

Discretionary denial is also not warranted in view of the pending Axpertec Reexamination initiated by a different party. First, Petitioners had no involvement with the reexamination. Second, this Petition and the reexamination are based on materially different grounds and positions. Most of the prior art in this Petition was not considered or cited in the Axpertec Reexamination. Although Tsuji and Lai were cited in the request for the Axpertec Reexamination, they were not considered in combination with Huang, Hasegawa, Echazarreta, Chou, and/or Liu, and this Petition is supported by the Declaration of Dr. Andrew Wolfe, while the Axpertec Reexamination is not. *See Oticon Med. AB v. Cochlear Ltd.*, IPR2019-00975, Paper No. 15, at 16-18 (PTAB Oct. 16, 2019) (precedential) (finding grounds did not involve the same or substantially the same prior art or arguments where the petitioner proposed arguments to the same primary reference considered in prosecution, but with the addition of a secondary reference not previously considered).

Third, denying institution in view of a third-party reexamination would be

unfairly prejudicial. It is the Patent Owner that decided to accuse separate companies of infringement, each with separate interests in challenging the patent. And, given the statutory deadline to file an IPR, Petitioners could not have waited until the conclusion of the reexamination. *See Mueller Sys., LLC v. Rein Tech, Inc.*, IPR2020-00100, Paper 9, at 12-14 (PTAB May 12, 2020) (“Petitioner would be barred from challenging claims ... following the Reexamination Proceeding.”).

Finally, the Axpertec Reexamination remains in its early stages at the time of this Petition. *See* Control No. 90/019,565. Indeed, while the Reexamination has been granted, an initial Office Action, has not issued. *Id.* Thus, Section 325(d) should not apply. *See, e.g., Mueller*, Paper 9, at 10-14 (Section 325(d) did not apply to prior art submitted in pending reexamination that had not yet resulted in an office action). As such, Section 325(d) does not counsel in favor of a discretionary denial.

XVI. CONCLUSION

For the foregoing reasons, Petitioners respectfully request that a trial for *inter partes* review of the '336 Patent be instituted and that Claims 1-5 be canceled.

Petition for *Inter Partes* Review of
U.S. Patent No. 10,690,336

Dated: July 26, 2024

Respectfully submitted,

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CERTIFICATE OF COMPLIANCE

1. The undersigned certifies that this brief complies with the type volume limitations of 37 CFR § 42.24(a)(1)(i). This brief contains 13,998 words (excluding the table of contents, the table of authorities, mandatory notices under 37 CFR § 42.8, the certificate of service, certificate of compliance, and appendix of exhibits), as calculated by the “Word Count” feature of Microsoft Word 360, the word processing program used to create it.

2. The undersigned further certifies that this brief complies with the typeface requirements of 37 CFR § 42.6(a)(2)(ii) and typestyle requirements of 37 CFR § 42.6(a)(2)(iii). This brief has been prepared in a proportionally spaced typeface using Microsoft Word in Times New Roman 14-point font.

Dated: July 26, 2024

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that a true copy of the foregoing **PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,690,336 B1** and supporting materials have been served in its entirety by electronic mail this 26th day of July, 2024, and to be served by FedEx on July 29, 2024 on Patent Owner at the correspondence address for the attorney of record for U.S. Patent No. 10,690,336 shown in USPTO Patent Center, as well as on counsel for Patent Owner in the co-pending litigation:

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Petition for *Inter Partes* Review of
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