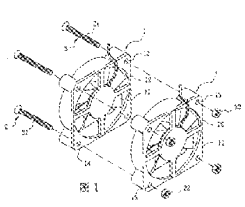
Legal events

Code	Title	Date	Country	Impact	Details
GR01	PATENT GRANT	2007-01-24	CN	+	
C14	GRANT OF PATENT OR UTILITY MODEL	2007-01-24	CN	+	
CF01	TERMINATION OF PATENT RIGHT DUE TO NON-PAYMENT OF ANNUAL FEE	2011-01-19	CN	-	Granted Publication Date 20070124 Termination Date 20091203
C17	CESSATION OF PATENT RIGHT	2011-01-19	CN	-	

Images



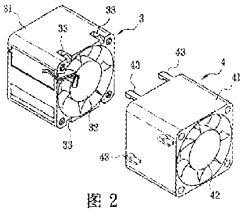
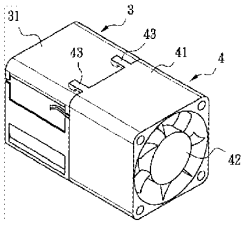
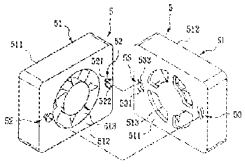
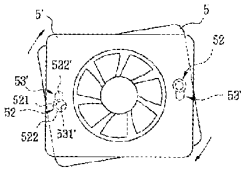
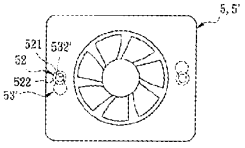


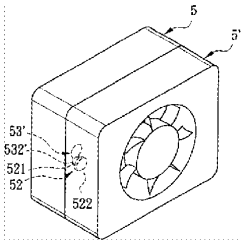
图 2

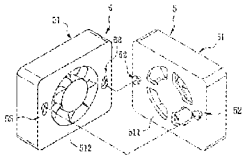


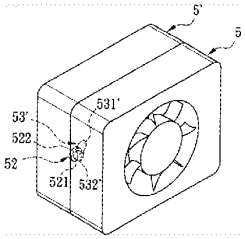


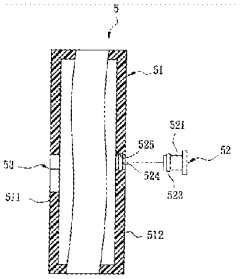












[19] 中华人民共和国国家知识产权局

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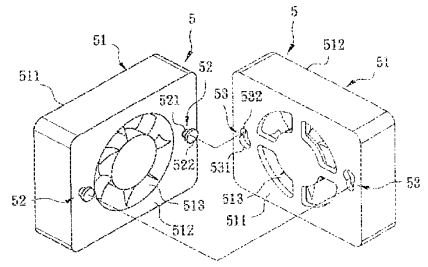
权利要求书 1 页 说明书 7 页 附图 7 页

[54] 实用新型名称

串联式风扇

[57] 摘要

一种串联式风扇，包含有一风扇本体、至少二设于该风扇本体上的接合件，及至少二设于该风扇本体上且可供该二接合件对应接合的承接部。每一接合件具有一卡柱，及一设于该卡柱上且截面积大于该卡柱的截面积的挡片。该二承接部皆具有一可供相对应的接合件的挡片穿置的穿置孔，及一连通该穿置孔且可供相对应的接合件的卡柱迫紧的定位孔。当欲接合二串联式风扇时，是使一串联式风扇的二接合件的挡片同时穿过另一串联式风扇的相对应承接部的穿置孔，再旋动该串联式风扇使该二接合件的卡柱旋入另一串联式风扇的相对应承接部的定位孔中，就可使该二串联式风扇迫紧接合而达到相互串联的目的。



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1.一种串联式风扇，包含有一风扇本体，该风扇本体具有一进风面，及一反向于该进风面的出风面，其特征在于：

该串联式风扇还包含有至少两个设于该风扇本体上的接合件，及至少两个设于该风扇本体上的承接部，该二接合件皆具有一卡柱，及一设于该卡柱上且截面积大于该卡柱的截面积的挡片，该二承接部分别与相对应的接合件接合，该二承接部皆具有一供相对应的接合件的挡片穿置的穿置孔，及一连通该穿置孔且供相对应的接合件的卡柱迫紧的定位孔，且该定位孔的孔径小于该穿置孔的孔径。

2. 如权利要求 1 所述的串联式风扇，其特征在于：

该二接合件是设于该风扇本体的出风面上，而该二承接部是设于该风扇本体的进风面上。

3. 如权利要求 2 所述的串联式风扇，其特征在于：

每一接合件还具有一设于该卡柱上的凸肋，而该风扇本体还具有两个设于该出风面上且分别供该二卡柱对应插设的插孔，及一设于该插孔的内壁面上且供该凸肋对应嵌置定位的嵌槽。

4. 如权利要求 1 所述的串联式风扇，其特征在于：

该二接合件是设于该风扇本体的进风面上，而该二承接部是设于该风扇本体的出风面上。

5. 如权利要求 4 所述的串联式风扇，其特征在于：

每一接合件还具有一设于该卡柱上的凸肋，而该风扇本体还具有两个设于该进风面上且分别供该二卡柱对应插设的插孔，及一设于该插孔的内壁面上且供该凸肋对应嵌置定位的嵌槽。

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串联式风扇

【技术领域】

本实用新型涉及一种风扇，特别是涉及一种串联式风扇。

【背景技术】

随着科技进步，许多电子元件皆已迈向小型化、高速度等设计特性，尤其电脑产品中的微处理器(CPU)，更是以更新更快的特点吸引消费者购买。但是愈高速运算的 CPU，产生的热量也会愈高，倘若无法即时迅速地将热量带离 CPU，往往会造成电脑当机，甚至 CPU 会因过热而损坏。针对此项缺点，将小型散热风扇安装于 CPU 上，已是相当普遍的设计。

但是小型散热风扇的缺点则是风量太小，无法应付CPU所产生的高热，另一方面，单一风扇也有可能发生故障的状况。目前一般散热技术是在一散热风扇上串联另一散热风扇，用以改善以上所述的缺点，然而如何以最简便、快速的组合方式予以串联散热风扇，已成为设计上的重点。

参阅图 1，一般串联式风扇装置，包含有二风扇 1 及多数螺合件 2。每一风扇 1 皆具有一扇体 11、一容置该扇体 11 的扇框 12，及多数设于该扇框 12 上的螺合孔 13。而每一螺合件 2 皆是由一螺栓 21 及一螺帽 22 所组成。当进行组装时，是先将该二风扇 1 重叠，并使该二风扇 1 的每一螺合孔 13 相互对应，再将所述螺合件 2 的螺栓 21 螺合入相互对应的二螺合孔 13 中，再以螺帽 22 锁设固定，而使该二风扇 1 达到相互串联的目的。

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然而，一般串联式风扇装置在组装过程中，必须对准每一螺合孔 13 才能进行锁设动作，导致组装速度缓慢，且必须借助螺合工具才能完成组装，对于使用者而言，组装过程较为繁复不便。

参阅图 2、3，另一种一般串联式风扇装置，包含有一第一风扇 3，及一第二风扇 4。该第一风扇 3 具有一第一框体 31、一第一扇轮 32，及多数设于该第一框体 31 上的第一结合件 33。而该第二风扇 4 具有一第二框体 41、一第二扇轮 42，及多数设于该第二框体 41 上且可分别与所述第一结合件 33 相互对应卡制的第二结合件 43。当进行组装时，同样是先将该第一、第二风扇 3、4 相互重叠，并借由第一、第二结合件 33、43 紧密地卡掣结合在一起，而达到该第一、第二风扇 3、4 相互串联的目的。

另一种一般串联式风扇装置虽然只需将该二风扇 3、4 的第一、第二结合件 33、43 对准并互相卡掣就可完成组装，过程快速且不需借助工具。然而，另一种一般串联式风扇装置却缺少串联组装时的防呆设计，使得组装时需使所述第一、第二结合件 33、43 处于精确的相对位置，使其互相对准方能组装完成，所以串联过程较为繁复、不便。倘若在未精确对准的状态下快速进行串联动作时，所述第二结合件 43 便容易碰撞该第一框体 31，而容易使得所述第二结合件 43 折断损坏。此外，由于所述第一、第二结合件 33、43 互相结合时，是一并显露于该第一框体 31 与第二框体 41 的外侧缘，视觉上便显得较不美观。

【实用新型内容】

本实用新型的目的是为了提供一种可使串联过程较为简便快速，且串联完成后较为美观的串联式风扇。

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为达到上述目的，本实用新型串联式风扇，包含有一风扇本体，该风扇本体具有一进风面，及一反向于该进风面的出风面，其特征在于：

该串联式风扇还包含有至少两个设于该风扇本体上的接合件，及至少两个设于该风扇本体上的承接部，该二接合件皆具有一卡柱，及一设于该卡柱上且截面积大于该卡柱的截面积的挡片，该二承接部分别与相对应的接合件接合，该二承接部皆具有一供相对应的接合件的挡片穿置的穿置孔，及一连通该穿置孔且供相对应的接合件的卡柱迫紧的定位孔，且该定位孔的孔径小于该穿置孔的孔径。

当欲接合二串联式风扇时，是使一串联式风扇的二接合件的挡片同时穿过另一串联式风扇的相对应承接部的穿置孔，再旋动该串联式风扇使该二接合件的卡柱旋入另一串联式风扇的相对应承接部的定位孔中，就可使该二串联式风扇相互迫紧接合，达到相互串联的目的，其串联组装过程轻易快速，并且该二串联式风扇的接合处不会显露于外侧，于视觉上也显得较为美观。

【附图说明】

下面通过较佳实施例及附图对本实用新型串联式风扇进行详细说明，附图中：

图 1 是一立体分解图，说明一般串联式风扇装置。

图 2 是一立体分解图，说明另一种一般串联式风扇装置。

图 3 是一立体组合图，说明另一种一般串联式风扇装置的组装结合态样。

图 4 是一立体图，说明本实用新型串联式风扇的第一较佳实施例的整体构造，图中同时显示该串联式风扇的二接合

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件与二承接部。

图 5 是一前视图，说明该第一较佳实施例的串联动作。

图 6 是一前视图，说明该第一较佳实施例完成串联后的状态。

图 7 是图 6 的一立体图。

图 8 是一立体图，说明本实用新型串联式风扇的第二较佳实施例的整体构造，图中同时显示该串联式风扇的二接合件与二承接部。

图 9 是一立体图，说明该第二较佳实施例完成串联后的状态。

图 10 是一局部剖视图，说明本实用新型串联式风扇的第三较佳实施例。

【具体实施方式】

在本实用新型被详细描述前，要注意的是，在以下的说明中，类似的元件是以相同的编号来表示。

参阅图 4，本实用新型串联式风扇 5 的第一较佳实施例，是包含一风扇本体 51、二接合件 52，及二承接部 53。

该风扇本体 51 概呈一矩形，具有一进风面 511、一反向于该进风面 511 的出风面 512，及一贯通该进风面 511 与出风面 512 的通风口 513，借使气流可由该进风面 511 方向流入，并由该出风面 512 方向流出。

在本实施例中，该二接合件 52 是分别设置于该风扇本体 51 的出风面 512 的两侧上。每一接合件 52 皆具有一设于该出风面 512 上的卡柱 521，及一设于该卡柱 521 上且截面积大于该卡柱 521 截面积的挡片 522。

该二承接部 53 是分别设置于该风扇本体 51 的进风面 511 的两侧上且可供该二接合件 52 对应接合。每一承接部

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53 皆具有一可供相对应的接合件 52 的挡片 522 穿置的穿置孔 531，及一连通该穿置孔 531 而可供相对应的接合件 52 的卡柱 521 迫紧的定位孔 532，且该定位孔 532 的孔径小于该穿置孔 531 的孔径。

参阅图 5，当欲接合二串联式风扇 5、5'时，是使一串联式风扇 5 的二接合件 52 的挡片 522 同时穿过另一串联式风扇 5'的相对应承接部 53'的穿置孔 531'。由于该二接合件 52 与另一串联式风扇 5'的该二承接部 53'是位于同一圆周上，因此，当如图 5 中所示的箭头方向略为旋动该串联式风扇 5 时，就可使该二接合件 52 的卡柱 521 同时离开相对应承接部 53'的穿置孔 531'，而分别对应旋入该二定位孔 532'中。

配合参阅图 6、7，此时该二接合件 52 的卡柱 521 是分别迫紧定位于相对应承接部 53'的定位孔 532'中，而该二接合件 52 的挡片 522 则分别定位于该二定位孔 532'之外。借此接合方式，就可使该二串联式风扇 5、5'迫紧接合而达到相互串联的目的。

参阅图 8，本实用新型串联式风扇 5 的第二较佳实施例，同样是包含一风扇本体 51、二接合件 52，及二承接部 53。与第一较佳实施例不同之处在于：该二接合件 52 是分别设置于该风扇本体 51 的进风面 511 的两侧上，而该二承接部 53 则是分别设置于该风扇本体 51 的出风面 512 的两侧上。

配合参阅图 9，当欲接合二串联式风扇 5、5'时，同样是使一串联式风扇 5 的二接合件 52(图中只显示其一)的挡片 522 同时穿过另一串联式风扇 5'的相对应承接部 53'的穿置孔 531'，再使该二接合件 52 的卡柱 521 对应旋入另一串联式风扇 5'的相对应承接部 53'的定位孔 532'中，就可使

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该二串联式风扇 5、5'迫紧接合而达到相互串联的目的。

参阅图 10，本实用新型串联式风扇 5 的第三较佳实施例同样是包含一风扇本体 51、二接合件 52，及二承接部 53(图中为方便说明，只显示出一个接合件 52 与一个承接部 53)。与该第一较佳实施例不同之处在于：每一接合件 52 还具有一环设于该卡柱 521 上的凸肋 523。该风扇本体 51 还具有二设于该出风面 512 上而可分别供该二卡柱 521 对应插设的插孔 524(图中只显示其一)，及一设于该插孔 524 内壁面而可供该凸肋 523 对应嵌置定位的嵌槽 525，并使该卡柱 521 插入所对应的插孔 524 内时，可局部突出于插孔 524 外侧。当欲使用单一串联式风扇 5 时，就可分别将该二接合件 52 自所对应的插孔 524 中拔离而使该出风面 512 维持平整的形态，不但可使外表较为美观，还可以降低该串联式风扇 5 的整体厚度。

在本实施例中，该二接合件 52 是分别插设于该风扇本体 51 的出风面 512 的两侧上，该二承接部 53 则分别设置于该风扇本体 51 的进风面 511 的两侧上，于实施实际时，也可以将该二插孔 524 及位于该二插孔 524 内壁面的嵌槽 525 设于该风扇本体 51 的进风面 511 的两侧，使该二接合件 52 可分别插设于该进风面 511 上，相对地，该二承接部 53 则分别设置于该出风面 512 的两侧上，所以不应以本实施例的说明为限。

本实用新型串联式风扇 5 借由前述的设计，可在实际接合作业上，视组设的环境需求，另外再串联多数个串联式风扇 5，以延长进出气流的流道。

续前所述，本实用新型串联式风扇 5 于进行串联作业上，可使一串联式风扇 5 的二接合件 52 的挡片 522 轻易、

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快速地穿伸入另一串联式风扇 5'的相对应承接部 53'的穿置孔 531'内，再借由旋转该串联式风扇 5，使该二接合件 52 的卡柱 521 同时旋入另一串联式风扇 5'的相对应承接部 53'的定位孔 532'中，就可使该二串联式风扇 5、5'相互迫紧接合而能简便快速地达到相互串联的目的，此外，当该二串联式风扇 5、5'相互串联之后，其接合处不会显露于外侧，于视觉上也显得较为美观，确实能达到本实用新型的目的。

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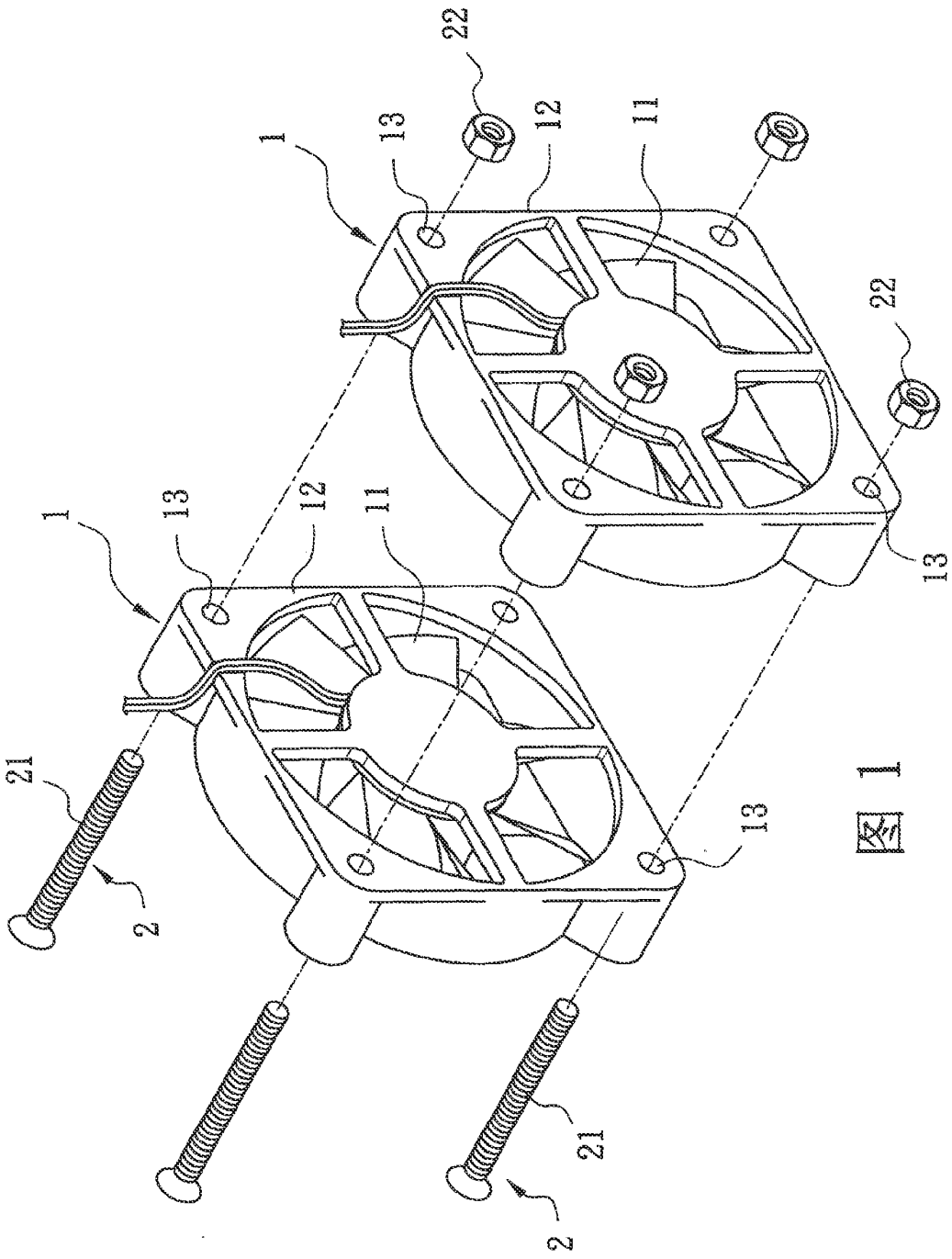


图 1

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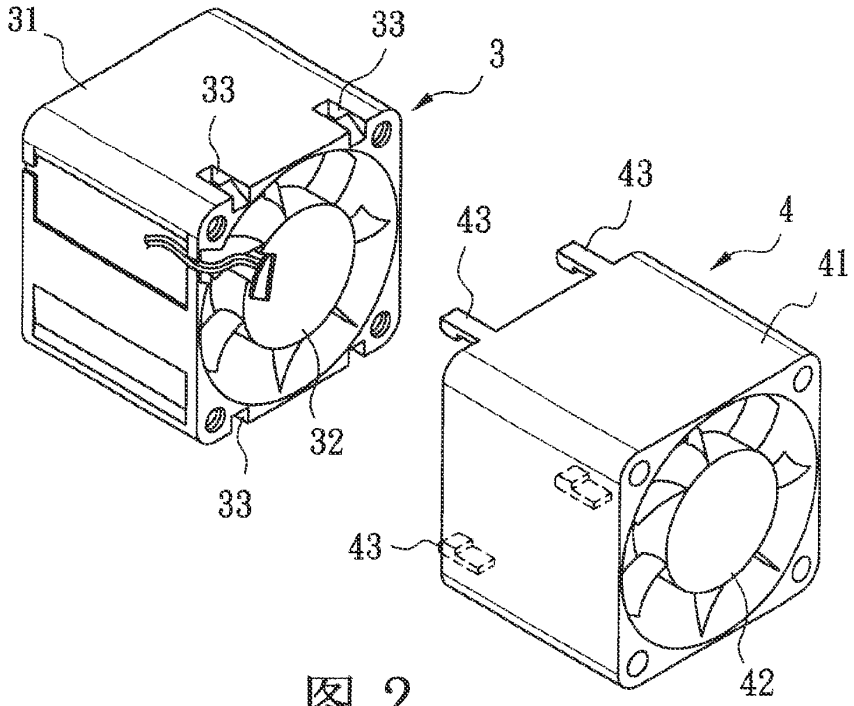


图 2

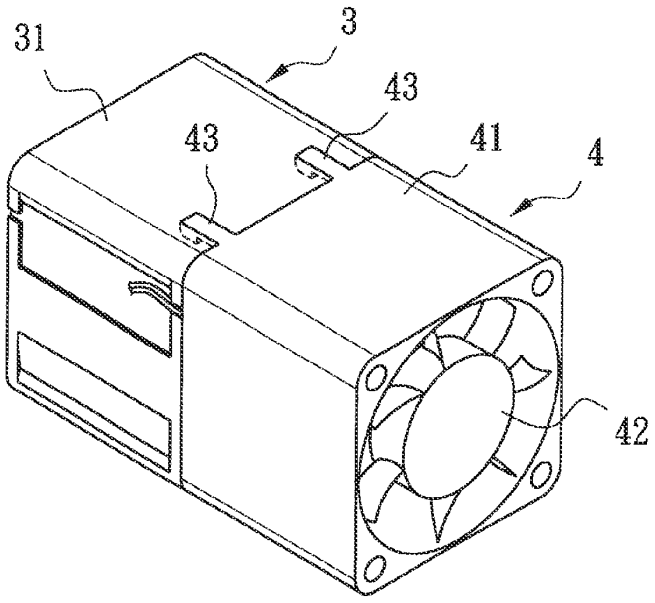


图 3

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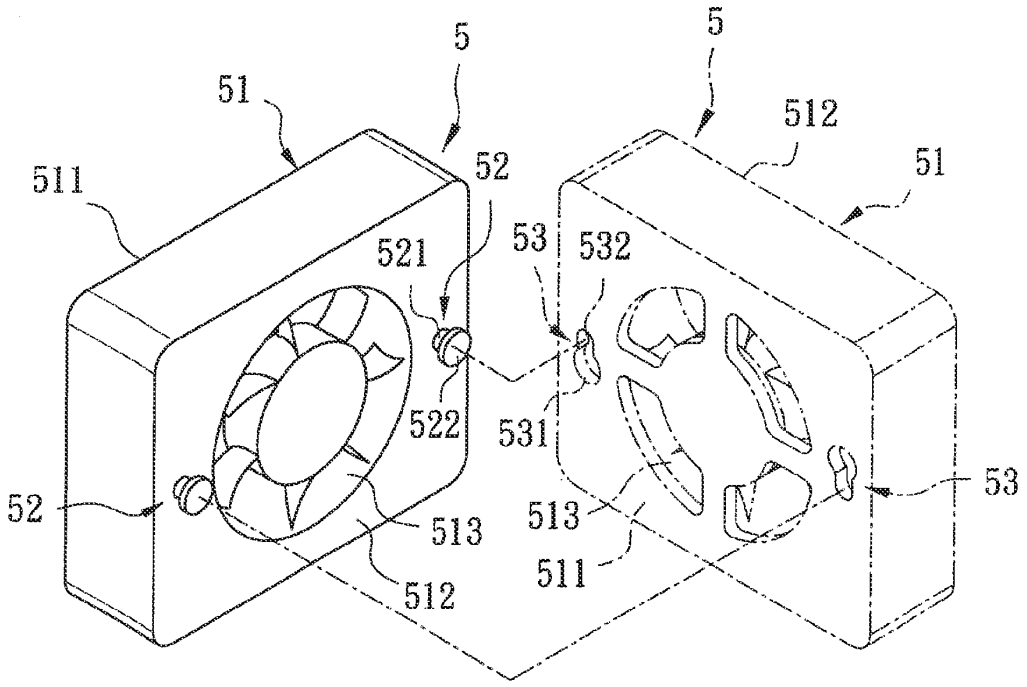


图 4

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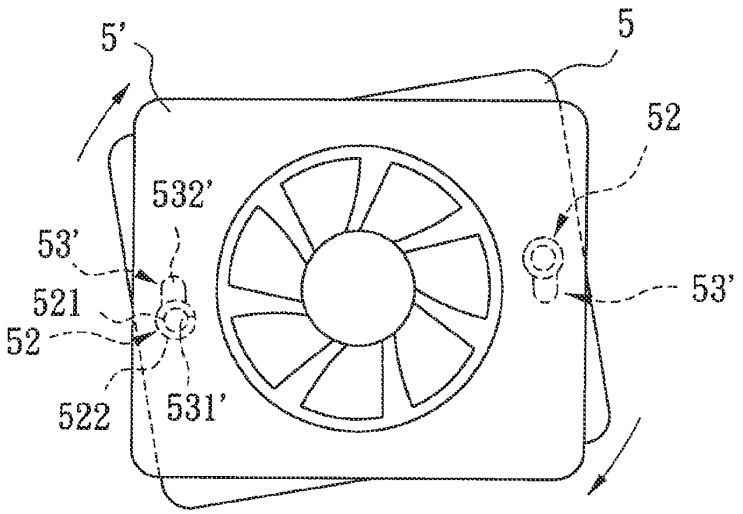


图 5

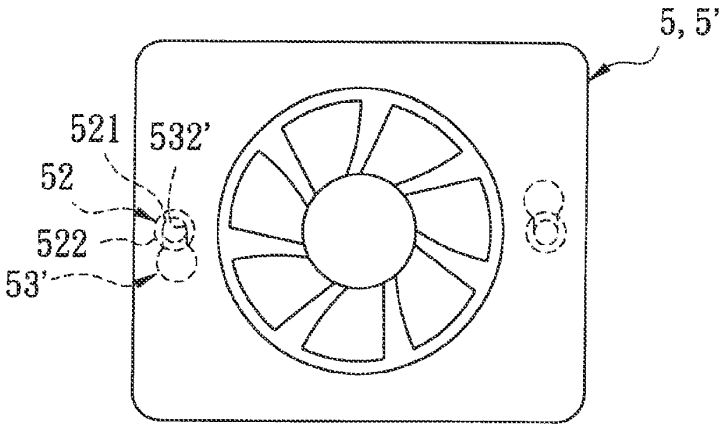


图 6

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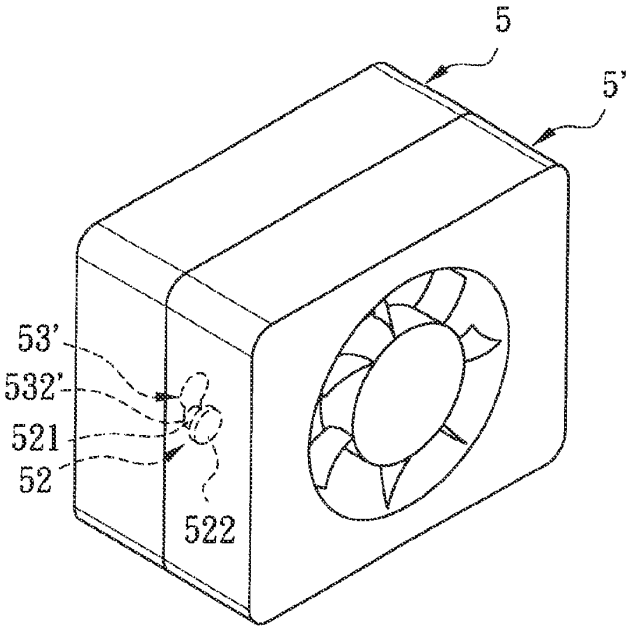


图 7

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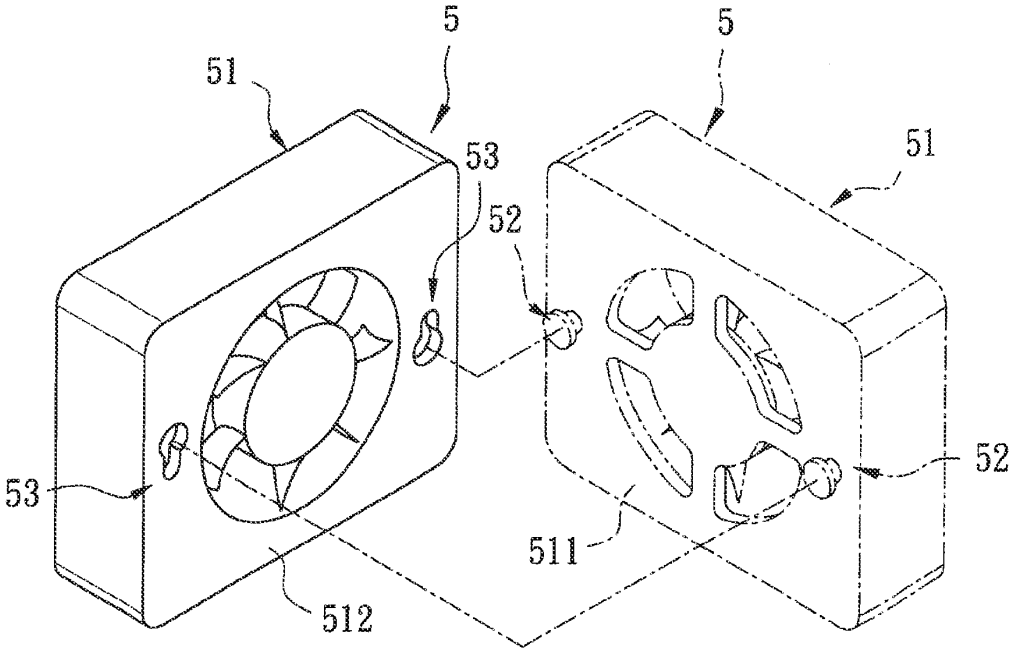


图 8

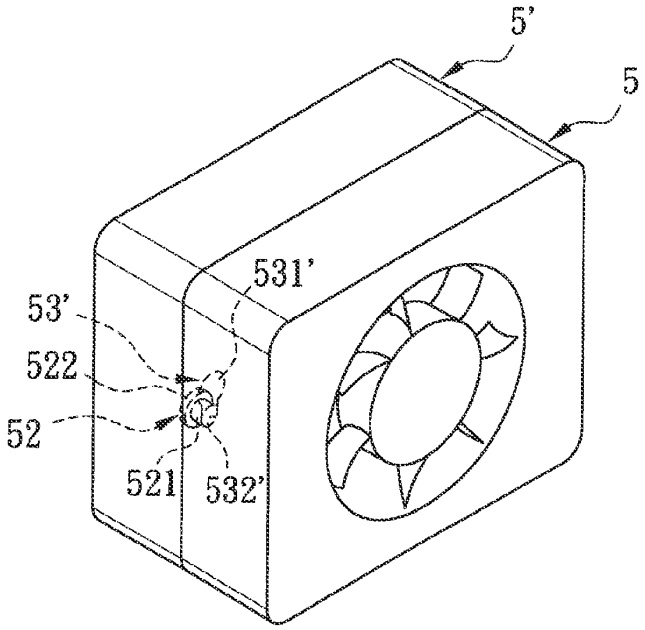


图 9

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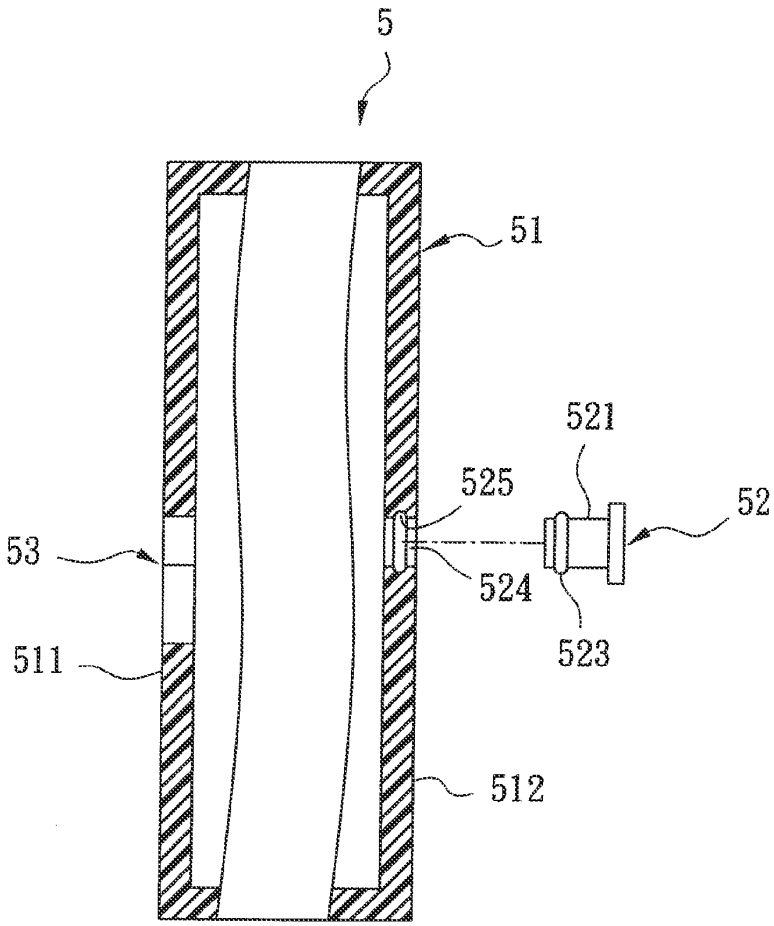


图 10

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EXHIBIT 1006

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(74) Patent Agency: UNITALEN ATTORNEYS AT LAW

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(51)Int .Cl .

F04D 25/08(2006 .01)

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F21V 33/00(2006 .01)

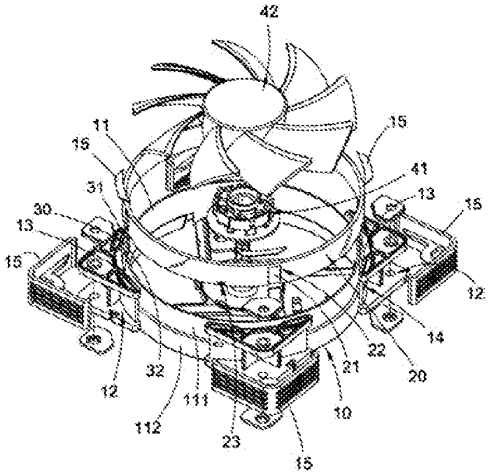
F21Y 115/10(2016 .01)

Claim Sheets: 1 Specification Sheets: 4 Drawing Sheets: 4

(54)Title of Utility Model: LIGHT EMITTING STRUCTURE OF HEAT DISSIPATION FAN

(57) Abstract

The subject utility model provides a light emitting structure of a heat dissipation fan that includes a frame, a light guiding ring and a light emitting unit. The frame is used to bear a motor and a fan blade, and the frame includes a central frame in an annular shape and a side rack located at an outer side of the central frame. The light guiding ring is a translucent assembly in an annular shape, and the light guiding ring sheathes the central frame and disposed between the central frame and the side rack. The light emitting unit includes a circuit board and a light emitting diode. One side of the light guiding ring facing the side rack has a recess where the light emitting unit is mounted. A light emitting direction of the light emitting diode is towards the light guiding ring, thus an even and annular illuminating visual effect is generated by the light guiding ring.



Claims

1. A light emitting structure of a heat dissipation fan, characterized in comprising: a frame, a light guiding ring, and a light emitting unit;

the frame, comprising a central frame in an annular shape and a side rack disposed at an outer side of the central frame, wherein the central frame comprises an upper segment part and a lower segment part;

the light guiding ring, being a translucent assembly in an annular shape and sheathing an outer side of the upper segment part of the central frame and disposed between the central frame and the side rack; and

the light emitting unit, comprising a circuit board and at least one light emitting diode electrically connected to a surface of the circuit board;

wherein one side of the light guiding ring, which faces the side rack, comprises a recess, the light emitting unit is embedded in the recess, a light emitting direction of the light emitting diode is directed toward the light guiding ring, the side rack comprises a socket electrically connected to a power source, the circuit board of the light emitting unit is inserted in the socket and electrically connected to the socket.

2. The light emitting structure of the heat dissipation fan according to claim 1, characterized in that the central frame is a assembly in a ring shape.

3. The light emitting structure of the heat dissipation fan according to claim 1, characterized in that an outer surface of the light guiding ring comprises a plurality of protruding reversed hooks, the side rack has a latching hole disposed at a location corresponding to the reversed hooks, and the light guiding ring is latched in the latching hole via the reversed hooks.

4. The light emitting structure of the heat dissipation fan according to claim 1, characterized in that the light guiding ring sheathes the outer side of the upper segment part of the central frame with a tightening manner.

5. The light emitting structure of the heat dissipation fan according to claim 1, characterized in that the light guiding ring is fastened at the outer side of the upper segment part of the central frame by an adhesive.

6. The light emitting structure of the heat dissipation fan according to claim 1, characterized in that the light emitting diode is a side-emitting light emitting diode, and the side-emitting light emitting diode is electrically connected to the surface of the circuit board by a surface mount technology.

7. The light emitting structure of the heat dissipation fan according to claim 1, characterized in that the circuit board comprises an electrode electrically connected to the light emitting diode, the circuit board of the light emitting unit is electrically connected to the socket via the electrode when being inserted in the socket.

8. The light emitting structure of the heat dissipation fan according to claim 1,

characterized in that the frame comprises a plurality of light shielding sheets, the light shielding sheets are opaque and attached at an outer side of the side rack of the frame and attached on a top surface of the side rack corresponding to a location of the light emitting unit.

LIGHT EMITTING STRUCTURE OF HEAT DISSIPATION FAN

TECHNICAL FIELD

[0001] The present utility model relates to a heat dissipation fan, especially to a light emitting structure of a heat dissipation fan capable of providing an annular illuminating visual effect.

BACKGROUND

[0002] With the personal computer being prevail and the information technology being developed, the function of the personal computer has not longer just been a business-related machine, the personal computer becomes a multimedia displaying device and recreational entertainment equipment with the abundant peripheral devices and high-resolution audio/video outputting equipment.

[0003] There are a lot of related-art cases or mainframes of the personal computers made of a translucent material, for example acrylic, or formed in a hollow structure. The cases or mainframes may be provided with a light strip having light emitting diodes capable of emitting various colors or full color light emitting diode bolts, thus the personal computer is provided with a prettified and colorful appearance.

[0004] For providing a dynamic and colorful illuminating effect to the related-art personal computer, one of the methods is to dispose multi-color light emitting diodes, a light strip or full color light emitting diode bolts on a heat dissipation fan of the personal computer, for example Taiwan Patent Registration No. M334280 titled as “The structure of decorative LED light for electric fan”, Taiwan Patent Registration No. M346250 titled as “Light-emitting fan device”, and Taiwan Patent Registration No. M260084 titled as “Light-emitting heat-dissipation fan” have all disclosed a heat dissipation fan having a light emitting effect. The aforesaid technical characteristics is to dispose at least one light emitting diode on a fan frame or a fan rib of the heat dissipation fan. As such, a heat dissipation fan having an illuminating effect is provided by lights emitted by the light emitting diode being directly radiated on a fan blade of the heat dissipation fan. However, the aforesaid technical characteristics mostly adopt a manner of the lights being directly radiated on the fan blade or the fan frame, and only a partial illuminating effect or the illuminating effect is only provided at a certain location.

[0005] Taiwan Patent Registration No. M526006 titled as "Assembling structure of light emitting fan device" has disclosed a flexible circuit board distributed with a plurality of light emitting diodes surrounding a fan blade of a fan, wherein lights emitted by the light emitting diodes are directly radiated on the rotating fan blade, thus a dynamic light and shade variation is generated, and a stable uniform illuminating effect may not be provided.

[0006] Taiwan Patent Registration No. M444697 titled as "Heat dissipation fan with uniform lighting" has disclosed a lighting unit annularly disposed at a periphery of an airflow channel of a fan frame. An accommodation part allowing a light emitting diode to be accommodated is disposed in the airflow channel of the fan frame, wherein the accommodation part is formed with an angle relative to a tangent of the airflow channel, and lights emitted by the light emitting diode is transferred by a light guiding unit to form a lighting ring. Wherein, the light emitting diode is quired to be connected to an electric wire by a relater-art electrical connecting means, thus the assembly is labor costing and inconvenient.

SUMMARY

[0007] The present utility model is to a light emitting structure of a heat dissipation fan, which has advantages of providing an annular illuminating visual effect, easy to be assembled and lowering the production cost.

[0008] Accordingly, the present utility model provides a light emitting structure of a heat dissipation fan, which includes a frame, a light guiding ring and a light emitting unit. The frame includes a central frame in an annular shape and a side rack disposed at an outer side of the central frame. The central frame includes an upper segment part and a lower segment part. The light guiding ring is a translucent assembly formed in an annular shape. The light guiding ring sheathes an outer side of the upper segment part of the central frame and disposed between the central frame and the side rack. The light emitting unit includes a circuit board and a light emitting diode electrically connected to a surface of the circuit board. One side of the light guiding ring, which faces the side rack, has a recess. The light emitting unit is embedded in the recess. A light emitting direction of the light emitting diode is directed toward the light guiding ring, thus an even and annular illuminating visual effect is generated by the light guiding ring. The side rack has a socket electrically connected to a power source. The circuit board of the light emitting unit is inserted in the socket and electrically connected to the socket.

[0009] Wherein, an outer surface of the light guiding ring has a plurality of protruding reversed hooks. The side rack has a latching hole disposed at a location corresponding to the reversed hooks, thus the light guiding ring is latched in the latching hole via the reversed hooks.

[0010] Wherein, the light guiding ring is sheathed at an outer side of the upper segment part of the central frame with a tightening manner.

[0011] According to some embodiments, the light guiding ring is fastened at a location between the central frame and the side rack by utilizing an adhesive.

[0012] Wherein, the light emitting diode of the light emitting unit is a side-emitting light emitting diode, and the side-emitting light emitting diode is electrically connected to a surface of the circuit board by a surface mount technology (SMT).

[0013] Wherein, the circuit board of the light emitting unit has an electrode electrically connected to the light emitting diode, the circuit board is electrically connected to the socket via the electrode when the circuit board of the light emitting unit is inserted in the socket.

[0014] Wherein, the frame further includes a plurality of light shielding sheets used for avoiding a problem of lights emitted by the light emitting unit leaking from the frame.

[0015] Regarding the specific embodiments and other advantages and effects of the present utility model, the following will be described with reference to the drawings

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] The features of the disclosure believed to be novel are set forth with particularity in the appended claims. The disclosure itself, however, may be best understood by reference to the following detailed description of the disclosure, which describes a number of exemplary embodiments of the disclosure, taken in conjunction with the accompanying drawings, in which:

[0017] FIG. 1 is a perspective view showing the light emitting structure of the heat dissipation fan according to one embodiment of the present disclosure;

[0018] FIG. 2 is a perspective exploded view of FIG. 1;

[0019] FIG. 3 is another perspective exploded view of FIG. 1; and

[0020] FIG. 4 is a cross sectional view of FIG. 1.

[0021] DESCRIPTION OF THE MAIN COMPONENTS

[0022]	10	frame	11	central frame
[0023]	111	upper segment part	112	lower segment part
[0024]	12	side rack	13	socket
[0025]	14	latching hole	15	light shielding sheets
[0026]	20	light guiding ring	21	light inputting surface
[0027]	22	recess	23	reversed hooks
[0028]	30	light emitting unit	31	circuit board
[0029]	32	light emitting diode	33	electrode
[0030]	41	motor	42	fan blade

DETAILED DESCRIPTION

[0031] It is to be understood that the terms for indicating positions and the location relation, for example “front”, “rear”, “left”, “right”, “front end”, “rear end”, “distal end”, “vertical”, “horizontal”, “top end” and “bottom end”, are based on the positions and the location relation disclosed in the drawings, and only used for disclosing the present disclosure and not used for indicating or implying the specified location of the device or the components or the specified structure and operation in certain location, thus the present disclosure is not intended to be limiting.

[0032] Please refer from FIG. 1 to FIG. 3, wherein FIG. 1 is a perspective view showing the light emitting structure of the heat dissipation fan according to one embodiment of the present disclosure; FIG. 2 is a perspective exploded view of FIG. 1; and FIG. 3 is another perspective exploded view of FIG. 1. According to one embodiment of the present utility model, a light emitting structure of a heat dissipation fan is provided. The light emitting structure of the heat dissipation fan includes a frame 10, a light guiding ring 20 and a light emitting structure 30.

[0033] The frame 10 includes a central frame 11 in an annular shape and a side rack 12 disposed at an outer side of the central frame 11. The frame 11 is used to bear a motor 41 and a fan blade 42. The side rack 12 is symmetrically arranged at four corners with respect to the center of the central frame 11. The central frame 11 is an assembly in an annular shape. Preferably, the central frame 11 is a assembly in a ring shape, the motor 41 and the fan blade 42 are disposed at a central location of the central frame 11, and the central frame 11 has an upper segment part 111 and a lower segment part 112.

[0034] The light guiding ring 20 is a translucent assembly in an annular shape. The light guiding ring 20 sheathes an outer side of the upper segment part 111 of the central frame 11 and disposed between the central frame 11 and the side rack 12. The light guiding ring 20 is made of a translucent material. The material of the light guiding ring 20 may include any kind of the light guiding material including acrylic and polyvinyl chloride (PVC). An outer surface (a surface facing the side rack 12) of the light guiding ring 20 has a light inputting surface 21. The light emitting unit 30 is disposed on the frame 10 and arranged between the light inputting surface 21 and the side rack 12. The light emitting unit 30 includes a circuit board 31and a light emitting diode 32 electrically connected to a surface of the circuit board 31. The amount of the light emitting diode 32 is equal to or more than one. Lights emitted by the light emitting diode 32 enter the light guiding ring 20 via the light inputting surface 21, thus the light guiding ring 20 provides a visual effect with an annular illuminating manner. Preferably, the frame 10 is an opaque assembly. The light guiding ring 20 sheathes the outer side of the upper segment part 111 of the central frame 11, thus the lights of the light guiding ring 20 collectively illuminate toward outside with the opaque upper segment part 111 served as a background to increase the light emitting uniformity.

[0035] In one embodiment, the light guiding ring 20 sheathes the central frame 11, and an outer surface (a surface facing the side rack 12) of the light guiding ring 20 has a plurality of protruding reversed hooks 23. The side rack 12 has a latching hole 14 disposed at a location corresponding to the reversed hooks 23, thus the light guiding ring 20 is latched in the latching hole 14 via the reversed hooks 23. In other embodiments, the light guiding ring 20 sheathes the outer side of the upper segment part 111 of the central frame 11 with a tightening manner. In other embodiments, the light guiding ring 20 is fastened at a location between the central frame 11 and the side rack 12 by an adhesive.

[0036] Preferably, an outer surface (a surface facing the side rack 12) of the light guiding ring 20 has a recess 22. A bottom surface of the recess 22 is defined as the light inputting surface 21, the light emitting unit 30 is embedded in the recess 22, and a light emitting direction of the light emitting diode 32 is directed toward the light inputting surface 21. Preferably, the light emitting diode 32 of the light emitting unit 30 is a side-emitting light emitting diode. The side-emitting light emitting diode is electrically connected to a surface of the circuit board 31 with a surface mount technology (SMT). Lights emitted by the side-emitting light

emitting diode enter the light guiding ring 20 via the light inputting surface 21. With the light guiding ring 20, an even and annular illuminating visual effect is generated.

[0037] In one preferable embodiment, the side rack 12 is disposed with a socket 13 electrically connected to a power source. The circuit board 31 of the light emitting unit 30 is inserted in the socket 13 and electrically connected to the socket 13. In one embodiment, the circuit board 31 of the light emitting unit 30 has an electrode 33 (for example a gold finger) electrically connected to the light emitting diode 32 (as shown in FIG. 4). After the circuit board 31 of the light emitting unit 30 is inserted in the socket 13, the circuit board 31 is electrically connected to the socket 13 via the electrode 33, thus the socket 13 is connected to a power input end of the motor 41 to be provided with the power supply via a conductive wire (not shown in figures) and a wire slot formed at a backside of the frame 10. With the aforesaid inserting structural design, the light emitting unit 30 is easy to be assembled. The light emitting unit 30 capable of emitting lights with different colors is easy to be used for replacement, thus the heat dissipation fan is capable of emitting lights with various colors is produced.

[0038] Preferably, the frame 10 further includes a plurality of light shielding sheets 15. In one embodiment, all the light shielding sheets 15 are an opaque rubber sheet. The light shielding sheet 15 is attached at an outer side of the side rack 12 of the frame 10, and attached on a top surface of the side rack 12 corresponding to the location of the light emitting unit 30, thus a light leaking problem of the lights emitted by the light emitting unit 30 leaking from the frame 10 is avoided.

[0039] While this utility model has been described by means of specific embodiments, numerous modifications and variations could be made thereto by those skilled in the art without departing from the scope and spirit of this utility model set forth in the claims.

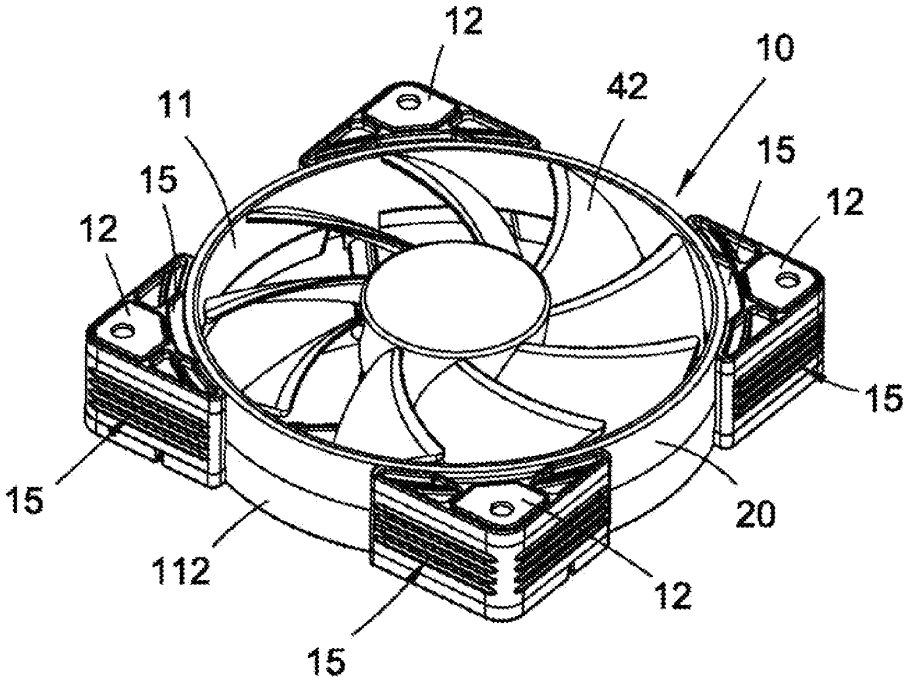


FIG. 1

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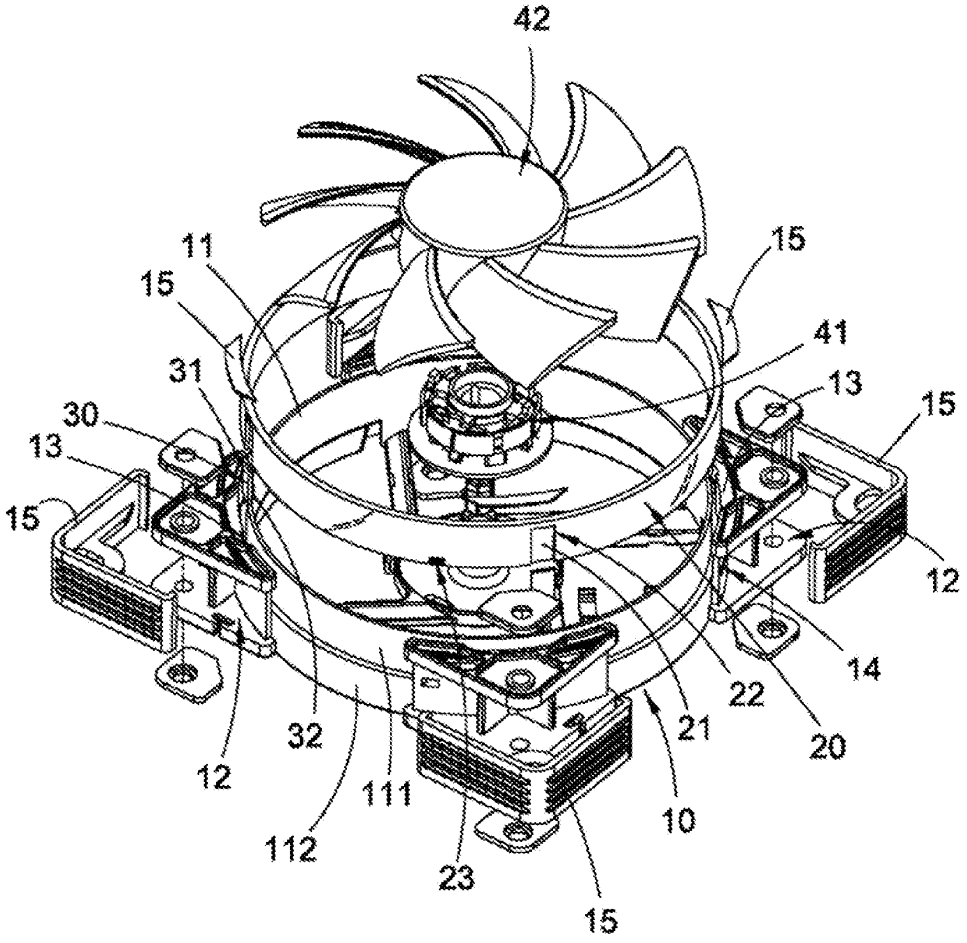


FIG. 2

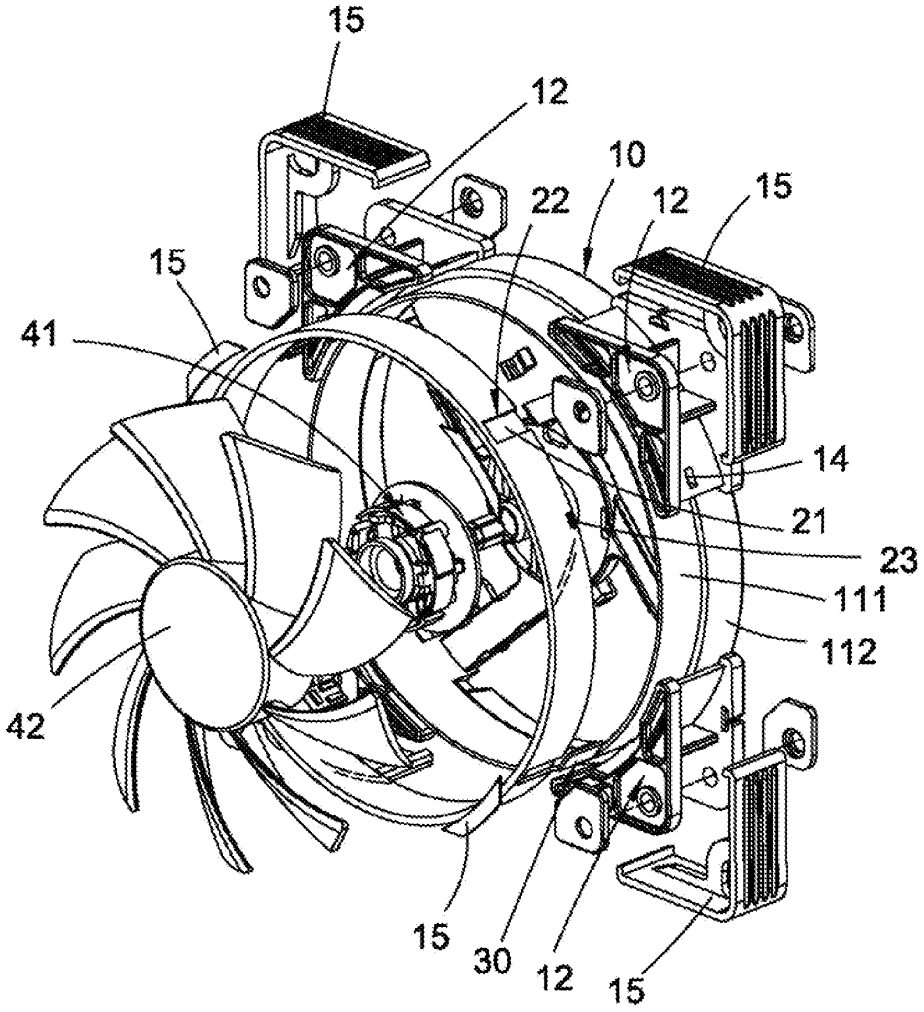


FIG. 3

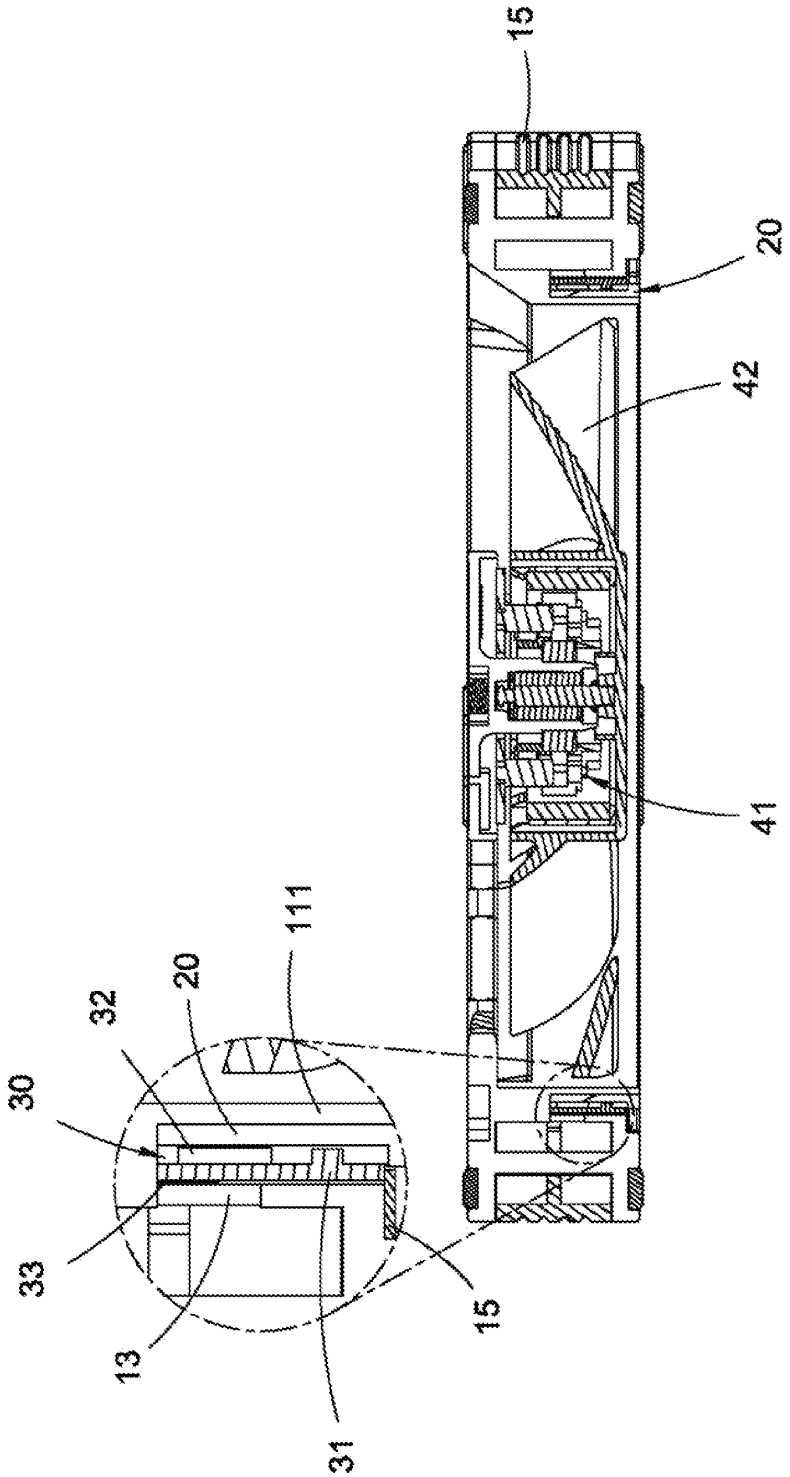


FIG. 4

VERIFICATION OF TRANSLATION

CN Utility Model Patent No. CN207064277U
TITLE: LIGHT EMITTING STRUCTURE OF HEAT DISSIPATION FAN

I (name and address of translator) Thomas LIAO
12F., No. 107, Sec. 2, Roosevelt RD., Taipei 106, Taiwan (R.O.C.)

am the translator of the English specification of the above-mentioned CN Utility Model Patent and I state that the attached specification is a true and accurate translation to the best of my knowledge and belief.

Signature of translator : Thomas Liao

Date : 17/JAN/2024

(19) 대한민국특허청(KR)
(12) 등록실용신안공보(Y1)

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(43) 공개일자 2020년07월07일
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107217659 2018년12월26일 대만(TW)
(56) 선행기술조사문헌
JP2018041147 A*
US20070007831 A1*
*는 심사관에 의하여 인용된 문헌

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청운특허법인

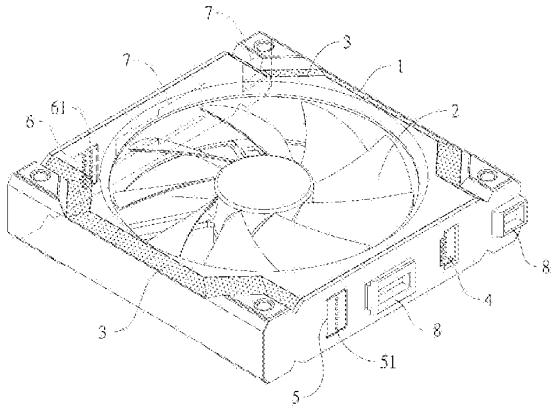
전체 청구항 수 : 총 4 항 심사관 : 한현명

(54) 고안의 명칭 **컴퓨터를 위한 적어도 하나의 조명 팬과 연결할 수 있는 조명 팬**

(57) 요 약

컴퓨터를 위한 적어도 하나의 조명 팬과 연결될 수 있는 조명 팬은 바디, 바디의 중심에 제공된 팬, 상기 바디의 정상에서 팬의 적어도 두 측면 상의 조명 구역, 상기 바디의 한 측면 상의 파워 소켓 및 제1 커넥터, 및 바디의 다른 측면 상의 제2 커넥터를 포함한다. 파워 소켓은 제1 커넥터, 제2 커넥터, 팬 및 조명 구역과 전기적으로 연결된다. 파워 소켓에 전력이 공급되면, 바디의 팬 및 조명 구역 각각은 회전 구동되고 조명되며, 바디의 제1 커넥터가 다른 조명 팬의 바디의 제2 커넥터와 연결되면, 다른 조명 팬의 바디의 팬 및 조명 구역이 각각 회전 구동 및 조명된다.

대 표 도 - 도1



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명 세 서

청구범위

청구항 1

컴퓨터를 위한 적어도 하나의 조명 팬과 연결될 수 있는 조명 팬으로서, 상기 조명 팬은:

바디, 상기 바디의 중심에 제공된 팬, 상기 바디의 정상에서 상기 팬의 적어도 두 측면 상의 조명 구역, 상기 바디의 한 측면 상의 파워 소켓 및 제1 커넥터, 및 상기 바디의 다른 측면 상의 제2 커넥터를 포함하고,

상기 파워 소켓은 제1 커넥터, 제2 커넥터, 팬 및 조명 구역과 전기적으로 연결되어, 상기 바디의 한 측면 상의 파워 소켓에 전력이 공급되면, 바디의 팬 및 조명 구역 각각이 회전 구동 및 조명되고, 상기 바디의 제1 커넥터가 다른 조명 팬의 바디의 제2 커넥터와 연결되면, 다른 조명 팬의 바디의 팬 및 조명 구역 각각이 회전 구동 및 조명되고,

상기 조명 팬의 바디의 한 측면에 홈이 제공되고, 상기 홈과 맞물리도록 다른 측면 상에 결합 블록이 제공되어, 상기 조명 팬의 바디의 홈이 다른 조명 팬의 바디의 결합 블록과 맞물릴 때, 상기 조명 팬의 바디가 다른 조명 팬의 바디와 연결되는, 컴퓨터를 위한 적어도 하나의 조명 팬과 연결될 수 있는 조명 팬.

청구항 2

청구항 1에 있어서,

상기 제1 커넥터에 전기 전도 터미널이 제공되고, 상기 전기 전도 터미널에 전기적으로 연결되기 위해 제2 커넥터에 전기 전도 접촉 표면이 제공되어, 상기 조명 팬의 바디의 제1 커넥터가 다른 조명 팬의 바디의 제2 커넥터와 연결되면, 다른 조명 팬의 바디의 팬 및 조명 구역 각각이 회전 구동 및 조명되는, 컴퓨터를 위한 적어도 하나의 조명 팬과 연결될 수 있는 조명 팬.

청구항 3

청구항 1에 있어서,

상기 조명 팬의 바디가 다른 조명 팬의 바디와 연결되면, 상기 두 바디의 조명 구역은 연속하는 조명 구역을 형성하는, 컴퓨터를 위한 적어도 하나의 조명 팬과 연결될 수 있는 조명 팬.

청구항 4

컴퓨터를 위한 적어도 하나의 조명 팬과 연결될 수 있는 조명 팬으로서, 상기 조명 팬은:

바디, 상기 바디의 중심에 제공된 팬, 상기 바디의 정상에서 상기 팬의 적어도 두 측면 상의 조명 구역, 상기 바디의 한 측면 상의 파워 소켓 및 제1 커넥터, 및 상기 바디의 다른 측면 상의 제2 커넥터를 포함하고,

상기 파워 소켓은 제1 커넥터, 제2 커넥터, 팬 및 조명 구역과 전기적으로 연결되어, 상기 바디의 한 측면 상의 파워 소켓에 전력이 공급되면, 바디의 팬 및 조명 구역 각각이 회전 구동 및 조명되고, 상기 바디의 제1 커넥터가 다른 조명 팬의 바디의 제2 커넥터와 연결되면, 다른 조명 팬의 바디의 팬 및 조명 구역 각각이 회전 구동 및 조명되고,

상기 조명 팬의 바디의 두 측면 상에 홈이 제공되고, 결합 블록이 조명 팬의 바디의 측면 상에 홈 중 하나 및 다른 조명 팬의 바디의 측면 상의 홈 중 하나와 각각 맞물려서 조명 팬의 바디가 다른 조명 팬의 바디와 연결되는, 컴퓨터를 위한 적어도 하나의 조명 팬과 연결될 수 있는 조명 팬.

청구항 5

삭제

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고안의 설명

기 술 분 야

[0001] 본 발명은 컴퓨터를 위한 적어도 하나의 조명 팬과 연결할 수 있는 조명 팬에 대한 것으로, 구조적으로 단순하며 구체적으로는 데스크탑 사용자에 적합하다.

배 경 기 술

[0002] 최근, 컴퓨터 장치는 비약적으로 발전하고 있으며, 컴퓨터 장치의 적용은 어디에서나 볼 수 있다. 이들 중, 컴퓨터는 예컨대, 실행 및 계산과 같은 수많은 기능을 제공함으로써 사람들의 요구를 만족시켰다. 예를 들어, 많은 개인용 컴퓨터가 엔터테인먼트, 문서 처리, 이미지 디스플레이 등을 제공하는 것으로 가족 삶의 중심을 차지하고 있으며; 산업용 컴퓨터는 공장들을 위한 관리, 제어 및 모니터링과 같은 서비스를 제공하고; 및 자동화 컴퓨터는 운전자와 승객에게 멀티미디어 엔터테인먼트 및 실시간으로 정보를 수신하는 기능을 제공한다. 전체적으로, 컴퓨터는 인간 사회의 필수적인 부분이 되었다.

고안의 내용

해결하려는 과제

[0003] 더욱이, 컴퓨터의 더 높은 사양에 대한 요구가 증가함에 따라 컴퓨터의 하우징 내부의 열 배출에 대해 더욱 관심이 집중되고 있다. 그러므로, 팬은 보통 조립 중 제공되어 하우징 내부에서 축적된 열을 외부로 배출한다. 그러나, 각각의 팬은 독립적인 동력 케이블을 통해 파워 서플라이(power supply)에 연결되어야 하므로, 조립될 수 있는 팬의 수량은 파워 서플라이의 가용한 한정된 연결 수량에 의해 한정된다. 이는 결국 열 소산 효율을 제한한다. 더욱이, 하우징 내부의 추가 전선은 케이블 라우팅(routing) 및 관리를 더욱 복잡하게 만든다.

과제의 해결 수단

[0004] 전술한 단점 및 문제점에 비추어, 업계의 계속된 연구 및 개선을 통해, 고안자는 결국 종래의 구조와 달리 컴퓨터 하우징 내부의 열 소산 효율을 개선한 본 발명을 제시한다.

[0005] 본 발명의 주요 목적은 구조적으로 간단한 컴퓨터를 위한 적어도 하나의 조명 팬과 연결할 수 있는 조명 팬을 제공하는 것이다.

[0006] 상기 및 다른 목적을 달성하기 위해, 본 발명은 컴퓨터를 위한 적어도 하나의 조명 팬과 연결할 수 있는 조명 팬을 제공하며, 이는 바디, 상기 바디의 중심에 배치된 팬, 상기 바디의 정상부에 팬의 적어도 두 측면 상의 조명 구역, 바디의 한 측면 상의 파워 소켓(power socket) 및 제1 커넥터, 및 바디의 다른 측면 상의 제2 커넥터를 포함할 수 있고, 상기 파워 소켓은 제1 커넥터, 제2 커넥터, 팬 및 조명 구역과 전기적으로 연결되어, 바디의 한 측면 상의 파워 소켓에 전력이 공급되면, 바디의 팬과 조명은 각각 회전 및 조명으로 구동될 수 있고, 바디의 제1 커넥터가 다른 조명 팬의 바디의 제2 커넥터와 연결되면, 다른 조명 팬의 바디의 팬 및 조명 구역은 각각 회전 및 조명으로 구동될 수 있다.

[0007] 구현 예에서, 전기 전도 터미널이 제1 커넥터에 제공되고, 전기 전도 접촉 표면이 전기 전도 터미널과 전기적으로 연결되기 위해 제2 커넥터에 제공되어, 조명 팬의 바디의 제1 커넥터가 다른 조명 팬의 바디의 제2 커넥터에 연결되면, 다른 조명 팬의 바디의 팬 및 조명 구역은 각각 회전 및 조명으로 구동될 수 있다.

[0008] 구현 예에서, 조명 팬의 바디가 다른 조명 팬의 바디와 연결될 때, 두 바디의 조명 구역은 연속 조명 구역을 형성한다.

[0009] 구현 예에서, 조명 팬의 바디의 한 측면 상에 홈이 제공되고, 반면 상기 홈으로 맞물리도록 그 다른 측면 상에 결합 블록(engaging block)이 제공되어, 조명 팬의 바디의 홈이 다른 조명 팬의 바디의 결합 블록과 맞물리면, 조명 팬의 바디는 다른 조명 팬의 바디와 연결된다.

[0010] 구현 예에서, 조명 팬의 바디의 두 측면 상에 홈이 제공되고, 조명 팬의 바디의 측면들 상의 홈 중 하나 및 다른 조명 팬의 바디의 측면들 상의 홈 중 하나와 결합 블록이 각각 맞물림으로써 조명 팬의 바디가 다른 조명 팬의 바디와 연결된다.

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[0011] 본 발명의 전술한 특징 및 이점들은 첨부된 도면들과 함께 아래의 자세한 설명으로부터 명백하게 될 것이다.

도면의 간단한 설명

[0012] 도 1은 본 발명의 실시예에 따른 바디의 외부 형태를 도시하는 사시도이다.

도 2는 본 발명의 실시예에 따른 조립되기 전의 두 바디를 도시하는 사시도이다.

도 3은 본 발명의 실시예에 따른 조립된 후의 복수의 바디의 외부 형태를 도시하는 사시도이다.

도 4는 본 발명의 실시예에 따른 조립되기 전의 두 바디를 도시하는 사시도이다.

도 5는 본 발명의 실시예에 따른 조립된 후의 두 바디를 도시하는 사시도이다.

고안을 실시하기 위한 구체적인 내용

[0013] 도 1 내지 3을 참고하면, 본 발명의 실시예에 따른 컴퓨터를 위한 적어도 하나의 조명 팬과 연결될 수 있는 조명 팬이 제공된다.

[0014] 본 발명의 컴퓨터를 위한 적어도 하나의 조명 팬과 연결될 수 있는 조명 팬은 바디(1), 바디(1)의 중앙에 배치된 팬(2), 상기 바디(1)의 정상부에서 팬의 적어도 두 측면에 배치된 조명 구역(3), 상기 바디(1)의 한 측면에 배치된 파워 소켓(4) 및 제1 커넥터(5), 및 상기 바디(1)의 다른 측면에 배치된 제2 커넥터(6)를 포함한다. 상기 파워 소켓(4)은 제1 커넥터(5), 제2 커넥터(6), 팬(2) 및 조명 구역(3)과 전기적으로 연결된다.

[0015] 이와 같이, 바디의 측면에서 파워 소켓(4)에 전력이 공급되면, 바디(1)의 팬(2)은 회전으로 구동될 수 있고 조명 구역(3)은 조명될 수 있다.

[0016] 적어도 두 바디(1)가 다중 세트의 팬을 형성하도록 함께 연결되면(도 2 및 3에 도시된 바와 같이), 제1 커넥터(5)는 전기 전도 터미널(51)이 제공되고, 제2 커넥터(6)는 전기 전도 터미널(51)과 전기적으로 연결되도록 전기 전도 접촉 표면(61)이 제공되어, 바디(1)의 제1 커넥터(5)가 다른 바디(1)의 제2 커넥터(6)에 연결될 때, 다른 바디(1)의 팬(2)은 회전 구동될 수 있고 조명 구역(3)은 조명될 수 있다. 두 바디(1)의 조명 구역(3)은 연속 조명 구역(3)을 형성할 수 있다. 더욱이, 바디(1)의 한 측면에 홈(7)이 제공되고, 다른 측면에 결합 블록(8)이 제공되어, 하나의 바디(1)의 홈(7)은 다른 바디(1)의 결합 블록(8)과 결합될 수 있으며, 이는 두 바디(1)가 함께 결합되게 한다.

[0017] 두 바디(1)를 결합하는 것과 관련하여, 도 4 및 5에 다른 접근이 도시되며, 바디(1)의 두 측면에 홈(7)이 제공되고, 두 바디(1)의 각각의 한 측면에서 홈(7)과 동시에 맞물리는데 결합 블록(8)이 사용되어, 두 바디(1)가 함께 결합되게 한다.

[0018] 결과적으로, 조립되고 나면, 독립적으로 사용될 수 있는 두 팬이 함께 연결될 수 있으며, 바디의 하나의 파워 소켓과 컴퓨터의 파워 서플라이를 연결함으로써 전력이 공급되어 두 바디의 팬이 동시에 회전 구동되고 조명 구역이 조명될 수 있다. 이는 파워 서플라이에 의해 제공된 충분치 않은 전력 케이블의 문제를 해소하며 많은 수의 전선으로 인한 성가신 라우팅 문제를 제거한다. 본 발명의 결합 설계를 통해, 컴퓨터 내의 임의의 위치에서의 열 소산 효율이 크게 개선될 수 있다.

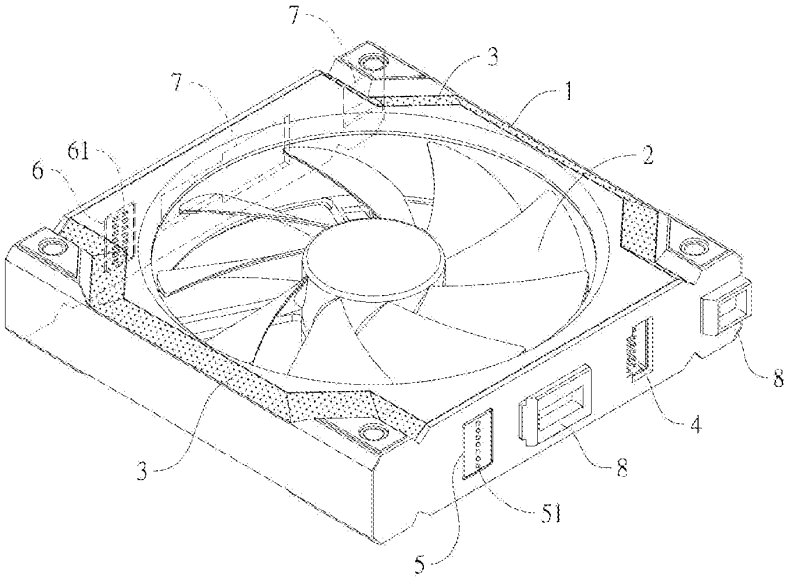
[0019] 상기 설명은 본 발명의 실시예 및 채용된 기술 수단을 제공한다. 다양한 변형 및 수정이 본 출원의 개시 또는 교시에 비추어 도출될 수 있고, 따라서 본 발명의 개념에 대한 등가물로서 간주된다. 이러한 변형 및 수정으로 야기된 효과는 본 발명에 의해 커버되는 실질적인 사상 및 도면을 초과하지 않는 정도에서 본 발명의 기술적 범주 내로서 해석되어야 한다.

[0020] 요컨대, 상기 개시에 기초하여, 본 발명은 구조적으로 단순하고 저비용이며 따라서 실용성 및 산업적 가치를 지닌 컴퓨터를 위한 적어도 하나의 조명 팬과 연결될 수 있는 조명 팬을 제공하며, 이로써 특허 출원이 법률에 따라 제출된다.

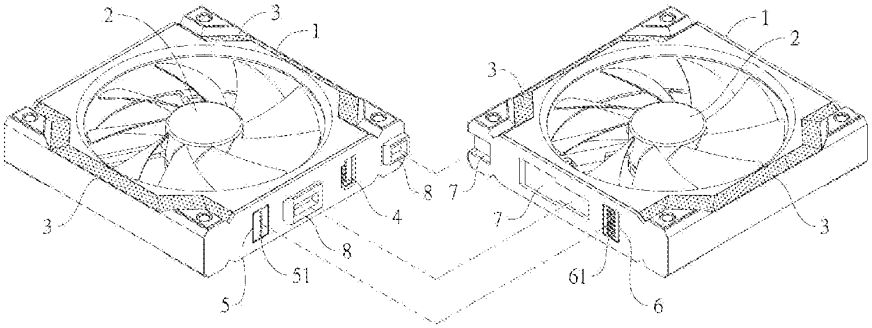
Thermaltake Tech. Co. v. Lian Li Ind. Co., Ex-2007
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도면

도면1

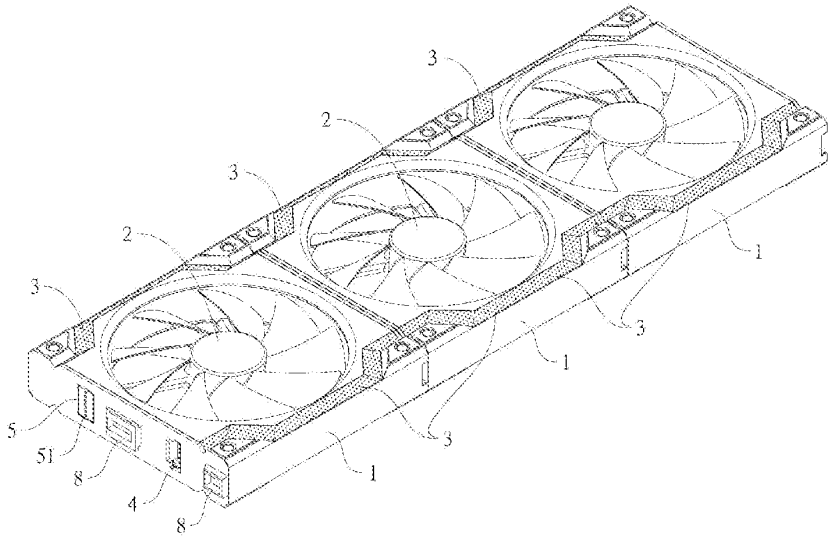


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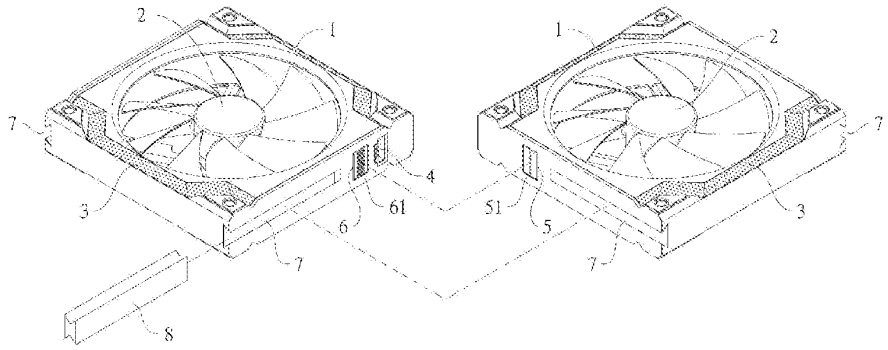


Thermaltake Tech. Co. v. Lian Li Ind. Co., Ex-2007
Page 438 of 1016, IPR2024-01230

도면3

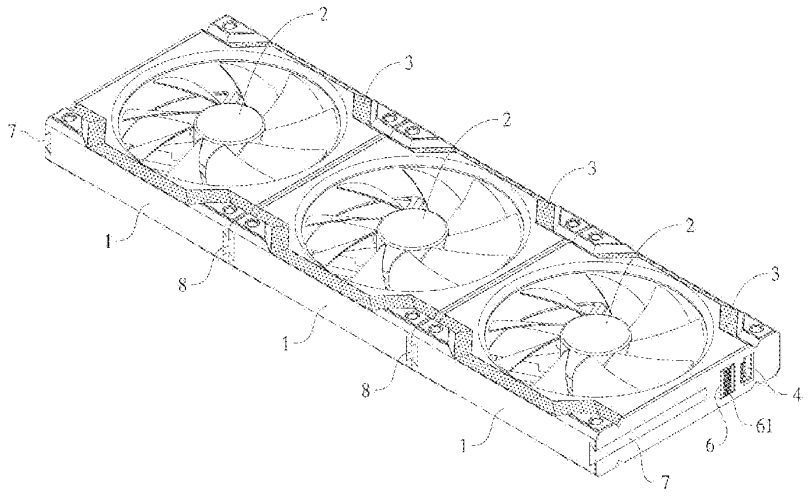


도면4



Thermaltake Tech. Co. v. Lian Li Ind. Co., Ex-2007
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도면5



Thermaltake Tech. Co. v. Lian Li Ind. Co., Ex-2007
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EXHIBIT 1010

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Lin (43) Pub. Date: Jan. 19, 2006

(54) COOLING FAN WITH A LIGHT-EMITTING DEVICE

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(21) Appl. No.: 10/893,657

(22) Filed: Jul. 16, 2004

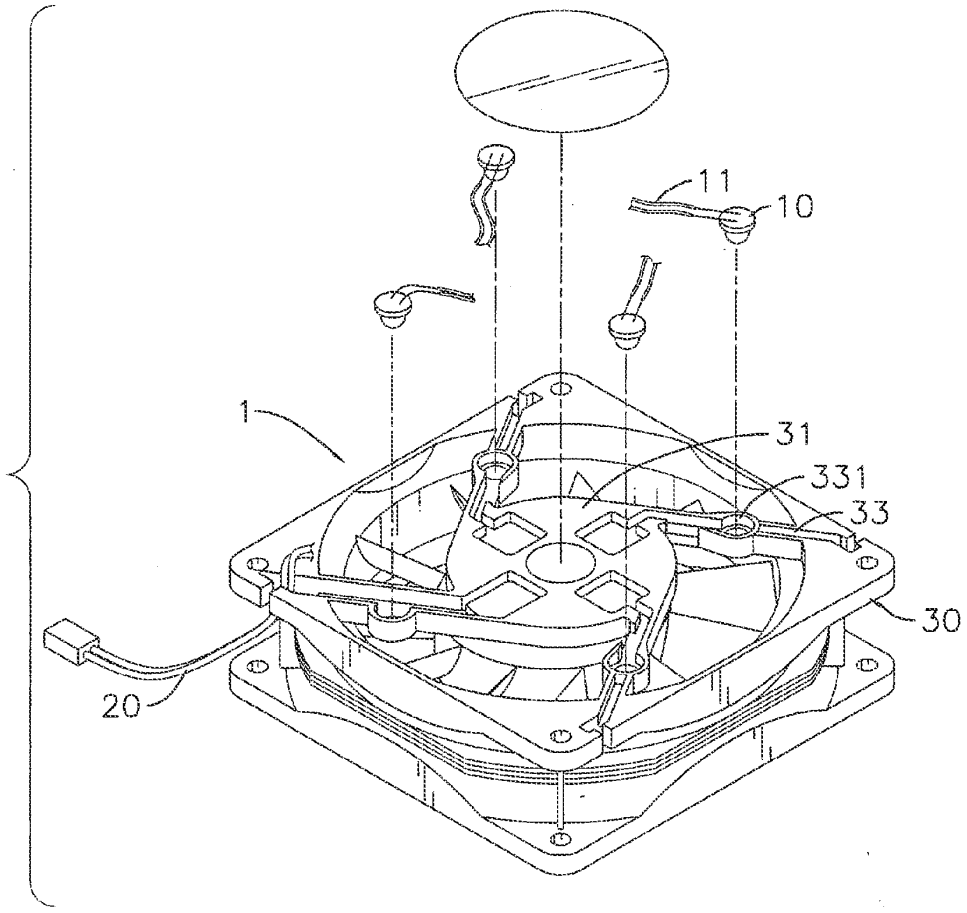
Publication Classification

(51) Int. Cl.
F21V 33/00 (2006.01)

(52) U.S. Cl. 362/96; 362/253

(57) ABSTRACT

The cooling fan has a frame and at least one light-emitting diode (LED). The frame has a central block with a circuit and multiple ribs. The ribs are formed on the rear surface of the frame, extend to the center of the inner space and have at least one set hole. The at least one LED is mounted respectively in the at least one set hole to emit light and faces to the front surface of the frame.



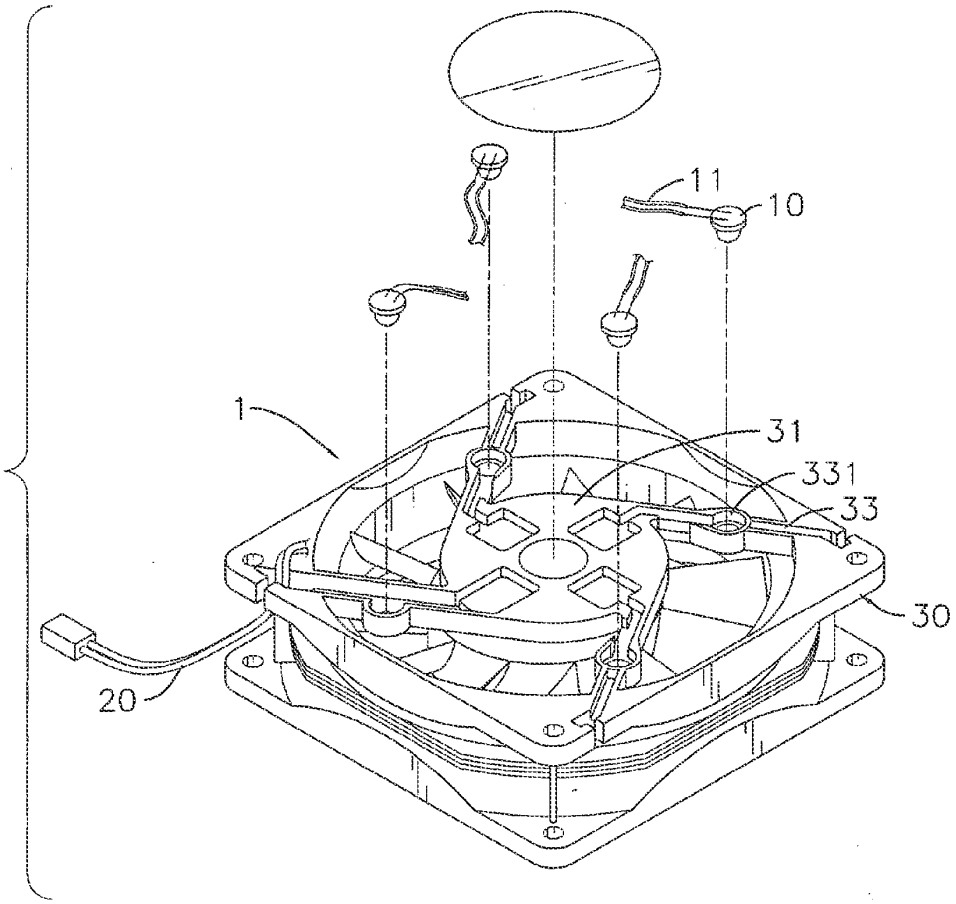


FIG. 1

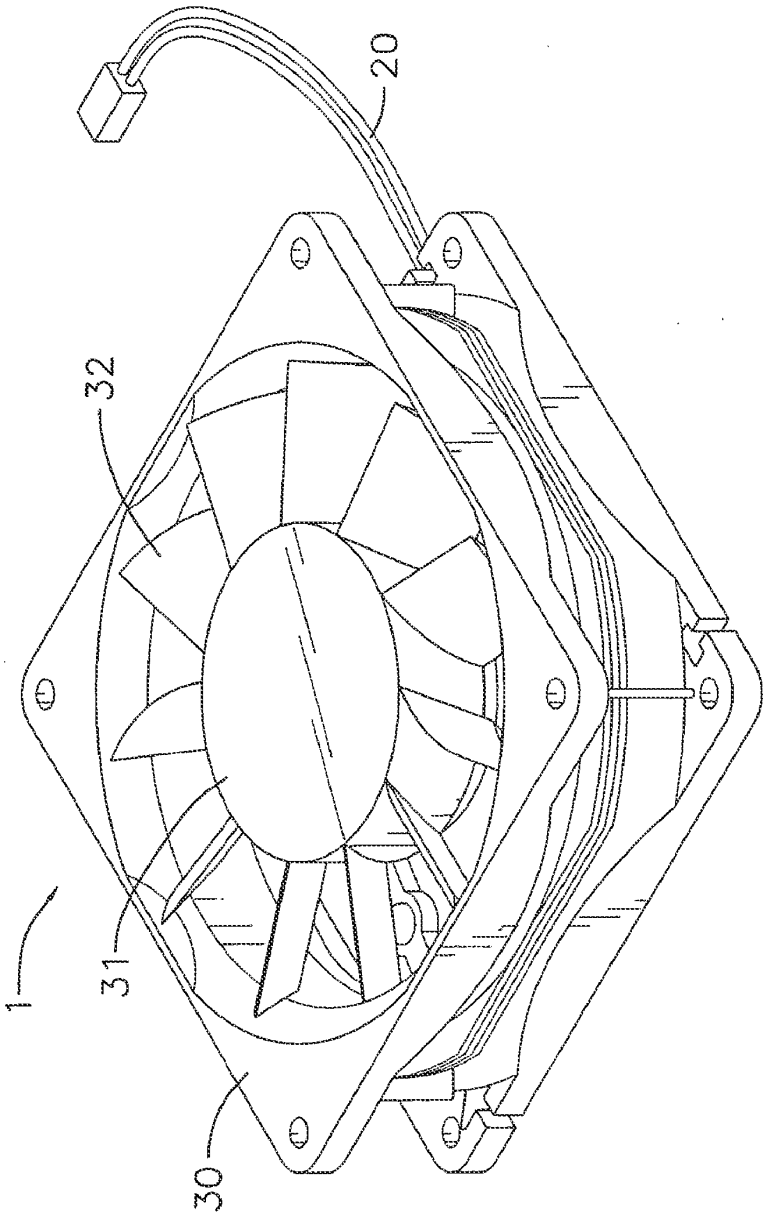


FIG. 2

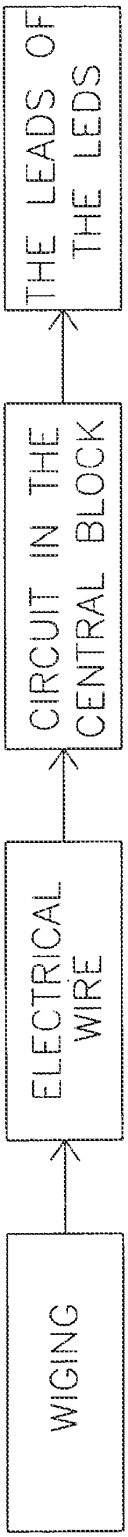

WIGING
ELECTRICAL WIRE
CIRCUIT IN THE CENTRAL BLOCK
THE LEADS OF THE LEDS

FIG. 3

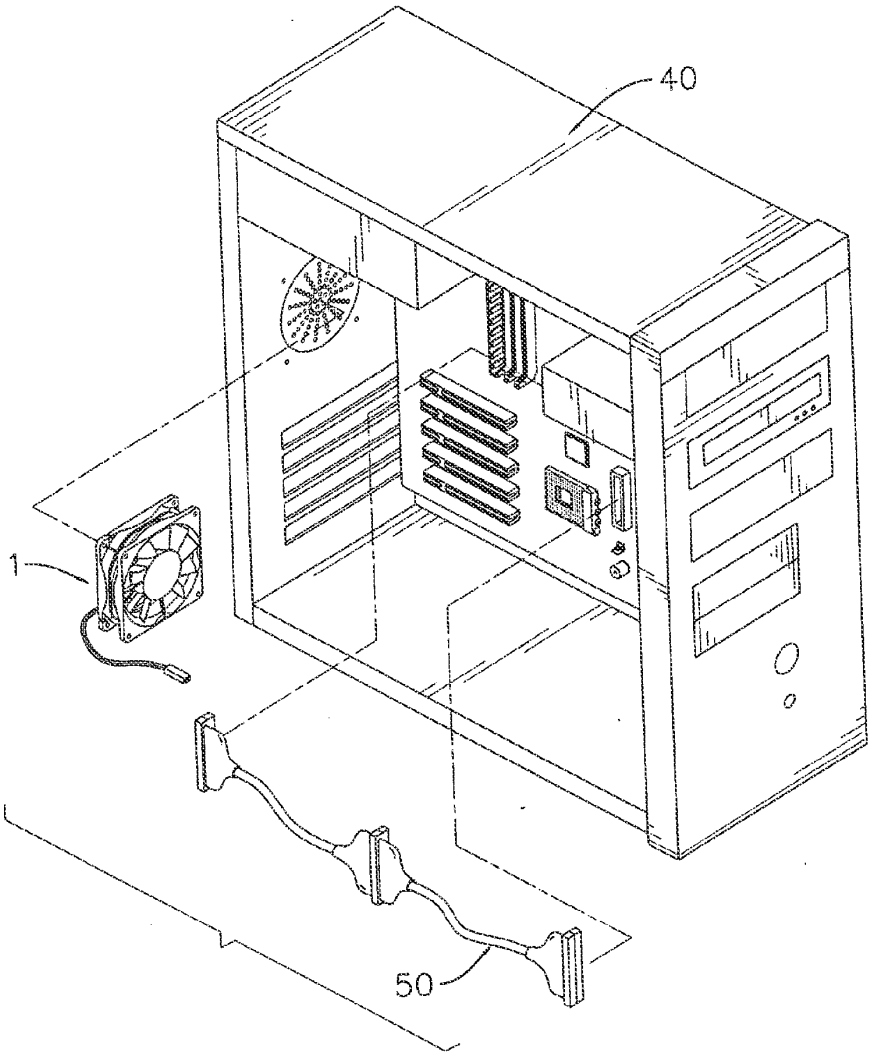


FIG. 4

COOLING FAN WITH A LIGHT-EMITTING DEVICE

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention relates to a cooling fan, especially to a cooling fan with a light-emitting device.

[0003] 2. Description of the Prior Arts

[0004] As the computer is used universally, it not only has to be practical but also to be attractive in appearance. Therefore people start to use many methods to enhance the appearance of the computer. One of the methods is to make the cooling fan to emit light. A conventional light-emitting cooling fan is commonly used with a transparent case to let the light radiate from the case and uses multiple light-emitting diodes (LED) to emit the light. A conventional light-emitting cooling fan substantially comprises a frame, a rotor and multiple LEDs. The frame has an inside space with an inner surface. The rotor is rotatably mounted in the inside space of the frame. The LEDs are mounted around an inside surface of the inner space in the frame or attached to the rotor. The light that the LED emits goes almost straight and hardly goes separately. When the light is emitted, the light hits the rotor or the inside surface of the cooling fan and is reflected out of the case. Therefore the light cannot go out of the case directly. The brightness of the light that has been reflected is weak. Furthermore, no matter how many LEDs are used or how many colors that the LEDs emit, the light emitting from the LEDs attached to a rotating rotor will only show a circle and the light cannot be arranged to a certain kind of pattern.

[0005] To overcome the shortcomings, the present invention provides a cooling fan with a light-emitting device to mitigate or obviate the aforementioned problems.

SUMMARY OF THE INVENTION

[0006] The main objective of the present invention is to provide a cooling fan with a light-emitting device. The light of the cooling fan can emit directly out of the case and can be arranged to any kind of pattern.

[0007] The cooling fan has a frame and at least one light-emitting diode (LED). The frame has a central block with a circuit and multiple ribs. The ribs are formed on the rear surface of the frame, extend to the center of the inner space and have at least one set hole. The at least one set hole is formed in the ribs. The at least one LED is mounted respectively in the at least one set hole to emit light and faces to the front surface of the frame.

[0008] Other objectives, advantages and novel features of the invention will become more apparent from the following detailed description when taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] **FIG. 1** is an exploded perspective view of a cooling fan with a light-emitting device in accordance with the present invention;

[0010] **FIG. 2** is a perspective view of the cooling fan in **FIG. 1**;

[0011] **FIG. 3** is a flowchart of the electrical connection of the cooling fan in **FIG. 1** with the computer; and

[0012] **FIG. 4** is an exploded perspective view of a computer case with the cooling fan in **FIG. 1**.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0013] With reference to **FIG. 1**, a cooling fan (**1**) in accordance with the present invention has a frame (**30**), an electrical wire (**20**) and at least one light-emitting diode (LED) (**10**).

[0014] With further reference to **FIGS. 2 and 3**, the frame (**30**) has an inner space, a rear surface, a front surface, multiple ribs (**33**), a central block (**31**), at least one set hole (**331**) and a rotor (**32**). The inner space has a center. The ribs (**33**) are formed on the rear surface of the frame (**30**) and extend to the center of the inner space. The at least one set hole (**331**) is formed in the ribs (**33**). The central block (**31**) is formed on the rear surface of the frame (**30**), is mounted between the ribs (**33**), is located at the center of the inner space and has a circuit. The rotor (**32**) is mounted on the central block (**31**) in the front surface of the frame (**30**).

[0015] The electrical wire (**20**) is mounted in the frame (**30**), connects with the circuit in the central block (**31**) and extends out of the frame (**30**). The at least one LED (**10**) is mounted respectively in the at least one set hole (**331**) to emit light, faces the front surface of the frame (**30**) and comprises two leads (**11**). The leads (**11**) connect with the circuit in the central block (**31**).

[0016] With further reference to **FIG. 4**, a computer has a transparent case (**40**), multiple electrical elements and at least one electric cable (**50**). The cooling fan (**1**) can be attached to the case (**40**) or one of the electrical elements in the case (**40**) with the rear surface of the frame (**30**). The electrical wire (**20**) is electrically connected with the electric cable (**50**) to provide electrical power to the cooling fan (**1**) through the electric cable (**50**) and the electrical wire (**20**). In order to make the appearance of the computer more attractive, the at least one electric cable (**50**) can fluoresce.

[0017] The cooling fan (**1**) as described has numerous advantages. Because the at least one LED (**10**) faces to the front surface of the frame (**30**), the light emitted by the LED (**10**) goes out of the front surface of the frame (**30**) directly without any reflection. Therefore, brightness of the light emitted by the LED (**10**) will be enhanced and the light is clearly visible. If multiple LEDs (**10**) are used, the LEDs (**10**) can be arranged to any kind of pattern to show a logo for a company, a name or a design.

[0018] Even though numerous characteristics and advantages of the present invention have been set forth in the foregoing description, together with details of the structure and function of the invention, the disclosure is illustrative only. Changes may be made in detail, especially in matters of shape, size, and arrangement of parts within the principles of the invention to the full extent indicated by the broad general meaning of the terms in which the appended claims are expressed.

What is claimed is:

1. A cooling fan with a light-emitting device having

a frame having

an inner space having a center;

a rear surface;

a front surface;

multiple ribs formed on the rear surface of the frame, extending to the center of the inner space;

at least one set hole formed in the ribs;

a central block mounted between the ribs from the rear surface to the front surface of the frame, located in the center of the inner space and having a circuit; and

a rotor mounted on the central block in the front surface of the frame;

an electrical wire mounted in the frame, connecting with the circuit inside the central block and extending out of the frame; and

at least one light-emitting diode (LED) mounted respectively in the at least one set hole to emit light and facing the front surface of the frame, and each one of the at least one light-emitting diode comprising two leads connecting with the circuit in the central block.

* * * * *

PTO/SB/57 (11-23)
Approved for use through 11/30/2024. OMB 0651-0064
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(Also referred to as FORM PTO-1465)

REQUEST FOR *EX PARTE* REEXAMINATION TRANSMITTAL FORM

Address to:
Mail Stop *Ex Parte* Reexam
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Attorney Docket No.: 16445.0001-00000

Date: July 2, 2024

1. ■ This is a request for *ex parte* reexamination pursuant to 37 CFR 1.510 of patent number 10,690,336 issued June 23, 2020. The request is made by:
   ☐ patent owner. ■ third party requester.

2. ■ The name and address of the person requesting reexamination is:
   Axpertec Inc. (aka Phanteks USA)
   20465 E Walnut Dr.
   N. City of Industry, CA 91789

3. Requester ☐ asserts small entity status (37 CFR 1.27) or ☐ certifies micro entity status (37 CFR 1.29). Only a patent owner requester can certify micro entity status. Form PTO/SB/15A or B must be attached to certify micro entity status.

4. This request is accompanied by payment of the reexamination fee as set forth in:
   ■ 37 CFR 1.20(c)(2); **or**
   ☐ 37 CFR 1.20(c)(1). **In checking this box for payment of the fee set forth in 37 CFR 1.20(c)(1), requester asserts that this request has forty (40) or fewer pages and complies with all other requirements of 37 CFR 1.20(c)(1).**

   Payment of the reexamination fee is made by the method set forth below.
   a. ☐ A check in the amount of $_____ is enclosed to cover the reexamination fee;
   b. ☐ The Director is hereby authorized to charge the reexamination fee to Deposit Account No. _____;
   c. ☐ Payment by credit card. Form PTO-2038 is attached; **or**
   d. ■ Payment made via USPTO patent electronic filing system.

   ■ In addition, the Director is hereby authorized to charge any fee deficiencies to Deposit Account No. 06-0916.

5. ■ Any refund should be made by ☐ check or ■ credit to Deposit Account No. 06-0916. 37 CFR 1.26(c). If payment is made by credit card, refund must be to credit card account.

6. ■ A copy of the patent to be reexamined having a double column format on one side of a separate paper is enclosed. 37 CFR 1.510(b)(4).

7. ☐ CD-ROM or CD-R in duplicate, Computer Program (Appendix) or large table
   ☐ Landscape Table on CD

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If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

8. ☐ Nucleotide and/or Amino Acid Sequence Submission
If applicable, items a. – c. are required.
   a. ☐ Computer Readable Form (CRF)
   b. Specification Sequence Listing on:
      i. ☐ CD-ROM (2 copies) or CD-R (2 copies) **or**
      ii. ☐ paper
   c. ☐ Statements verifying identity of above copies.

9. ☐ A copy of any disclaimer, certificate of correction or reexamination certificate issued in the patent is included.

10. ■ Reexamination of claim(s) 1-5 is requested.

11. ■ A copy of every patent or printed publication relied upon is submitted herewith including a listing thereof on Form PTO/SB/08, PTO-1449, or equivalent.

12. ■ An English language translation of all necessary and pertinent non-English language patents and/or printed publications is attached.

13. ■ The attached detailed request includes at least the following items:
   a. A statement identifying each substantial new question of patentability based on prior patents and printed publications. 37 CFR 1.510(b)(1).
   b. An identification of every claim for which reexamination is requested, and a detailed explanation of the pertinency and manner of applying the cited art to every claim for which reexamination is requested. 37 CFR1.510(b)(2).

14. ☐ A proposed amendment is included (only where the patent owner is the requester). 37 CFR 1.510(e).

15. ■ It is certified that the statutory estoppel provisions of 35 U.S.C. 315(e)(1) or 35 U.S.C. 325(e)(1) do not prohibit requester from filing this *ex parte* reexamination request. 37 CFR 1.510(b)(6).

16. Service
   a. ■ It is certified that a copy of this request (if filed by other than the patent owner) has been served in its entirety on the patent owner as provided in 37 CFR 1.33(c).

      The name and address of the party served are:

      60601 - Muncy, Geissler, Olds & Lowe, P.C.
      125 S. Royal St.
      Alexandria, VA 22314, UNITED STATES

      Date of Service: July 2, 2024

   OR

   b. ☐ A duplicate copy is enclosed since service on patent owner was not possible. An explanation of the efforts made to serve patent owner **is attached**. See MPEP 2220.

17. Correspondence Address: Direct all communication about the reexamination to:

☒ The address associated with Customer Number: 22,852

OR

☐ Firm or Individual Name _____
(at the address identified below)

Address

City	State	Zip

Country

Telephone	Email

18. ☒ The patent is currently the subject of the following concurrent proceeding(s):

a. ☐ Copending reissue Application No. _____

b. ☐ Copending reexamination Control No. _____

c. ☐ Copending Interference No. _____

d. ☒ Copending litigation styled:
Lian Li Industrial Co., Ltd. et al. v. Phanteks Europe et al.,
No. 2:23-cv-07471-HDV-MAR (C.D. Cal.)

WARNING : Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

/Kai Rajan/ — Authorized Signature

July 2, 2024 — Date

Kai Rajan — Typed/Printed Name

70,110 — Registration No.

☐ For Patent Owner Requester ☒ For Third Party Requester

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Routine uses of the information in this record may include disclosure to:

1) law enforcement, in the event that the system of records indicates a violation or potential violation of law;

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3) a contractor of the USPTO having need for the information in order to perform a contract;

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5) a Member of Congress submitting a request involving an individual to whom the record pertains, when the individual has requested the Member's assistance with respect to the subject matter of the record;

6) a court, magistrate, or administrative tribunal, in the course of presenting evidence, including disclosures to opposing counsel in the course of settlement negotiations;

7) the Administrator, General Services Administration (GSA), or their designee, during an inspection of records conducted by GSA under authority of 44 U.S.C. 2904 and 2906, in accordance with the GSA regulations and any other relevant (i.e., GSA or Commerce) directive, where such disclosure shall not be used to make determinations about individuals;

8) another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c));

9) the Office of Personnel Management (OPM) for personnel research purposes; and

10) the Office of Management and Budget (OMB) for legislative coordination and clearance.

If you do not furnish the information requested on this form, the USPTO may not be able to process and/or examine your submission, which may result in termination of proceedings, abandonment of the application, and/or expiration of the patent.

EXHIBIT 1004

[Title of the Invention] **ELECTRONIC DEVICE, COOLING FAN CONTROLLER, COOLING FAN CONTROL PROGRAM, AND COOLING FAN CONTROLLING METHOD**

[Abstract]

[Problem] To provide an electronic device capable of assigning an address associated with a position of each fan unit to each fan unit even when the fan unit is swapped.

[Solution] An electronic device includes an electronic apparatus, and a plurality of serially-connected fan units that cools the electronic apparatus. Each fan unit includes a controlling unit that assigns to an own fan unit an address that identifies the own fan unit among the plurality of the fan units by associating the same with a connection position of the own fan unit among the plurality of the fan units.

[Claims]

1. An electronic device comprising:
an electronic apparatus, and
a plurality of fan units that cools the serially-connected electronic apparatus, wherein
each fan unit among the plurality of the fan units includes
a controlling unit that assigns an address that identifies an own fan unit among the plurality of the fan units to the own fan unit by associating the same with a connection position of the own fan unit among the plurality of the fan units.

2. The electronic device as claimed in Claim 1 includes a management unit that identifies each fan unit among the plurality of the fan units based on the assigned address, and manages each fan unit.

3. The electronic device as claimed in Claim 1 or 2, wherein the plurality of the fan units is configured so as to enable hot swapping of one fan unit among the plurality of the fan units by adding and connecting an additional fan unit to one end side of the plurality of the fan units and pushing out a fan unit arranged on the other side of the plurality of the fan units from the other side, and
the controlling unit assigns to the own fan unit an address in accordance with the added connection of the additional fan unit.

4. The electronic device as claimed in Claim 3, wherein the controlling unit includes
a counter that counts a pulse signal received from a previous fan unit that is arranged before the own fan unit, and
delays the pulse signal received from the previous fan unit by a predetermined delay time and outputs thereof to the subsequent fan unit arranged after the own fan unit, and
assigns to the own fan unit a value in accordance with a countable value counted by the counter as the address.

5. The electronic device as claimed in Claim 4, wherein

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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.

6. The 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 the own fan unit are connected when the own fan unit is arranged on one end side of the plurality of the fan units.

7. A cooling fan controller that controls a plurality of fan units that cools serially-connected electronic apparatus, comprising:

a controlling unit that assigns an address that identifies an own fan unit among the plurality of the fan units to the own fan unit by associating the same with a connection position of the own fan unit among the plurality of the fan units.

8. A cooling fan control program that causes a processor that controls the plurality of the fan units that cools the serially-connected electronic apparatus to execute a processing in which an address that identifies an own fan unit among the plurality of the fan units to the own fan unit is assigned by associating the same with a connection position of the own fan unit among the plurality of the fan units.

9. A cooling fan controlling method by using which a plurality of fan units that cools serially-connected electronic apparatus is controlled by a processor, comprising:

assigning an address that identifies an own fan unit among the plurality of the fan units to the own fan unit by associating the same with a connection position of the own fan unit among the plurality of the fan units.

[Description]

[Technical Field]

[0001]

The present invention relates to an electronic device, a cooling fan controller, a cooling fan control program, and a cooling fan controlling method.

[Background Art]

[0002]

In cooling fans conventionally used in large-scale backbone servers, an ability to perform hot maintenance and swapping while maintaining a system operational state (energized state) is desirable. Accordingly, a fan unit that includes a cooling fan is often arranged on a front side or a rear side of a chassis that forms a server casing. However, in such a configuration, devices or connectors necessary for maintenance and swapping cannot be arranged on the front side or the rear side of the chassis.

[0003]

To solve such a problem, it is conceivable to adopt a structure that enables maintenance of the fan unit

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from upper / lower surfaces or a side surface of a server by pulling out each chassis from the server casing. However, when printed boards, cables, and the like that are in the energized state exist in a direction of installing / removing the fan unit, it is difficult to swap the fan unit while retaining the energized state of these components. Therefore, it is difficult to arrange the fan unit near the center of the interior of the server casing so as to enable hot swapping.

[0004]

To solve such a problem, it is conceivable to adopt a structure that enables hot swapping by sliding one fan unit among the plurality of the fan units. In such a structure, the plurality of the fan units is sequentially arranged so as to pass from one side of the server casing through the other side thereof. Moreover, an additional fan unit is added on one end of the plurality of the fan units, and the fan unit arranged on the other end is pushed out from the other end.

[0005]

On the other side, because cooling efficiency and lower power consumption is desirable in the servers in the recent years, rotation speed control or state monitoring of each fan unit is performed by a management and monitoring unit of the entire server. Accordingly, it is conceivable to physically connect a control signal line of each fan unit to the management and monitoring unit to identify and control each fan unit inside the server casing. However, because the number of signal lines must be wired in accordance with the number of installed fan units in such a configuration, wiring of the signal lines becomes difficult as the number of installed fan units increases.

[0006]

To resolve such a problem, in a structure in which the fan units are hot-swappable by sliding operation as explained above, it is possible to adopt a serial interface capable of monitoring and controlling the fan units by using fewer signal lines. For example, the plurality of the fan units is connected in a daisy chain form by using a serial interface such as Inter-Integrated Circuit (I2C). In such a case, the management and monitoring unit monitors and controls each fan unit while identifying each fan unit by a unique address (ID; identification information) assigned to each fan unit beforehand.

[Summary of the Invention]

[Problem to be solved by the Invention]

[0008]

However, when adopting the serial interface in a structure that enables hot swapping of the fan units by sliding operation, the following problems may occur. The management and monitoring unit requires a unique address to identify each fan unit arranged inside the server casing. However, because the unique address thereof cannot be set and changed after the hot swapping of the fan unit is performed, an association between an installation position (connection position) and the address of each fan unit cannot be established. Accordingly, the management and monitoring unit cannot correctly recognize and monitor / control the fan unit.

[0009]

An object of the present invention is to provide an electronic device capable of assigning to each fan unit an address associated with a position of each fan unit even when the fan unit is swapped.

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[Means to Solve the Problems]

[0010]

An electronic device of the present invention includes an electronic apparatus, and a plurality of serially-connected fan units that cools the electronic apparatus. Each fan unit includes a controlling unit that assigns to the own fan unit an address that identifies an own fan unit among the plurality of the fan units by associating the same with a connection position of the own fan unit among the plurality of the fan units.

[Advantageous Effect of the Invention]

[0011]

An address associated with a position of each fan unit can be assigned to each fan unit even when the fan unit is swapped.

[Brief Description of the Figures]

[0012]

FIG. 1 is a diagram showing a first example of a related technology.

FIG. 2 is a diagram showing a second example of the related technology.

FIG. 3 is a diagram showing a third example of the related technology.

FIG. 4 is a diagram showing a fourth example of the related technology.

FIG. 5 is a schematic perspective view of a connection structure of a server and fan units to which a technology according to the present embodiment is applied.

FIG. 6 is an enlarged perspective view of the connection structure of hot-swappable fan units shown in FIG. 5 explaining a connection structure of the fan units and a hot-swapping procedure of the fan units according to the present embodiment.

FIG. 7A is a schematic perspective view of the fan unit according to the present embodiment, and FIG. 7B is a schematic front view of the fan unit according to the present embodiment.

FIG. 8 is a schematic perspective view of a connection structure explaining the hot-swapping procedure of the fan unit and a fault display according to the present embodiment.

FIG. 9 is another schematic perspective view of the connection structure explaining the hot-swapping procedure of the fan unit and the fault display according to the present embodiment.

FIG. 10 is a yet another schematic perspective view of the connection structure explaining the hot-swapping procedure of the fan unit and the fault display according to the present embodiment.

FIG. 11 is a yet another schematic perspective view of the connection structure explaining the hot-swapping procedure of the fan unit and the fault display according to the present embodiment.

FIG. 12 is a block diagram showing a hardware configuration of a server to which the technology according to the present embodiment is applied.

FIG. 13 is a diagram showing an I2C connection between a management unit (I2C master) and various fan units (I2C slaves) in the server to which the technology according to the present embodiment is applied.

FIG. 14 is a block diagram showing a configuration of each fan unit according to the present embodiment.

FIG. 15 is a block diagram showing a detailed configuration of a Light Emitting Diode (LED) lightning circuit shown in FIG. 14.

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FIG. 16 is a block diagram showing a detailed configuration of an I2C bus switching circuit shown in FIG. 14.

FIG. 17 is a block diagram showing a detailed configuration of an edge generating circuit shown in FIG. 14.

FIG. 18 is a block diagram showing a detailed configuration of a pulse generating circuit shown in FIG. 14.

FIG. 19 is time chart explaining an operation that is performed when the four fan units shown in FIG. 14 are serially connected.

FIG. 20 is a flowchart explaining the hot-swapping procedure of the fan units in the server to which the technology according to the present embodiment is applied.

[Best Mode(s) of Carrying Out the Invention]

[0013]

Exemplary embodiments of an electronic device, a cooling fan controller, a cooling fan control program, and a cooling fan controlling method disclosed in the present invention are explained below with reference to the accompanying drawings. However, the embodiments shown below are merely illustrative, and there is no intention to exclude various modifications and technical applications that are not explicitly described below. In other words, the present embodiment can be implemented with various modifications without departing from the essence of the present embodiment. Moreover, each of the drawings is not intended to include only the components shown in the drawing and can include other functions. Each of these embodiments can be appropriately combined within the scope that does not conflict with the details of the processing.

[0014]

1. Related technology

As explained above, in cooling fans used in large-scale backbone servers, an ability to perform hot maintenance and swapping while maintaining the system operational state (energized state) is desirable. Consequently, as shown in FIG. 1, for example, a fan unit 110 that includes a cooling fan is arranged on a front side or a rear side of a chassis that forms a casing of a server 100, and maintenance and swapping of the fan unit 110 is often performed from the direction of Arrow A1 shown in FIG. 1. In such a configuration, other devices or connectors necessary for maintenance and swapping cannot be arranged on the front side or the rear side of the chassis. Furthermore, FIG. 1 is a diagram showing a first example of a related technology. FIG. 1 shows an example in which a total of eight fan units 110, four on the left side and four on the right side, are arranged on the front side of the server 100. The fan unit 110 shown in FIG. 1, for example, cools various types of electronic apparatus 101 mounted inside the server 100.

[0015]

To resolve such a problem, it is conceivable to adopt a structure that enables maintenance of the fan unit 110 from an upper / lower surface (for example, direction of Arrow A2 or A3) or a left side / right side surface of the server 100 as shown in FIG. 2 by pulling out each chassis from a casing of the server 100. However, when an energized printed board or a cable exists in the direction from which the fan unit 110 is installed / removed, it is difficult to swap the fan unit 110 while retaining in the energized state. Therefore, it is difficult to arrange the fan unit 110 near the center of the interior of the casing of the server 100 so as to

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enable hot swapping. Furthermore, FIG. 2 is a diagram showing a second example of the related technology. In FIG. 2, an example in which a total of eight fan units 110, four on the upper side and four on the lower side, are arranged near the center of a front-rear direction of the server 100 is shown.

[0016]

Here, as shown in FIG. 3 or 4, it is conceivable to adopt a structure that enables hot swapping by sliding a plurality of the fan units 110. In such a structure, the fan units 110 are sequentially arranged so as to pass from one side (right side) of the casing of the server 100 through the other side (left side) thereof.

[0017]

In FIG. 3, four fan units 110 are provided moveably in the horizontal direction by a pair of power rails 151 and 152 near the center of the interior of the server 100. Furthermore, FIG. 3 is a diagram showing a third example of the related technology. The power rails 151 and 152 are connected to an internal power source 120 of the server 100, and are configured so as to supply power to the fan units 110. In a configuration shown in FIG. 3, the left-side fan unit 110 is pushed out from the left side by pushing one fan unit 110 to be swapped from the right side while supplying power to each fan unit 110. By pushing out such fan units 110 one-by-one, one fan unit among the four fan units 110 can be hot-swapped. However, in the example shown in FIG. 3, contacts of the power rails 151 and 152 are exposed. Consequently, in such a configuration, in addition to requiring a large-scale structure, there is an issue of soiling and corrosion of contacts due to being near the fan unit 110. Furthermore, upon performing the sliding operation of the fan units 110 in a state in which the power supply is on, there is an issue of electric voltage fluctuation due to fluctuation in the resistance value of the sliding properties, and the like.

[0018]

In FIG. 4, an example of a method in which hot swapping the fan unit 110 is performed without using the power rails shown in FIG. 3. Furthermore, FIG. 4 is a diagram showing a fourth example of the related technology. In FIG. 4, three serially-connected fan units 110 are moveably provided so as to slide in the horizontal direction. At the time of a normal operation, power is supplied from the internal power source 120 of the server 100 to the three fan units 110 via a power cable 141. Power is supplied from the internal power source 130 to the three fan units 110, which are the units to be swapped, via a power cable 142. The adjacent fan units 110 are connected via a connector, and power is supplied between the fan units via the connector. In a configuration shown in FIG. 4, by pushing in the three fan units 110 to be swapped from the right side, the three fan units 110 arranged inside the server 100 are pushed out from the left side. Subsequently, the power cable 141 is connected to the three fan units 110 that are pushed out so as to supply power from the internal power source 120. Accordingly, the three fan units 110 are hot-swapped. In the example shown in FIG. 4, hot swapping of the fan unit 110 can be performed without using the power rails as shown in FIG. 3. However, because the plurality of the fan units 110 are hot-swapped in a batch, only a part of the fan units 110 among the plurality of the fan units 110 cannot be hot-swapped. In other words, only the fan unit 110 that needs to be swapped cannot be swapped.

[0019]

On the other side, because cooling efficiency and lower power consumption is desirable in the server 100 in the recent years as explained above, rotation speed control or state monitoring of each fan unit 110 is performed by a management and monitoring unit of the entire server. Therefore, it is conceivable to physically connect the control signal line of each fan unit 110 to the management and monitoring unit to

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identify and control each fan unit 110 arranged inside the casing of the server 100. However, because the number of the signal lines must be wired in accordance with the number of installed fan units 110 in such a configuration, wiring of the signal lines becomes difficult as the number of installed fan units 110 increases.
[0020]

To resolve such a problem, in a structure in which the fan units 110 are hot-swappable by sliding operation, it is possible to use a serial interface capable of monitoring and controlling the fan units 110 by using fewer signal lines. For example, the plurality of the fan units 110 is connected in a daisy chain form by using a serial interface such as I2C. In such a case, the management and monitoring unit monitors and controls each fan unit 110 while identifying each fan unit 110 by using a unique address (ID; identification information) assigned to each fan unit 110 beforehand.
[0021]

However, when using the serial interface in a structure that enables hot swapping of the fan units 110 by sliding operation, the following problems may occur. The management and monitoring unit requires a unique address to identify each fan unit 110 arranged inside the casing of the server 100. However, because the unique address thereof cannot be set and changed after the fan unit 110 is hot-swapped, an association between an installation position (connection position) and the address of each fan unit 110 cannot be established. Accordingly, the management and monitoring unit cannot correctly recognize and monitor or control the fan unit 110. For example, correspondence (link) between a faulty fan unit 110 and a fault LED that should be lit on a fan fault external display panel cannot be established.
[0022]

Here, it is conceivable to provide a dip switch and the like in each fan unit 110, where a maintenance person can manually change the ID of each fan unit 110 by operating the dip switch. In such a configuration, among the plurality of the fan units 110, the only surface that is exposed to the outside of the server 100 is one surface of the fan units 110 at both ends. Accordingly, the maintenance person cannot visually confirm the ID of each fan unit 110. Moreover, when the maintenance person sets the ID incorrectly, the fan unit cannot be monitored. When the ID is set in a duplicated manner, the entire server 100 cannot be managed and monitored.
[0023]

2. Overview of the present embodiment

The present embodiment discloses a technology that resolves various problems and issues of the related technology explained above while referring to FIGS. 1 to 4. Particularly, in the present embodiment, a technology that enables automatic assignment to each fan unit of the position and the associated address (ID) of each fan unit even after hot-swapping the fan unit in the electronic devices such as server is disclosed.
[0024]

In the present embodiment, for example, the technology used for hot-swapping the fan units in a system operating state in the server that includes a management and monitoring unit for the entire server casing that controls the rotation speed of each fan unit and monitors abnormal conditions is disclosed. In the technology, instead of assigning a special unique ID to the fan unit in advance, an ID unique to each fan unit linked to the installation position thereof is automatically assigned at the same time swapping of the fan unit is completed after a specific fan unit among the plurality of the fan units is hot-swapped. Accordingly, by using the technology, rotation speed control and abnormal conditions monitoring of the fan units in a same state as

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that before the swapping can performed by the management and monitoring unit of the entire server casing.

[0025]

To realize the technology, a server 1 as shown in FIG. 5 is disclosed in the present embodiment. In the present embodiment, the server 1 is an example of an electronic device that includes an electronic apparatus that is cooled by a fan unit 10. The electronic device is not limited to a server, and can be a device that includes various electronic apparatus such as information processing device, communication device that ought to be cooled. Furthermore, FIG. 5 is a schematic perspective view of a connection structure of the server 1 and the fan units 10 to which the technology according to the present embodiment is applied. FIG. 6 is an enlarged perspective view of the connection structure of the hot-swappable fan units 10 shown in FIG. 5 explaining the connection structure of the fan units 10 and the hot-swapping procedure according to the present embodiment.

[0026]

The server 1 according to the present embodiment includes the electronic apparatus 101 and a plurality of the serially-connected fan units 10 that cools the electronic apparatus 101. In the present embodiment, the number of the fan units 10 provided is, for example, four.

[0027]

Each fan unit 10 includes a cooling fan 11 that is driven rotationally by a not-shown motor, and a not-shown controlling unit. The controlling unit controls each fan unit 10, and includes a fan controller 13, circuits 20, 30, 40, and 50, and a counter 60 (refer to FIG. 14) explained later. The fan controller 13 monitors and controls the operation of the cooling fan 11. Particularly, the controlling unit performs a function of assigning to an own fan unit (fan controller 13) an address that identifies the own fan unit among the plurality of the fan units 10 (for example, I2C slave address) by corresponding thereof with the connection position of the own fan unit among the plurality of the fan units 10.

[0028]

Moreover, the server 1 includes a management unit 7 (refer to FIGS. 8 to 13). The management unit 7 identifies each fan unit 10 based on the address assigned thereto, and manages each fan unit 10. In the following explanation, the management unit 7 may be referred to as a management and monitoring unit 7 of the entire server casing, or a management and monitoring unit 7, or a monitoring unit 7.

[0029]

As explained later by referring to FIGS. 5 to 11, the plurality of the fan units 10 is configured so as to enable hot swapping of one fan unit among the plurality of the fan units 10. In other words, the plurality of the fan units 10 is configured so as to enable hot swapping of one fan unit among the plurality of the fan units 10 by adding and connecting an additional fan unit 10 to one end side of the plurality of the fan units 10 and pushing out a fan unit arranged on the other side of the plurality of the fan units 10 from the other side.

[0030]

The controlling unit assigns to the own fan unit an address that identifies the own fan unit in accordance with the addition and connection of the additional fan unit. The controlling unit includes the counter 60 that counts a pulse signal received from a previous fan unit that is arranged before the own fan unit (refer to FIGS 14 and 19). Moreover, the controlling unit delays the pulse signal received from the previous fan unit only for a predetermined delay time (DL4; refer to FIG. 19), outputs the same to a

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subsequent fan unit arranged after the own fan unit, and assigns to the own fan unit as an address a value according to the countable value counted by the counter 60.

[0031]

Moreover, each fan unit 10 on which hot swapping (swapping in the energized state) of the fan unit 10 can be performed is configured as below. In other words, 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). Moreover, each fan unit 10 includes power connectors CNA and CNB to which two or more power cables capable of supplying power to the own fan unit are connected when the own fan unit is arranged on one end side of the plurality of the fan units 10 (refer to FIGS. 5 to 7).

[0032]

According to the server 1 explained above, a part of the fan units among the plurality of the fan units 10 can be hot-swapped by the slide operation without using the exposed power rail configuration, as explained in detail below. Moreover, in such a case, immediately after the hot swapping is performed, an I2C slave address is automatically assigned by the controlling unit in each fan unit 10. In other words, an address associated with the position of each fan unit 10 can be assigned to each fan unit 10 even after the fan unit 10 is hot-swapped.

[0033]

Accordingly, a link between the installation position of each fan unit 10 inside the casing of the server 1 and the I2C slave address thereof can be established without performing any special operation, and the management unit 7 can correctly recognize each fan unit 10 and appropriately perform the rotation speed control or abnormality condition monitoring of each fan unit 10. For example, correspondence between the faulty fan unit 10 and fault LEDs 8a to 8d that should be lit on a fan fault external display panel 8 can be correctly established, as explained later by referring to FIGS. 8 to 11. In such a manner, according to the server 1 of the present embodiment, problems and issues of the related technology explained above by referring to FIGS. 1 to 4 can be resolved.

[0034]

3. Connection structure and hot-swapping procedure of the fan units of the present embodiment

The connection structure and the hot-swapping procedure of the fan units used in the present embodiment that resolves various problems and issues of the related technology explained by referring to FIGS. 1 to 4 will be explained below while referring to FIGS. 5 to 11.

[0035]

Furthermore, as explained above, FIG. 5 is the schematic perspective view of the connection structure of the server 1 and the fan unit 10 according to the present embodiment, and FIG. 6 is the enlarged perspective view of the connection structure shown in FIG. 5. Moreover, FIG. 7A is a schematic perspective view of the fan unit 10 according to the present embodiment, and FIG. 7B is a schematic front view of the fan unit 10 according to the present embodiment. FIGS. 8 to 11 show schematic perspective views of the connection structure explaining the hot-swapping procedure of the fan units 10 and the fault display according to the present embodiment.

[0036]

As shown in FIGS. 5 and 6, and FIGS. 8 to 11, in the present embodiment, the plurality of the fan units

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10 (four fan units in the figure) are arranged sequentially so as to pass from one side (right side in the figure) through the other side (left side in the figure) of the casing of the server 1. Consequently, by adding a new fan unit 10 to one side of the plurality of the fan units 10 and sliding the entire plurality of the fan units 10 to the left side shown in the figure, the fan units 10 on the left side are pushed out to the other side (left side in the figure) of the casing.

[0037]

Each of the fan units 10 that form such a connection structure includes connectors CNA, CNB, CNC, CND for supplying power and transmitting a control signal / monitoring signal to the adjacent fan unit 10, as shown in FIGS. 5, 6, 7A, and 7B. Furthermore, in the following explanation, the control signal / monitoring signal may be referred to as a control / monitoring signal.

[0038]

In other words, a connector CNC (male) that enables power supply and live connection of the control signal / monitoring signal is provided by protruding on the right side surface when viewed from a front surface of each fan unit 10. A connector CND (female) that enables power supply and live connection of the control signal / monitoring signal is provided by recessing on the left side surface when viewed from the front surface of each fan unit 10. The two adjacent fan units 10 are connected so as to enable power supply and transmission of the control signal / monitoring signal by engaging the connector CNC of the fan unit 10 on one side and the connector CND of the fan unit 10 on the other end.

[0039]

Moreover, two female connectors CNA and CNB that enable power supply and live connection of the control signal / monitoring signal are provided on one end of each fan unit 10 (right side when viewed from the front surface). The connector CNA on one side is arranged on a lower part of the front surface of each fan unit 10 such that an end part plug (male) of a cable A is inserted from the front surface side so as to be live-connected. The connector CNB on the other side is arranged on an upper part of the rear surface of each fan unit 10 such that an end part plug (male) of a cable B is inserted from the rear surface side so as to be live-connected. The two cables A and B are connected to the connectors CNA and CNB, respectively, when the fan unit 10 is arranged on a right-most side (one side) of the plurality of the fan units 10 (when adding the fan unit 10). The cables A and B each supply power from a power supplying unit (internal power source) 2 of the server 1 and transmits the control signal / monitoring signal and the like received from the management unit 7 (refer to FIGS. 8 to 13).

[0040]

Furthermore, as shown in FIG. 7A, an insertable / removable indicator lamp 12 is provided on the right side surface when viewed from the front surface of each fan unit 10. Because the right side surface is exposed to the outside when the fan unit 10 is arranged on the right-most side of the plurality of the fan units 10 (when the fan unit 10 is added), the maintenance person can check a lighting state of the insertable / removable indicator lamp 12. The insertable / removable indicator lamp 12 is, for example, a dual-colored LED. The lighting color (luminescent color) of the insertable / removable indicator lamp 12 is controlled by a later-explained LED lighting circuit 20 (refer to FIGS. 14 and 15). For example, when the cables A and B are respectively connected to the connectors CNA and CNB, that is, the cables A and B are in a insertable / removable state (a 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 a green color state (to lit up in

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green color). 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 a cable is removed), the insertable / removable indicator lamp 12 is controlled to be in a yellow color state (to lit up in yellow color).

[0041]

The power is supplied to the serially-connected plurality of the 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 the 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 the fan units 10 via the cables A and B and the connectors CNA, CNB, CNC, and CND explained above. Therefore, the fan unit 10 can be hot-swapped without having to stop the system (server 1).

[0042]

Next, the hot-swapping procedure of the fan unit 10 according to the present embodiment will be explained while referring to FIG. 6. Here, an operation performed by the maintenance person when adding a new fan unit 10 on one side (right side) and sliding the already installed fan unit 10 in the server 1 to push out the fan unit 10 on the other end (left side) is explained. At the start of the operation, four serially-connected fan units 10 are installed in the server 1 and the connectors CNA and CNB of the fan unit on the right-most side are connected to the cables A and B, respectively.

[0043]

At this time, the maintenance person confirms that the insertable / removable indicator lamp 12 provided on the right side of the fan unit 10 arranged on the right-most side among the already installed fan units 10 inside the server 1 is in the green color state. In other words, the maintenance person confirms that the connectors CNA and CNB of the fan unit 10 arranged on the right-most side is connected to the cables A and B, and is in a state in which the cable can be inserted / removed.

[0044]

Upon visually confirming the insertable / removable indicator lamp 12 and confirming that it is the state in which the cable can be inserted / removed, the maintenance person engages the connector CNC (male) of the fan unit 10 on the right-most side with the connector CND of the new fan unit 10 (refer to Arrow (1) shown in FIG. 6). Accordingly, the new unit 10 is connected to the fan unit 10 on the right-most side as a fifth fan unit 10.

[0045]

Subsequently, the maintenance person removes the cable A that is connected to the connector CNA of the fan unit 10 on the right-most side, and connects the same to the connector CNA of the additionally-linked new fan unit 10, as shown by Arrow (2) of FIG. 6. At this step, the insertable / removable indicator lamp 12 switches from the green color state to the yellow color state when the cable A is removed, and switches back to the green color when the cable A is connected to the connector CNA of the new fan unit 10.

[0046]

Furthermore, the maintenance person removes the cable B that is connected to the connector CNB of the fan unit 10 on the right-most side, and connects the same to the connector CNB of the additionally-linked new fan unit 10, as shown by Arrow (3) of FIG. 6. Even at this step, the insertable / removable

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indicator lamp 12 switches from the green color state to the yellow color state when the cable B is removed, and switches back to the green color when the cable B is connected to the connector CNB of the new fan unit 10.

[0047]

Subsequently, the maintenance person performs the sliding operation to move the all five fan units 10 in which the new fan unit 10 is added on the right-most side in a direction of the Arrow (4) (left side) shown in FIG. 6. Accordingly, the new fan unit 10 is pushed inside the server 1, and a fifth fan unit 10 from the right (left-most side) is pushed outside from the server 1.

[0048]

At this time, when the pushed-out fan unit 10 is a faulty fan unit to be swapped (target fan unit), the pushed-out fan unit 10 is removed, and the swapping operation is completed. When the pushed-out fan unit 10 is not the target fan unit, the maintenance person adds and connects that pushed-out fan unit 10 on the right-most side and pushes thereof inside the server 1 as the new fan unit 10 as explained above. The maintenance person repeats such an operation till the target fan unit is pushed out.

[0049]

In such a way, a specific fan unit among the serially-connected four fan units 10 (faulty fan unit) can be swapped with a new fan unit 10 without stopping the power supply to the fan units 10. Accordingly, swapping of the fan units 10 in a state in which rotation of the cooling fan 11 provided in each fan unit 10 is maintained as is, that is, swapping of the fan units 10 in the hot state can be performed.

[0050]

Incidentally, in the present embodiment, when the cables A and B are removed / inserted as explained above and the insertable / removable indicator lamp 12 returns to the green color state, that is, when the new fan unit 10 is added and connected, an address is automatically assigned by the controlling unit of each fan unit 10. In other words, the controlling unit of each fan unit 10 automatically assigns and sets the I2C slave address of the fan controller 13 (I2C slave; refer to FIGS. 12 to 14) of each fan unit 10 as explained below.

[0051]

For example, a smallest number (for example, 0) is assigned as the I2C slave address to a first fan unit 10 (arranged on the right-most side) to which the cables A and B are connected. The smallest number + 1 (for example, 1) is assigned to a second fan unit 10 from the right side as the I2C slave address. Similarly, the smallest number + 2, the smallest number + 3, the smallest number + 4 (for example, 2, 3, and 4) are assigned as the I2C slave addresses to a third, fourth, and fifth fan unit 10 from the right side, respectively.

[0052]

In such a way, an address that identifies each fan unit 10 can be assigned to each fan unit 10 in correspondence with the connection position of each fan unit 10 among the plurality of the fan units 10.

[0053]

Furthermore, a method using which I2C slave address is automatically assigned and set is explained in more detail while referring to FIGS. 14 to 19.

[0054]

The management unit 7 (I2C master) identifies each fan unit 10 based on the I2C slave address that is automatically assigned and set to the fan controller 13 of the respective fan unit 10 as explained above, and manages each fan unit 10 (fan controller 13). The management unit 7 also controls a normal / faulty display

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for the plurality of the fan units 10 explained below while referring to FIGS. 8 to 11. FIGS. 8 to 11 are views explaining the hot-swapping procedure of the fan unit 10 and the fault display according to the present embodiment.

[0055]

As shown in FIGS. 8 to 11, a fan fault external display panel 8 is provided on a lower part of the front surface of the server 1 according to the present embodiment. The fan fault external display panel 8 includes four LEDs (dual-colored LEDs) 8a, 8b, 8c, and 8d. The management unit 7 controls the lighting color of the LEDs 8a to 8d in accordance with the state of the four fan units 10 mounted inside the server 1.

[0056]

The LED 8a shows the normal / faulty state of the fan unit 10 on the left-most side, that is, the fourth fan unit 10 from the right side indicated by (1) in FIGS. 9 to 11. The LED 8b shows the normal / faulty state of the second fan unit 10 from the left side, that is, the third fan unit 10 from the right side indicated by (2) in FIGS. 9 to 11. The LED 8c shows the normal / faulty state of the third fan unit 10 from the left side, that is, the second fan unit 10 from the right side indicated by (3) in FIGS. 9 to 11. The LED 8d shows the normal / faulty state of the fourth fan unit 10 from left side, that is, the fan unit 10 on the right-most side indicated by (4) in FIGS. 9 to 11.

[0057]

For example, each of the LEDs 8a to 8d are controlled to be in the green color state (a state in which the LED emits the green color) when the corresponding fan unit 10 are in the normal state. On the other hand, each of the LEDs 8a to 8d are controlled to be in the yellow color state (a state in which the LED emits the yellow color) when the corresponding fan unit 10 is in the faulty state.

[0058]

As shown in FIG. 8, when all fan units 10 are in the normal state, all the LEDs 8a to 8d of the fan fault external display panel 8 are caused to retain the green color state by the management unit 7.

[0059]

At this step, the management unit 7 and the fan controller 13 of each fan unit 10 are connected via I2C as shown in FIG. 13, and the management unit 7 becomes the I2C master and each fan controller 13 becomes the I2C slaves to which a unique address (I2C slave address) is assigned. Consequently, the management unit 7 reads the state from each fan controller 13, and when the read state is the faulty state, transmits an external fault display signal (refer to FIG. 12) to the fan fault external display panel 8. Accordingly, the LED among the LEDs 8a to 8b that corresponds to the faulty fan unit 10 identified by the unique address is lit in the yellow color state. Therefore, it is necessary that the installation position and the I2C slave address of each fan unit 10 correspond to each other. In the present embodiment, by configuring the fan units 10 so as to include the controlling unit explained above of each fan unit 10 as shown in FIGS. 14 to 18, the installation position and the I2C slave address of the fan unit after the fan unit 10 is pushed out and swapped can be automatically synchronized.

[0060]

For example, when the management unit 7 detects a fault of the fan unit (2) in a state shown in FIG. 8, the management unit 7 transmits the external fault display signal (refer to FIG. 12) related to the fan unit (2) to the fan fault external display panel 8. As shown in FIG. 9, the LED 8b on the fan fault external display panel 8 that corresponds to the fan unit (2) switches from the green color state to the yellow color state

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according to the external fault display signal. The maintenance person refers to the fan fault external display panel 8 to recognize the fault of the fan unit (2), and prepares one new fan unit (5) for the addition.

[0061]

At this time, by a function of the controlling unit of each fan unit 10 explained above, addresses that correspond to the connection position of each fan unit 10, for example, 3, 2, 1, and 0 are assigned to the four fan units (1) to (4), as the I2C slave addresses that identify each fan unit 10. Accordingly, the fan unit (2) in which fault has occurred is identifies by the address "2".

[0062]

Subsequently, as shown in FIG. 10, the maintenance person additionally connects the new fan unit (5) on the right-most side of the four fan units (1) to (4) in the server 1 according to the procedure explained above while referring to FIG. 6. The maintenance person causes all serially-connected five fan units (1) to (5) to slide in the left direction shown in FIG. 11, as shown in FIG. 11. Accordingly, the new fan unit (5) is pushed inside the server 1, and the fan unit (1) is pushed outside from the server 1.

[0063]

At this step, four fan units (2) to (5) are mounted inside the server 1. Subsequently, by a function of the controlling unit of each fan unit 10 explained above, addresses that correspond to the connection position of each fan unit 10, for example, 3, 2, 1, and 0 are assigned to these four fan units (2) to (5), as the I2C slave addresses that identify each fan unit 10. Accordingly, the fan unit (2) in which fault has occurred is identifies by the address "3".

[0064]

Consequently, when the management unit 7 detects a fault of the fan unit (2) that is identified with address "3", and transmits the external fault display signal (refer to FIG. 12) related to the fan unit (2) to the fan fault external display panel 8. As shown in FIG. 11, the LED 8a on the fan fault external display panel 8 that corresponds to the fan unit (2) switches from the green color state to the yellow color state according to the external fault display signal, and the LEDs 8b to 8d that correspond to the fan units (3) to (5) are set to the green color state.

[0065]

Subsequently, the maintenance person recognizes the fault of the fan unit (2) by referring to the fan fault external display panel 8, and then adds and connects the pushed-out fan unit (1) on the right-most side of the four fan units (2) to (5) in the server 1. Subsequently, the maintenance person causes all serially-connected five fan units (2) to (5) and (1) to slide in the left direction shown in FIG. 11. Accordingly, the fan unit (1) is pushed inside the server 1, and the faulty fan unit (2) is pushed outside from the server 1.

[0066]

Accordingly, hot swapping of the faulty fan unit (2) is completed. At this step, the four fan units (3) to (5) and (1) are assigned the addresses, for example, 3, 2, 1, and 0, respectively. Moreover, because all fan units 10 are in the normal state, all the LEDs 8a to 8d of the fan fault external display panel 8 are caused to retain the green color state by the management unit 7, as shown in FIG. 8.

[0067]

4. Hardware configuration of server according to the present embodiment

Next, hardware configuration of the server according to the present embodiment will be explained while referring to FIGS. 12 and 13. FIG. 12 is a block diagram showing a hardware configuration of the

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server 1 used in the technology according to the present embodiment. FIG. 13 is a diagram showing an I2C connection between the management unit 7 (I2C master) and various fan units 10 (I2C slaves) in the server 1 used in the technology according to the present embodiment.

[0068]

As explained above, the server 1 is an example of an electronic device that includes an electronic apparatus that is cooled by the fan unit 10. As shown in FIG. 12, the server 1 according to the present embodiment includes, for example, the power source unit 2, CPU 3, MEM 4, HDD 5, an electric voltage regulator 6, the management and monitoring unit 7, the fan fault external display panel 8, and four fan units 10. The CPU is an abbreviation of Central Processing Unit, MEM is an abbreviation of the memory, and HDD is an abbreviation of Hard Disk Drive.

[0069]

The power source unit 2 is an internal power source mounted inside the server 1, and as explained above, supplies power to the plurality of the fan units 10 via the cable A, the cable B, and the connectors CNA to CND. Moreover, in addition to supplying power to electronic apparatus such as the CPU 3, the MEM 4, and the HDD 5, the power source unit 2 supplies power to other various not-shown electronic apparatus and the like via the electric voltage regulator 6.

[0070]

The CPU 3 is an example of a processor that performs various kinds of controls and calculations. The CPU 3 is connected to the MEM 4, the HDD 5, the management and monitoring unit 7, other various types of electronic apparatus and the like via a bus so as to be mutually communicable. Furthermore, instead of an arithmetic processing device such as the CPU 3, electronic circuit, for example, integrated circuits (IC) such as Micro Processing Unit (MPU), Application Specific Integrated Circuit (ASIC), and Field Programmable Gate Array (FPGA) can be used as a processor.

[0071]

The MEM 4 is an example of hardware of a volatile storage unit that stores information such as various data and computer programs. Memories such as Random Access Memory (RAM) and the like can be cited as an example of the MEM 4.

[0072]

The HDD 5 is an example of hardware of a non-volatile storage unit that stores information such as various data and computer programs. In addition to magnetic disk devices such as HDDs, various kinds of storage devices, for example, semiconductor drive devices such as Solid State Drives (SSD), flash memories, and nonvolatile memories such as Read Only Memory (ROM) and the like can be cited as examples of the non-volatile storage unit. The HDD 5 can store various kinds of computer programs that implement all or a part of various functions of the server 1.

[0073]

The CPU 3 can realize various functions of the server 1 by, for example, loading various computer programs stored in the HDD 5 onto the MEM 4 and executing thereof.

[0074]

The electric voltage regulator 6 adjusts the power voltage of the power from the power source unit 2, and supplies the voltage-adjusted power to the electronic apparatus, for example, the CPU 3, the MEM 4, and HDD 5 inside the server 1.

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[0075]

The management and monitoring unit 7 of the entire server casing monitors the hardware configuration of the server 1, and can be regarded as, for example, a service processor. The management and monitoring unit 7 according to the present embodiment manages the state of the power source unit 2, the CPU 3, the MEM 4, the HDD 5, and the fan units 10 by exchanging the monitoring signals between the power source unit 2, the CPU 3, the MEM 4, the HDD 5, and the fan units 10. Moreover, the management and monitoring unit 7 controls the state of the power source unit 2 and the fan units 10 by transmitting the control signal to the power source unit 2 and the fan units 10.

[0076]

In the present embodiment, the power line and the control / monitoring signal line of the four fan units 10 inside the server 1 are joined in a daisy chain form via the cables A and B, and the connectors CNA, CNB, CNC, and CND. Particularly, as shown in FIG. 13, the monitoring unit 7, which is the I2C master, and the fan controller 13, which is the I2C slave in each fan unit 10, are connected by the control / monitoring signal lines SCL and SDL that form the I2C serial interface. SCL is an abbreviation of Serial Clock Line, and SDL is an abbreviation of Serial Date Line.

[0077]

At this step, in each fan unit 10, a countable value AD0-3 (see FIG. 19) obtained by the I2C address counter 60 can be assigned as is to the I2C slave 13 as the I2C slave address. Moreover, as shown in FIG. 13, upon converting the countable value AD0-3 (refer to FIG. 19) to the corresponding address values such as 1D, 1E, 1F, and so on, the converted corresponding address values can be assigned and set to the I2C slave 13 as the I2C slave address.

[0078]

Accordingly, the monitoring unit 7 (I2C master) can identify each fan unit 10 based on the I2C slave addresses that are automatically assigned and set to the fan controller 13 of the respective fan unit 10, and manage / control each fan unit 10 (fan controller 13). Moreover, as explained above while referring to FIGS. 8 to 11, the monitoring unit 7 performs control on the normal / fault display of the four fan units 10 by using the external fault display signal, that is, performs control on the LEDs 8a to 8d on the fan fault external display panel 8.

[0079]

As explained above while referring to FIGS. 8 to 11, the fan fault external display panel 8 is arranged on a lower part of the front surface of the server 1, and includes the LEDs 8a to 8d that correspond to the four fan units 10. The LEDs 8a to 8d are controlled by the monitoring unit 7 so as to light in a color based on the state of the four fan units 10 installed inside the server 1.

[0080]

The four fan units 10 are serially connected, and cool down the electronic apparatus including the CPU 3, the MEM 4, and the HDD 5. Each fan unit 10 includes a cooling fan 11 that is driven rotationally by a not-shown motor. Moreover, the four fan units 10 are configured so as to be hot-swappable by performing the sliding operation of a part of the fan units 10 as explained above while referring to FIGS. 5 to 11.

[0081]

In addition to the insertable / removable indicator lamp 12 explained above while referring to FIG. 7A, each fan unit 10 includes a controlling unit that includes the fan controller 13. The fan controller 13

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monitors the rotation speed and abnormal conditions (performs temperature monitoring) of the cooling fan 11. Moreover, the controlling unit explained above assigns to the fan controller 13 of the own fan unit the I2C slave address that identifies own fan unit among the four fan units 10 by corresponding thereof with the connection position of the own fan unit among the four fan units 10. As explained later while referring to FIG. 14, in addition to the fan controller 13, the controlling unit includes circuits 20, 30, 40, and 50, and the counter 60.

[0082]

5. Configuration of various fan units according to the present embodiment

Next, the configuration of the fan unit 10 according to the present embodiment will be explained while referring to FIGS. 14 to 18. Here, configuration for automatically generating, assigning, and setting the I2C slave address with respect to the fan controller 13 of each fan unit 10 is explained below.

[0083]

FIG. 14 is a block diagram showing the configuration of various fan units 10 according to the present embodiment. FIG. 15 is a block diagram showing a detailed configuration of the LED lighting circuit 20 shown in FIG. 14. FIG. 16 is a block diagram showing a detailed configuration of an I2C bus switching circuit 30 shown in FIG. 14. FIG. 17 is a block diagram showing a detailed configuration of an edge generating circuit 40 shown in FIG. 14. FIG. 18 is a block diagram showing a detailed configuration of a pulse generating circuit 50 shown in FIG. 14.

[0084]

As shown in FIG. 14, each fan unit 10 includes the connectors (power source connectors) CNA and CNB for the cables A and B, and the inter-fan connectors CNC and CND explained above.

[0085]

Moreover, each fan unit 10 includes the cooling fan 11, the insertable / removable indicator lamp 12, and the fan controller 13.

[0086]

Furthermore, each fan unit 10 includes the LED lighting circuit 20, the I2C bus switching circuit 30, the edge generating circuit 40, the pulse generating circuit 50, and the I2C address counter 60. Here, the I2C bus switching circuit 30, the edge generating circuit 40, the pulse generating circuit 50, and the I2C address counter 60 function as a controlling unit that automatically generates, assigns, and sets the I2C slave address to the fan controller 13 of each fan unit 10.

[0087]

Functions and operation of the LED lighting circuit 20, the I2C bus switching circuit 30, the edge generating circuit 40, the pulse generating circuit 50, and the I2C address counter 60 are explained below.

[0088]

Furthermore, a part or all functions of the LED lighting circuit 20, the I2C bus switching circuit 30, the edge generating circuit 40, the pulse generating circuit 50, and the I2C address counter 60 can be realized by a processor 10a provided in each fan unit 10 by executing a cooling fan control program.

[0089]

In such a configuration, an arithmetic processing device such as CPU, or integrated circuits such as MPU, ASIC, or FPGA can be used as the processor 10a. Moreover, the computer program executed by the processor 10a can be provided in a state in which it is recorded on a non-transitory portable recording

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medium such as an optical disk, a memory device, or a memory card. Alternatively, the computer program executed by the processor 10a can be provided via a network.

[0090]

Furthermore, the optical disk is a portable, non-transitory recording medium on which data is readably recorded by the reflection of light. Blu-ray (trademark), Digital Versatile Disc (DVD), DVD-RAM, Compact Disc Read Only Memory (CD-ROM), CD-R (Recordable) / RW (ReWritable) can be cited as an example of the optical disk. The memory device is a non-transitory recording medium that includes a communication function with a device connection interface, such as a Universal Serial Bus (USB) memory. The memory card is a card-type non-transitory recording medium that serves as a data writing/reading target when connected to a processing unit 22 via a memory reader / writer.

[0091]

In FIG. 14, the connectors CNA and CNB are connected to the cables A and B that are connected to a main body unit of the server 1, respectively, as explained above. However, the cables A and B can only be connected to the connectors CNA and CNB of the first fan unit 10. The connectors CNC and CND connect the adjacent fan units 10 as explained above.

[0092]

The connector CNA of the first fan unit 10 is connected to the main body unit of the server 1 via the cable A, and is connected to a power source and a signal (a power supply VCCA, an I2C control / monitoring signal line (SCL, SDL) I2CA, an alarm signal AlmA, a ground GND) of a first system A. Similarly, the connector CNB of the first fan unit 10 is connected to the main body unit of the server 1 via the cable B, and is connected to a power source and a signal (a power supply VCCB, an I2C control / monitoring signal line I2CB, an alarm signal AlmB, the ground GND) of a second system B.

[0093]

Moreover, in FIG. 14, VCC indicates the power source, and GND indicates ground. Moreover, a character "o" assigned to signals *ALo, I2Co, S0o, S1o, S2o indicates this signal is output from the respective fan unit 10. Similarly, a character "i" assigned to signals *ALi, I2Ci, S0i, S1i, S2i indicates this signal is input to the respective fan unit 10.

[0094]

*AL is an alarm signal that indicates a fan abnormality detected in the fan controller 13 of each fan unit 10 in negative logic. The alarm signal *AL is input from a *ALo terminal of the connector CNC of the previous fan unit 10 to a *ALi terminal of the connector CND of the own fan unit 10. Then, the alarm signal *AL is transmitted in real time from the *ALi terminal of the connector CND of the own fan unit 10 to the terminal *ALo of the connector CNC. Moreover, in the first fan unit 10, the monitoring unit 7 is notified of the alarm signal *AL via an AlmA terminal of the connector CNA and the cable A, and via an AlmB terminal of the connector CNB and the cable B.

[0095]

The alarm signal *AL is a signal that notifies of an abnormality when the fan controller 13 detects a rotation speed abnormality of the cooling fan 11, or a temperature abnormality from a temperature sensor in the cooling fan 11. Detailed information related to the abnormality (such as rotation speed, temperature) is collected by the monitoring unit 7, which is the I2C master, by accessing the fan controller 13, which is the I2C slave, via an I2C line.

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[0096]

As shown in FIG. 15, the LED lighting circuit 20 is configured so as to control the lighting color (luminescent color) of the insertable / removable indicator lamp 12 when hot-swapping the fan unit 10, as explained above while referring to FIG. 7A. The LED lighting circuit 20 includes an AND gate 21. In FIG. 15, VCCA indicates a power source of the first system A supplied from the connector CNA, and VCCB indicates a power source of the second system B supplied from the connector CNB.

[0097]

While the cable A or cable B is temporarily connected only to the connector CNA or the connector CNB when hot-swapping the fan unit 10, a state of the lighting signal from the AND gate 21 becomes "0" and the state of the insertable / removable indicator lamp 12 changes from the green color lighting state to the yellow color lighting state. Moreover, upon connecting the cable A and the cable B to the connectors CNA and CNB of the new fan unit 10, the state of the lighting signal from the AND gate 21 becomes "1" and the state of the insertable / removable indicator lamp 12 changes from the green color lighting state to the yellow color lighting state.

[0098]

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.

[0099]

The I2C bus switching circuit 30 is configured to switch a connection destination of an I2C bus within each fan unit 10 to an appropriate connection destination depending on whether the fan unit 10 is arranged as the first fan unit 10 or as the second or subsequent fan unit 10, as shown in FIG. 16. The I2C bus switching circuit 30 includes an OR gate 31 and an analog multiplexer 32. The I2C (SCL, SDL) is a signal in conformance with the I2C interface standards, and is connected to the I2C master in the monitoring unit 7 and the I2C slave (fan controller 13) of each fan unit 10.

[0100]

Because the I2Ci is set in an open state in the first fan unit 10, the I2Co needs to be switched so as to connect to the I2CA and I2CB signals from the connectors CNA and CNB, instead of I2Ci. Moreover, in the second and subsequent fan units 10, because the I2C buses of the connectors CNA and CNB are set in an open state, and the I2Ci is connected to the I2Co of the previous fan unit 10, it is necessary to connect the I2Co to the I2Ci.

[0101]

In FIG. 16, when a plug of the cable A or the cable B is inserted and connected to the connectors CNA or CNB, a selection signal from the OR gate 31 becomes "1". In other words, in the first fan unit 10, because the cables A and B are connected to the connectors CNA and CNB, the selection signal becomes "1", and the analog multiplexer 32 switches in accordance with the selection signal so as to connect a port A and a port X. Accordingly, the I2Co is connected to I2CA / I2CB connected to the port A.

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[0102]

On the other hand, in the second and the subsequent fan units 10, because the cables A and B are not connected to the connectors CNA and CNB, the selection signal becomes "0", and the analog multiplexer 32 switches in accordance with the selection signal so as to connect the port B and the port X. Accordingly, the I2Co is connected to the I2Ci connected to the port B.

[0103]

By using such I2C bus switching circuit 30 shown in FIG. 16, the monitoring unit 7, which is the I2C master, is connected to the I2C slaves (fan controller 13) inside the all serially-connected fan units 10 via the I2Co terminal of the connector CND of each fan unit 10. Accordingly, the I2C master (monitoring unit 7) can identify the I2C slave by using the I2C slave address automatically assigned to the I2C slave, and communicate with the I2C slave.

[0104]

As shown in FIG. 17, in the first fan unit 10, the edge generating circuit 40 is configured to generate an edge which is a starting point of reset when turning on the power of the main unit and inserting / removing the fan unit 10. The edge generating circuit 40 includes the AND gate, a Schmidt trigger component element, and an open collector.

[0105]

When the power of the system is turned on while a fault has not occurred in the cooling fan 11, the cables A and B are connected to the connectors CNA and CNB of the first fan unit 10. At this time, an edge from High (H) to Low (L) is generated in S0o signal by the Schmidt trigger component having a delay with respect to rise of the power source VCC.

[0106]

At the time of swapping the fan unit 10 after a fault has occurred in the cooling fan 11, upon inserting the cable A to the connector CNA of the new fan unit (first fan unit) 10, output of the Schmidt trigger component (S0o) becomes an H state. Subsequently, upon inserting the cable B in the connector CNB of the new fan unit (first fan unit) 10, the cables A and B are connected to the connectors CNA and CNB, respectively. Consequently, an edge from H to L is generated in the S0o signal by the Schmidt trigger component.

[0107]

This change (edge) is only generated in the edge generating circuit 40 of the first fan unit 10 to which respective cables A and B of the connectors CNA and CNB are connected. The edge generated in the edge generating circuit 40 of the first fan unit 10 is transmitted to the second fan unit 10 and the subsequent fan units 10 via the S0o terminal of the connector CND (refer to area C1 in FIG. 19).

[0108]

As shown in FIG. 18, the pulse generating circuit 50 is configured to generate a pulse signal that is used to generate (calculate) the I2C slave address in each fan unit 10. The pulse generating circuit 50 includes a circuit 51 and a D-FF (flip flop) 52 explained later in the document.

[0109]

By using the pulse generating circuit 50 shown in FIG. 18, a pulse signal is generated in accordance with a delay time DL4 in each fan unit 10 that is used as a count UP signal of the I2C address counter 60, and then transmitted to the next (subsequent) fan unit 10. In each fan unit 10, countable value AD0-3

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counted by the I2C address counter 60, or the address value obtained by converting the countable value is automatically assigned and set to the fan controller 13 as a unique I2C slave address.

[0110]

In the circuit 51 of the pulse generating circuit 50, a logical sum (OR) of an input signal S0i and an inverted signal of the input signal S0i according to a delay time DL1 is output as a S0x (Reset) signal. Accordingly, regardless of a state of the S0i signal, the S0x signal, which is an output of the OR gate, is in the H state. Only when the S0i signal changes from the H state to a L state, a pulse signal of a time width DL1 is generated in the S0x (Reset) signal, which is the output of the OR gate (refer to FIG. 19). Functions and operation of the pulse generating circuit 50 is more specifically explained later while referring to FIG. 19.

[0111]

6. Operation of various fan units according to the present embodiment

Next, the operation of the fan unit 10 according to the present embodiment will be explained while referring to FIG. 19. Here, operation performed when four fan units 10 shown in FIGS. 14 to 18 are serially connected (function of each fan module 10 as the controlling unit explained above) is explained in accordance with the time chart show in FIG. 19. Particularly, an operation in which the I2C slave address is automatically generated, assigned, and set to the fan controller 13 of each fan unit 10 is explained. Furthermore, in FIG. 19, t1 to t11 indicate timing of a fixed time interval (for example, the time width DL1 in the present embodiment). For example, t1 indicates connection timing of the cable A, and t3 indicates connection timing of the cable B.

[0112]

In the first fan unit 10, power and the control signal is respectively supplied from the power source unit 2 and the monitoring unit 7 via at least one of the two cables A and B. The cable A or the cable B is removed from the connector CNA or the connector CNB one by one, and is connected to the connector CNA or the connector CNB of the new fan unit 10. Starting from the time when both cables A and B are connected to the connectors CNA and CNB of the new fan unit 10 (refer to t3 in FIG. 19), as shown in FIG. 19, an internal reset signal S0x (Reset) with the time width DL1 is generated for all fan units 10 (see t3 to t4 in FIG. 19).

[0113]

At this time, as shown in the area C1 of FIG. 19, the internal reset signal S0x (Reset) changes to the L state for the time width DL1 at the same time in all fan units 10, and the reset processing is performed. As the reset processing, for example, a processing in which the countable value AD0-3 of the counter 60 is reset to zero, or a processing in which the D-FF 52 of the pulse generating circuit 50 is reset, is performed. In each fan unit 10, because the input S0i and the output S0o are directly connected, the internal reset signal S0x (Reset) is immediately transmitted to all fan units 10.

[0114]

After the reset is released by the internal reset signal S0x (Reset), a pulse signal for counting inside each fan unit 10 is generated with respect to the next fan unit 10 in sequence. Each fan unit 10 transmits to the subsequent fan unit 10 the pulse signal received from the previous fan unit 10 by delaying only for a predetermined delay time DL4 (refer to t3 to t5 and Arrow B1; t5 to t7 and Arrow B2; and t7 to t9 and Arrow B3 in FIG. 19). In each fan unit 10, the internal counter 60 counts the pulse signal received from the previous fan unit, and recognizes the countable value as the address AD0-3 of each fan unit 10.

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[0115]

Particularly, in the edge generating circuit 40 shown in FIG. 17, a pulse signal with a delay time (time width, pulse width) DL1 is generated on the internal signal S0x in accordance with the edge notified from the first fan unit 10 (refer to t3 in FIG. 19). Accordingly, the I2C address counter 60 and the D-FF 52 of the pulse generating circuit 50 are reset. The S0i terminal of the connector CNC and the S0o terminal of the connector CND are electrically serially-connected, and the D-FF 52 and the I2C address counter 60 inside all fan units 10 are reset.

[0116]

Moreover, in the pulse generating circuit 50 shown in FIG. 18, an input pulse signal (pulse signal for counting) to be transmitted to the counter 60 that determines the I2C slave address is generated from the input signal S1x. At this time, an FF_CLK (clock) signal is generated by passing the input signal S1i through an RC integral circuit that prevents erroneous operation due to noise and the Schmidt trigger component. After the FF_CLK signal is latched by the D-FF 52, a negative Low pulse signal is generated and output from the *Q terminal of the D-FF 52. Furthermore, because the negative Low pulse signal is delayed only for the predetermined delay time DL4 (> time width DL1 explained above), the negative Low pulse signal is transmitted from the S1o terminal of the connector CND to the subsequent fan unit 10 as the output signal S1o.

[0117]

The FF_CLK signal explained above is also input to a CLK terminal of the I2C address counter 60 at the same time, and the I2C address counter 60 also counts the pulse signals generated by the own fan unit 10. Furthermore, because the S1i terminal is the open state in the first fan unit 10, by using a signal synchronized with the signal S0o from the edge generating circuit 40, a signal change (change from H to L; edge) that includes a predetermined delay time DL4 is generated in the signal S1o (refer to t5 in FIG. 19).

[0118]

The pulse signal generated in the fan units 10 arranged up to the previous fan unit 10 are input from the S2i terminal of each fan unit 10. The input pulse signal is input to the I2C address counter 60 by passing through the RC integrated circuit that prevents erroneous operation due to noise, and the Schmidt trigger component. Subsequently, in addition to the pulse signals up to the previous fan unit 10, by inputting the pulse signal generated in the own fan unit 10 to the I2C address counter 60, the countable value counted by the counter 60 becomes larger by 1 from that calculated by the counter 60 of the previous fan unit 10. By using such a countable value as the I2C slave address for the own fan unit 10, an I2C slave address that is unique to each fan unit 10 can be assigned and set for each fan unit 10.

[0119]

A 4-bit counter, for example, can be used as the I2C address counter 60 that counts the countable value AD0-3. In the server 1 shown in FIG. 12, the countable value counted by the counter 60 of the first fan unit 10 becomes "0", and the countable value counted by the counter 60 of the second fan unit 10 becomes "1". Moreover, the countable value counted by the counter 60 of the third fan unit 10 becomes "2", and the countable value counted by the counter 60 of the fourth fan unit 10 becomes "3". Such countable values are, for example, respectively converted to I2C slave addresses "1D", "1E", "1F", and "20", and are assigned to the fan controllers 13 of each fan unit 10.

[0120]

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Here, as explained above, the time width (pulse width) DL1 is a time width of a pulse signal generated by the pulse generating circuit 50. Moreover, the predetermined delay time DL4 is set larger than that of the time width DL1 (for example, DL4 = 2xDL1 shown in FIG. 19). Accordingly, a transmission delay of the pulse signal is intentionally generated between the four fan units 10, and a count-up pulse signal (S2o) generated in each fan unit 10 is transmitted to the next fan unit 10 by delaying for the delay time DL4.

[0121]

In such a way, the pulse signal generated in each fan unit 10 is sent to the next fan unit 10 with a delay of the predetermined delay time DL4. Therefore, first to N-1st pulse signals are transmitted to an Nth fan unit 10 (N is an integer equal to or greater than 1) without overlapping. By delaying the pulse transmission to the subsequent fan unit 10 in each fan unit 10, the pulse signal generated in the previous fan unit 10 and the pulse signal generated in the own fan unit 10 can be reliably sent to the subsequent fan unit 10.

[0122]

Furthermore, as shown in an area C2 in FIG. 19, a pulse signal is generated by using the signal S1i transmitted from the previous fan unit 10 with the delay time DL4. Accordingly, a pulse signal generated in the previous fan unit 10 and the pulse signal generated in the own fan unit 10 are generated without overlapping and transmitted to the subsequent fan unit 10.

[0123]

As shown in an area C3 in FIG. 19, because of the signal S2i, the pulse signals generated up to the previous fan unit 10 are not generated by overlapping and are transmitted with a fixed delay interval DL4. In such a manner, the pulse signal transmitted to the fan unit 10 is counted up by the counter 60 of each fan unit 10, and a unique I2C slave address is assigned to the fan controller 13.

[0124]

Each fan controller 13 according to the present embodiment is monitored by the monitoring unit 7 via the I2C interface, and can control the rotation speed of the cooling fan 11 (driving motor) by a pulse width modulation (PWM) signal. At this step, the rotation speed of the cooling fan 11 is read as the number of pulses of a Taco signal. Temperature of the environment cooled by the cooling fan 11 is detected by reading the electric voltage of the temperature sensor. Moreover, abnormalities in the rotation speed, temperature, and the like of the cooling fan 11 are monitored by the monitoring unit 7 via the fan controller 13 and the I2C interface. Upon detecting an abnormality, an alarm signal *AL that indicates such abnormality is output in the negative logic.

[0125]

7. Hot-swapping procedure of fan unit in server according to the present embodiment

Next, hot-swapping procedure of the fan unit 10 in the server 1 to which the technology according to the present embodiment is applied is explained in accordance with a time chart shown in FIG. 20 (Steps S10 to S18 and Steps S20 to S24).

[0126]

As shown in FIG. 20, when a user such as an operator and a maintenance person inputs a power on instruction by pressing a power on button to start the server 1 (Step S10), the system performs processes of Steps S11 to S18.

[0127]

Upon receiving the power on instruction from the outside, the management unit (management and

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monitoring unit) 7 instructs the power source unit 2 to turn on the power (Step S11).

[0128]

In accordance with the power on instruction to the power source unit 2, power supply and power on is performed in each fan unit 10. Subsequently, the I2C slave address is automatically assigned to the fan controller 13 of each fan unit 10 by executing the procedure explained above in accordance with the time chart shown in FIG. 19. Accordingly, communication becomes possible between the management unit 7 and the fan controller 13 (Step S12).

[0129]

The management unit 7 monitors the temperature of each fan unit 10 (environment cooled by the cooling fan 11) and controls the rotation speed of the cooling fan 11 according to that temperature via the I2C interface. Moreover, the management unit 7 displays the state of each fan unit 10 (normal / faulty) on the fan fault external display panel 8 (Step S13). For example, each of the LEDs 8a to 8d of the fan fault external display panel 8 are controlled to be in the green color state when the corresponding fan unit 10 are in the normal state. On the other hand, each of the LEDs 8a to 8d is controlled to be in the yellow color state when the corresponding fan unit 10 is in the faulty state.

[0130]

Subsequently, the management unit 7 monitors whether the alarm signal (faulty state) of the cooling fan 11 is detected by the fan controller 13 via the I2C interface (Step S14). When the alarm signal is not detected (NO route at Step S14), the management unit 7 returns to the processing performed at Step S13.

[0131]

On the other hand, when the alarm signal is detected (YES route at Step S14), the management unit 7 identifies the target fan unit (faulty fan unit) 10 and reads the temperature of the target fan unit 10 via the I2C interface. Moreover, the management unit 7 controls the PWM signal transmitted from each fan controller 13 to the cooling fan 11 so as to forcefully cause the cooling fans 11 of all fan units 10 to rotate at 100% high speed. Furthermore, the management unit 7 causes the LED among the LEDs 8a to 8d corresponding to the target fan unit 10 on the fan fault external display panel 8 to be lit in the yellow color (Step S15).

[0132]

Furthermore, in the present embodiment, each fan controller 13 is configured to switch the rotation state of the cooling fan 11 between a 100% high speed rotation and a normal rotation. When a fault in the cooling fan 11 is detected, or when a cable is connected to connector CNA or the connector CNB, that is, when it is recognized that it is time for hot-swapping of the fan unit 10, the management unit 7 can forcefully switch the rotation state of the cooling fan 11 to the high speed rotation.

[0133]

Subsequently, a maintenance work (Steps S21 to 24) in which the user hot-swaps the target fan unit 10 is performed (Step S20).

[0134]

At this step, first, the connector CND of the additional fan unit 10 is joined to the connector CNC of the existing fan unit (Step S21; refer to Arrow (1) in FIG. 6).

[0135]

Subsequently, the cable A or the cable B connected to the connector CNA or the connector CNB of the

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existing fan unit 10 is removed from the connector CNA or the connector CNB (Step S22; refer to Arrow (2) or (3) in FIG. 6). Consequently, after this operation, the insertable / removable indicator lamp 12 provided on the side surface of the fan unit 10 is set to the yellow color lighting state (Step S16).

[0136]

Subsequently, the removed cable A or cable B is connected to the connector CNA or the connector CNB of the additional fan unit 10 (Step S23; refer to Arrow (2) or (3) in FIG. 6). Consequently, after this operation, the insertable / removable indicator lamp 12 provided on the side surface of the fan unit 10 is set to the green color lighting state (Step S17).

[0137]

In the present embodiment, the processes of Steps S22 and S23 and Steps S16 and S17 are performed once for each of the cable A and the cable B, respectively.

[0138]

After connecting the cables A and B to the connectors CNA and CNB of the additional fan unit 10, the additional fan unit 10 is pushed into the server 1, and the existing fan unit 10 that is arranged on an opposite side of the additional fan unit 10 is pushed out from the server 1 (Step S24; refer to Arrow (4) in FIG. 6).

[0139]

When the fan unit 10 pushed out at Step 24 is the target fan unit, the pushed out fan unit 10 is removed and the operation is completed. When the pushed out fan unit 10 is not the target fan unit, the pushed out fan unit 10 is added and connected as the new additional fan unit 10, and the operations performed at Steps 21 to 24 are repeated till the target fan unit is pushed out.

[0140]

Subsequently, upon connecting the cables to the connectors CNA and CNB of the additional fan unit 10 at Step S23, in each fan unit 10, the I2C slave address is automatically assigned to each fan controller 13 of each fan unit 10 in accordance with the time chart shown in FIG. 19 by using the procedure explained above. Accordingly, based on the I2C slave address, the management unit 7 recognizes the installation position of each fan unit 10 changed by hot-swapping and manages each fan unit 10 (Step S18). Subsequently, the management unit 7 returns to the processing performed at Step S13.

[0141]

In such a manner, according to the present embodiment, even when the fan unit 10 is swapped, installation position and the I2C slave address thereof are automatically synchronized. Therefore, even after the hot-swapping, it is possible to monitor and control the state of each fan unit 10 from the management monitoring unit 7 without manually setting the I2C slave address.

[0142]

In other words, according to the server 1 explained above, a part of the fan units among the plurality of the fan units 10 can be hot-swapped by the slide operation without using the exposed power rail configuration. In such a case, immediately after the hot swapping, an I2C slave address is automatically assigned by the controlling unit in each fan unit 10. Accordingly, an address associated with the position of each fan unit 10 can be assigned to each fan unit 10 even after the fan unit 10 is hot-swapped.

[0143]

Accordingly, a link between the installation position of each fan unit 10 inside the casing of the server 1 and the I2C slave address thereof can be established without performing any special operation, and the

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management unit 7 can correctly recognize each fan unit 10 and appropriately perform the rotation speed control or abnormality condition monitoring of each fan unit 10. Moreover, according to the server 1 of the present embodiment, problems and issues of the related technology explained above by referring to FIGS. 1 to 4, too, can be resolved.

[0144]

8. Other

Preferred embodiments of the present invention are explained above; however, the present invention is not limited to such specific embodiments, and can be implemented with variety of modifications and changes within the scope of the present invention.

[0145]

For example, in the embodiments explained above, four fan units 10 are arranged; however, the present invention is not limited thereto. Even when the number of fan units 10 is two, three, five or more, the present invention can be applied in the same manner as that in the embodiments explained above and the same effects and advantages as that in the embodiments explained above can be obtained.

[0146]

9. Supplementary Notes

Regarding the embodiments explained above, the following supplementary notes are further disclosed.

[0147]

(Supplementary Note 1)

An electronic device comprising:

an electronic apparatus, and

a plurality of fan units that cools the serially-connected electronic apparatus;

wherein each fan unit among the plurality of the fan units includes

a controlling unit that assigns an address that identifies an own fan unit among the plurality of the fan units to the own fan unit by associating the same with a connection position of the own fan unit among the plurality of the fan units.

[0148]

(Supplementary Note 2)

The electronic device as explained in the supplementary Note 1 includes a management unit that identifies each fan unit among the plurality of the fan units based on the assigned address, and manages each fan unit.

[0149]

(Supplementary Note 3)

The electronic device as explained in Supplementary Note 1 or 2, wherein the plurality of the fan units is configured so as to enable hot swapping of one fan unit among the plurality of the fan units by adding and connecting an additional fan unit to one end side of the plurality of the fan units and pushing out a fan unit arranged on the other side of the plurality of the fan units from the other side, and

the controlling unit assigns to the own fan unit an address in accordance with the added connection of the additional fan unit.

[0150]

(Supplementary Note 4)

The electronic device as explained in supplementary Note 3, wherein the controlling unit includes

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a counter that counts a pulse signal received from a previous fan unit that is arranged before the own fan unit, and

delays the pulse signal received from the previous fan unit by a predetermined delay time and outputs thereof to the subsequent fan unit arranged after the own fan unit, and

assigns to the own fan unit a value in accordance with a countable value counted by the counter as the address.

[0151]

(Supplementary Note 5)

The electronic device as explained in supplementary Note 4, wherein

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.

[0152]

(Supplementary Note 6)

The electronic device as explained in supplementary Note 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 the own fan unit are connected when the own fan unit is arranged on one end side of the plurality of the fan units.

[0153]

(Supplementary Note 7)

A cooling fan controller that controls a plurality of fan units that cools serially-connected electronic apparatus, comprising:

a controlling unit that assigns an address that identifies an own fan unit among the plurality of the fan units to the own fan unit by associating the same with a connection position of the own fan unit among the plurality of the fan units.

[0154]

(Supplementary Note 8)

The cooling fan controller as explained in the supplementary Note 7 includes a management unit that identifies each fan unit among the plurality of the fan units based on the assigned address, and manages each fan unit.

[0155]

(Supplementary Note 9)

The cooling fan controller as explained in Supplementary Note 7 or 8, wherein the plurality of the fan units is configured so as to enable hot swapping of one fan unit among the plurality of the fan units by adding and connecting an additional fan unit to one end side of the plurality of the fan units and pushing out a fan unit arranged on the other side of the plurality of the fan units from the other side, and

the controlling unit assigns to the own fan unit an address in accordance with the added connection of the additional fan unit.

[0156]

(Supplementary Note 10)

The cooling fan controller as explained in supplementary Note 9, wherein the controlling unit includes

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a counter that counts a pulse signal received from a previous fan unit that is arranged before the own fan unit, and

delays the pulse signal received from the previous fan unit by a predetermined delay time and outputs thereof to the subsequent fan unit arranged after the own fan unit, and

assigns to the own fan unit a value in accordance with a countable value counted by the counter as the address.

[0157]

(Supplementary Note 11)

The cooling fan controller as explained in supplementary Note 10, wherein

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.

[0158]

(Supplementary Note 12)

The cooling fan controller as explained in supplementary Note 11, 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 the own fan unit are connected when the own fan unit is arranged on one end side of the plurality of the fan units.

[0159]

(Supplementary Note 13)

A cooling fan control program that causes a processor that controls the plurality of the fan units that cools the serially-connected electronic apparatus to execute a processing in which an address that identifies an own fan unit among the plurality of the fan units to the own fan unit is assigned by associating the same with a connection position of the own fan unit among the plurality of the fan units with a connection position of the own fan unit among the plurality of the fan units.

[0160]

(Supplementary Note 14)

The cooling fan control program as explained in supplementary Note 13 that causes the processor to execute processing in which each fan unit among the plurality of the fan units is identified based on the assigned address to manage each fan unit.

[0161]

(Supplementary Note 15)

The cooling fan control program as explained in Supplementary Note 13 or 14, wherein the plurality of the fan units is configured so as to enable hot swapping of one fan unit among the plurality of the fan units by adding and connecting an additional fan unit to one end side of the plurality of the fan units and pushing out a fan unit arranged on the other side of the plurality of the fan units from the other side, and

the processor is caused to execute the processing in which an address is assigned to the own fan unit in accordance with the addition and connection of the additional fan unit.

[0162]

(Supplementary Note 16)

The cooling fan control program as explained in supplementary Note 15, wherein the processor is caused to

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execute the processing in which a pulse signal received from a previous fan unit that is arranged before the own fan unit is counted by a counter;

the pulse signal received from the previous fan unit is delayed by a predetermined delay time and is output to the subsequent fan unit arranged after the own fan unit, and;

a value in accordance with a countable value counted by the counter as the address is assigned to the own fan unit.

[0163]

(Supplementary Note 17)

A cooling fan controlling method by using which a plurality of fan units that cools serially-connected electronic apparatus is controlled by a processor, comprising:

assigning an address that identifies an own fan unit among the plurality of the fan units to the own fan unit by associating the same with a connection position of the own fan unit among the plurality of the fan units.

[0164]

(Supplementary Note 18)

The cooling fan controlling method as explained in the supplementary Note 17 includes identifying each fan unit among the plurality of the fan units based on the assigned address, and manages each fan unit respectively.

[0165]

(Supplementary Note 19)

The cooling fan controlling method as explained in Supplementary Note 17 or 18, wherein the plurality of the fan units is configured so as to enable hot swapping of one fan unit among the plurality of the fan units by adding and connecting an additional fan unit to one end side of the plurality of the fan units and pushing out a fan unit arranged on the other side of the plurality of the fan units from the other side, and

assigns to the own fan unit an address in accordance with the added connection of the additional fan unit.

[0166]

(Supplementary Note 20)

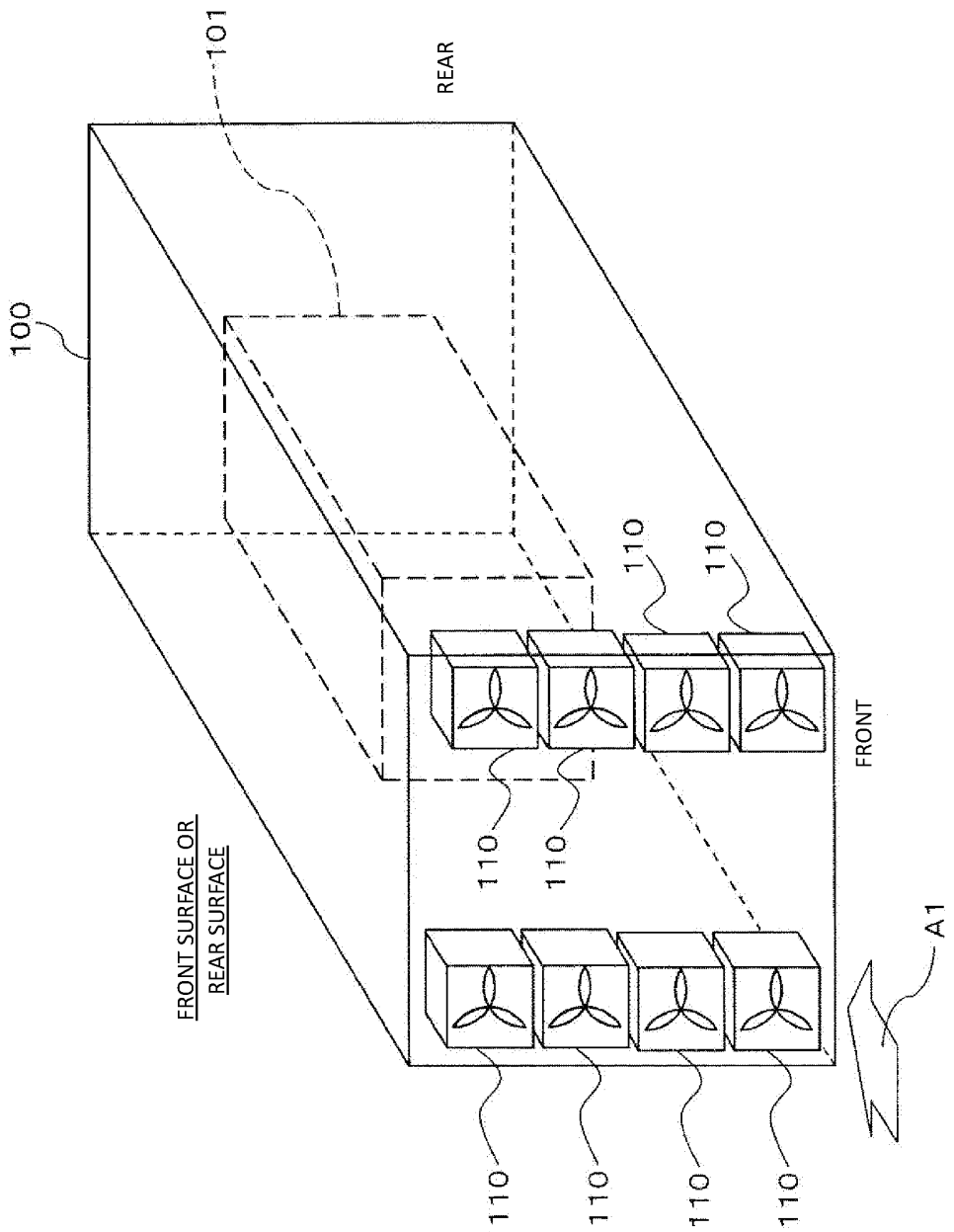
The cooling fan controlling method as explained in supplementary Note 19, wherein a pulse signal received from a previous fan unit that is arranged before the own fan unit is counted by a counter;

the pulse signal received from the previous fan unit is delayed by a predetermined delay time and is output to the subsequent fan unit arranged after the own fan unit, and

a value is assigned to the own fan unit in accordance with a countable value counted by the counter as the address.

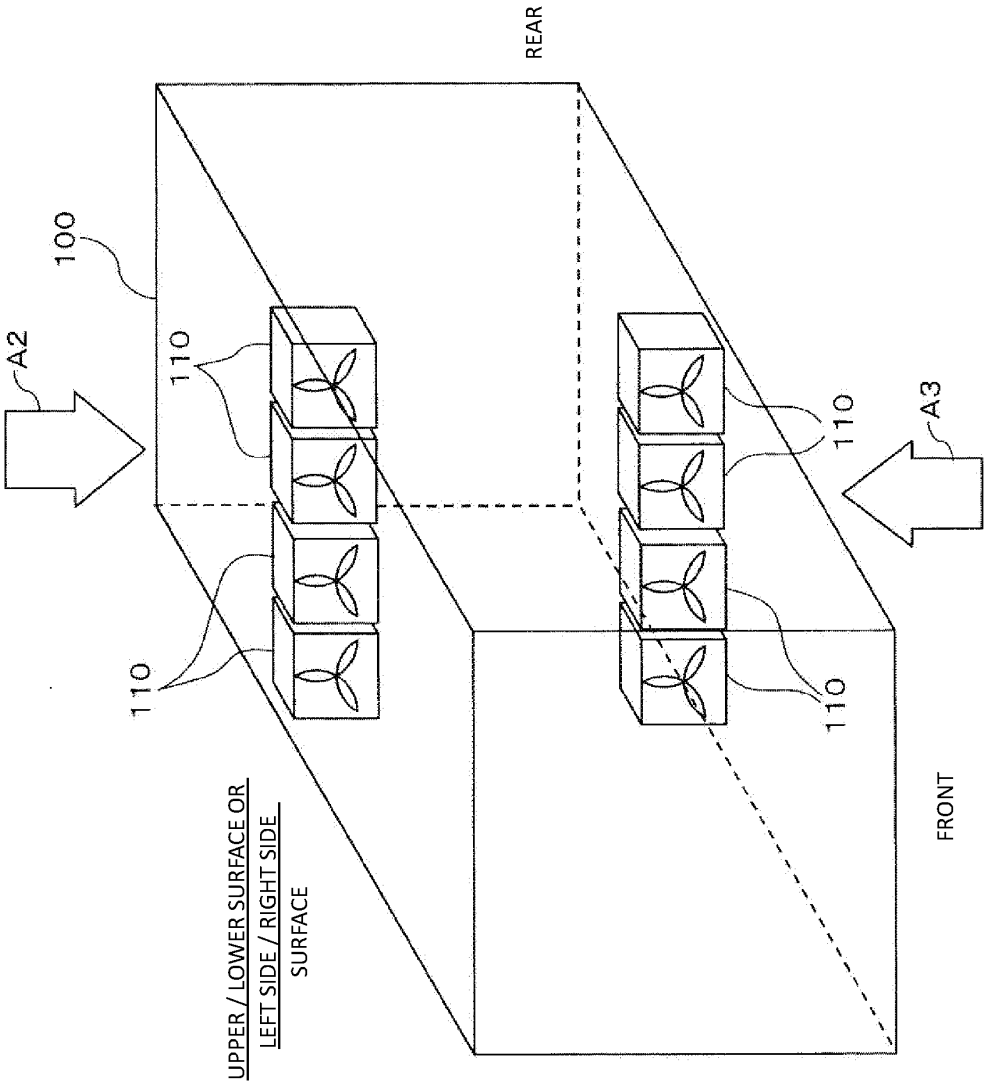
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FIGURE 1



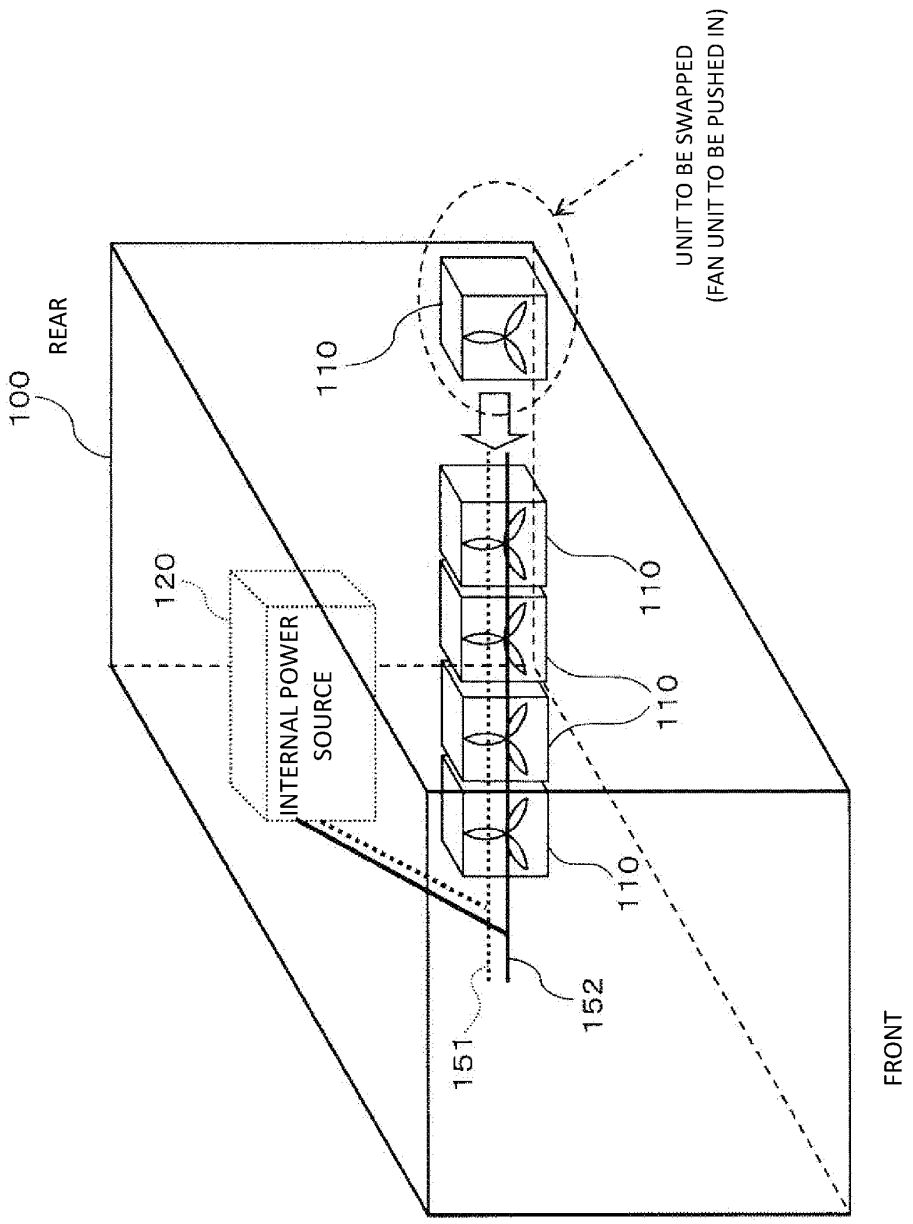
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FIGURE 2



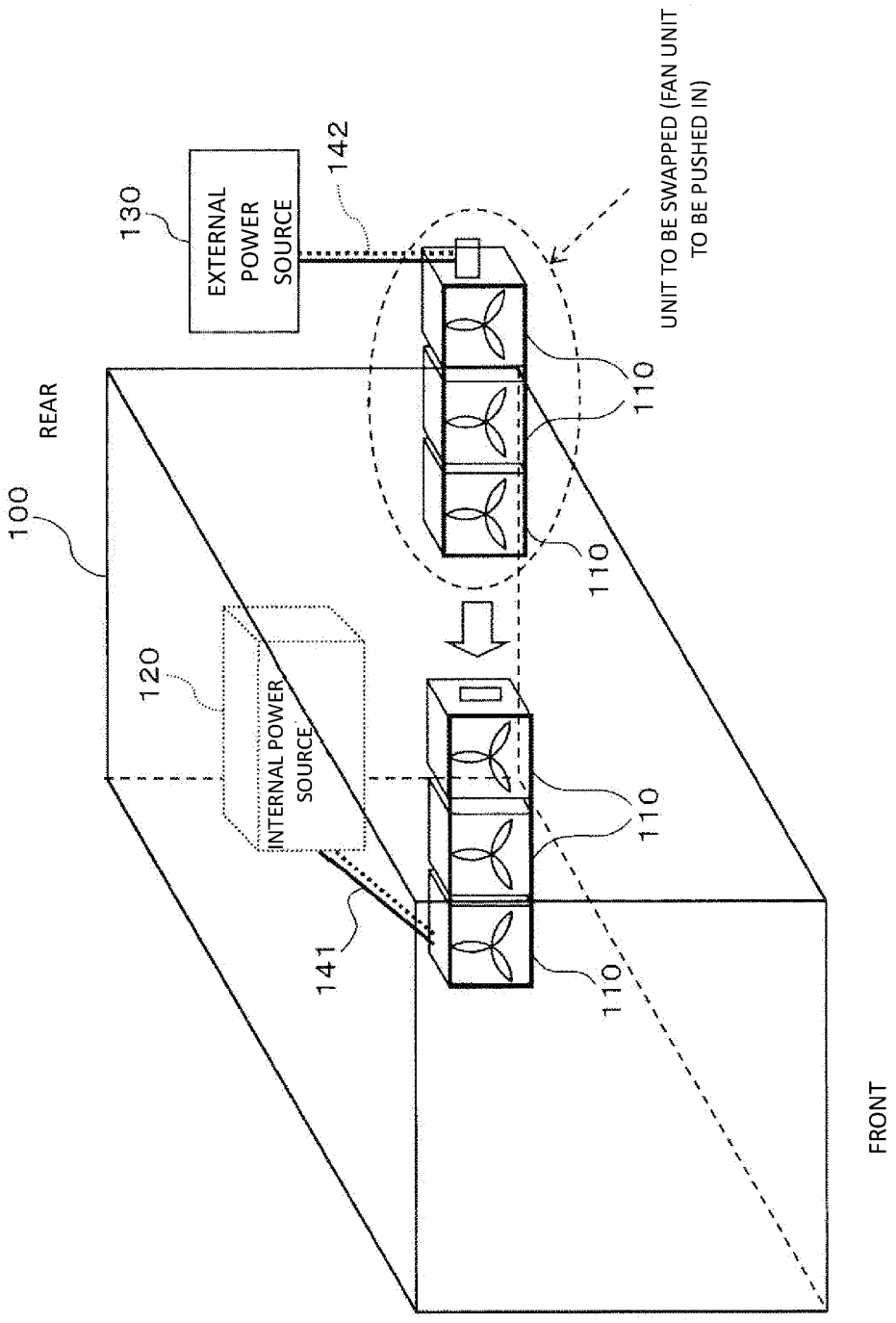
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FIGURE 3



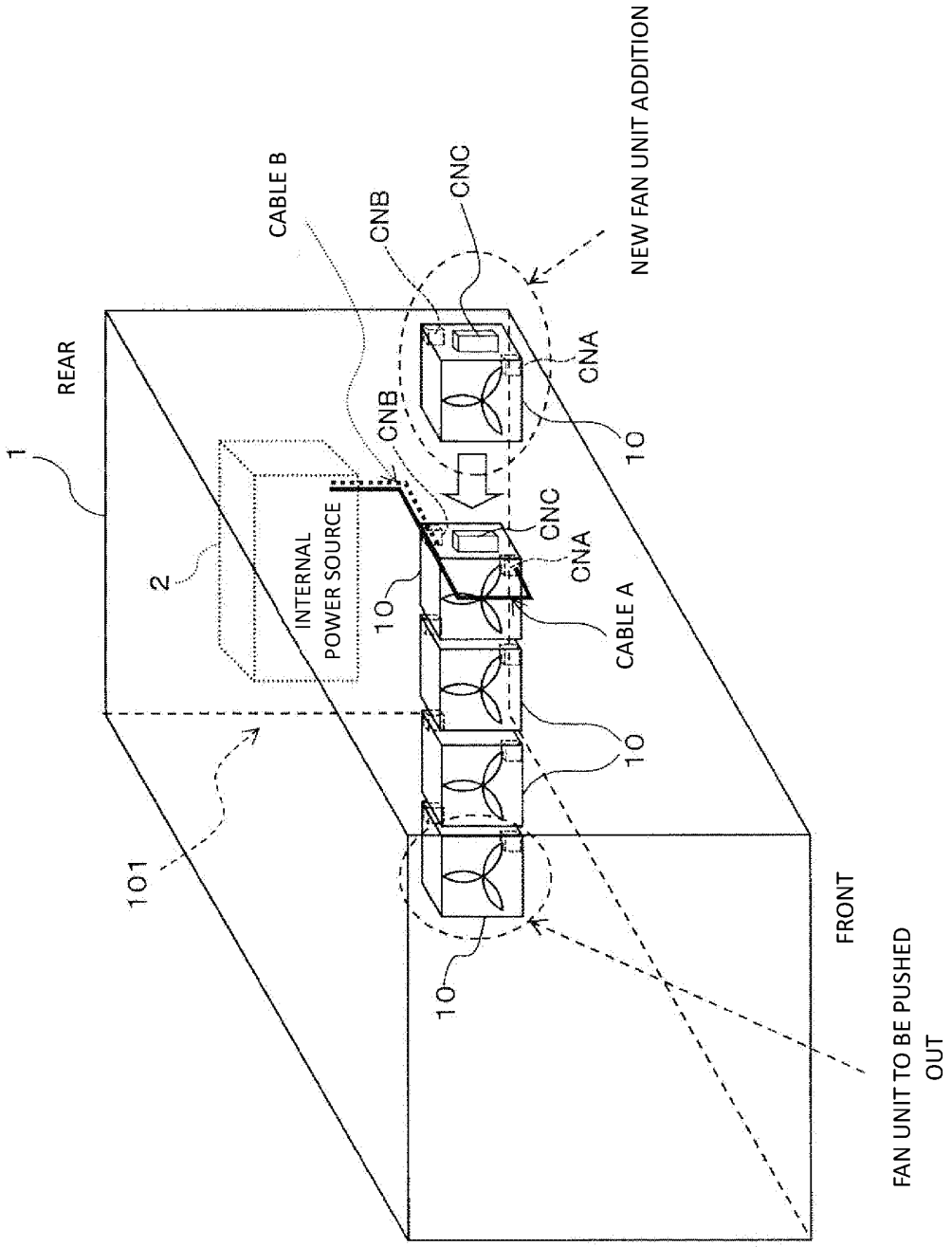
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FIGURE 4



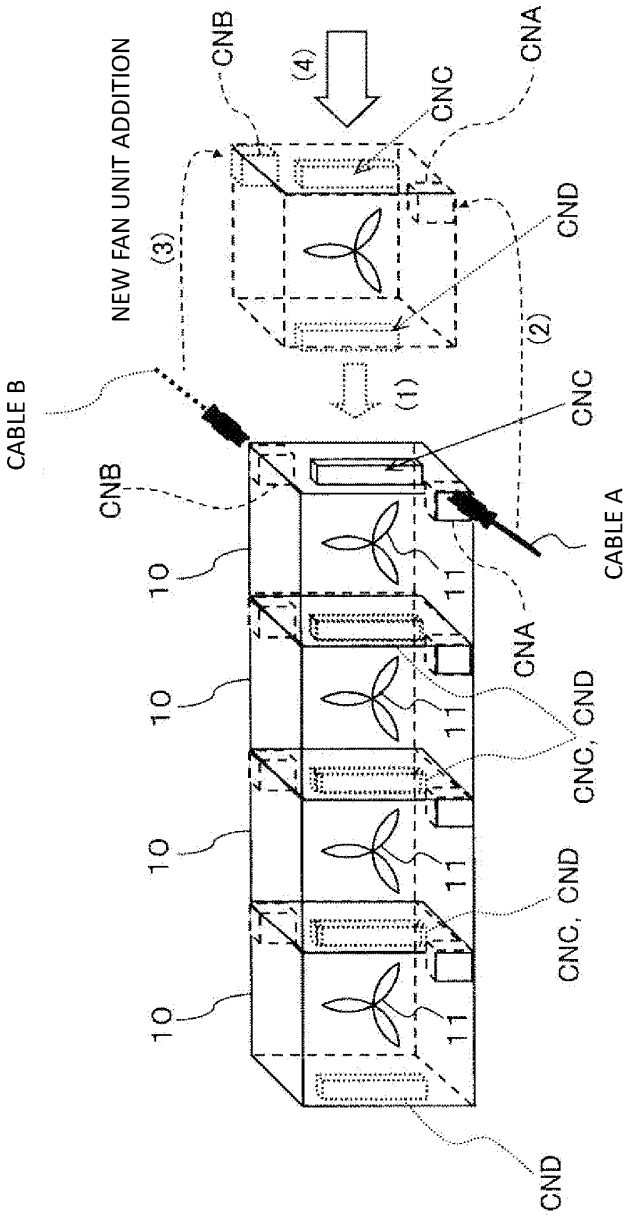
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FIGURE 5



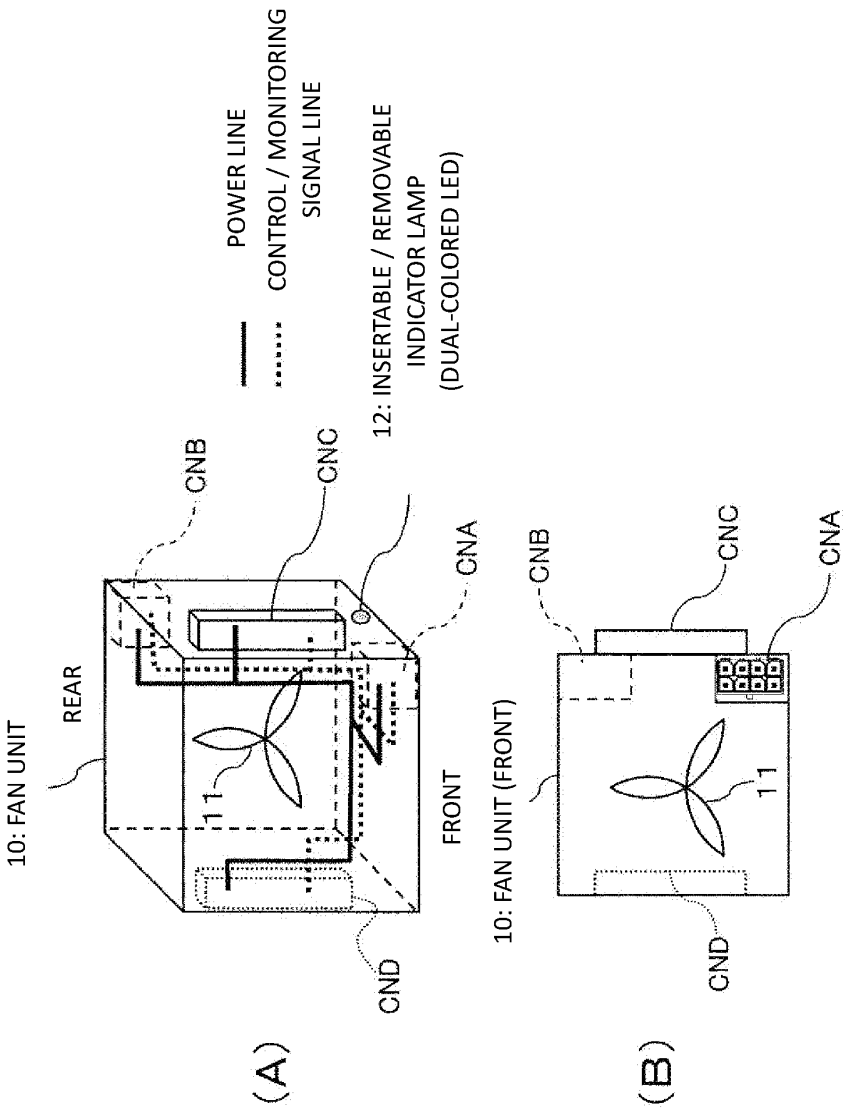
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FIGURE 6



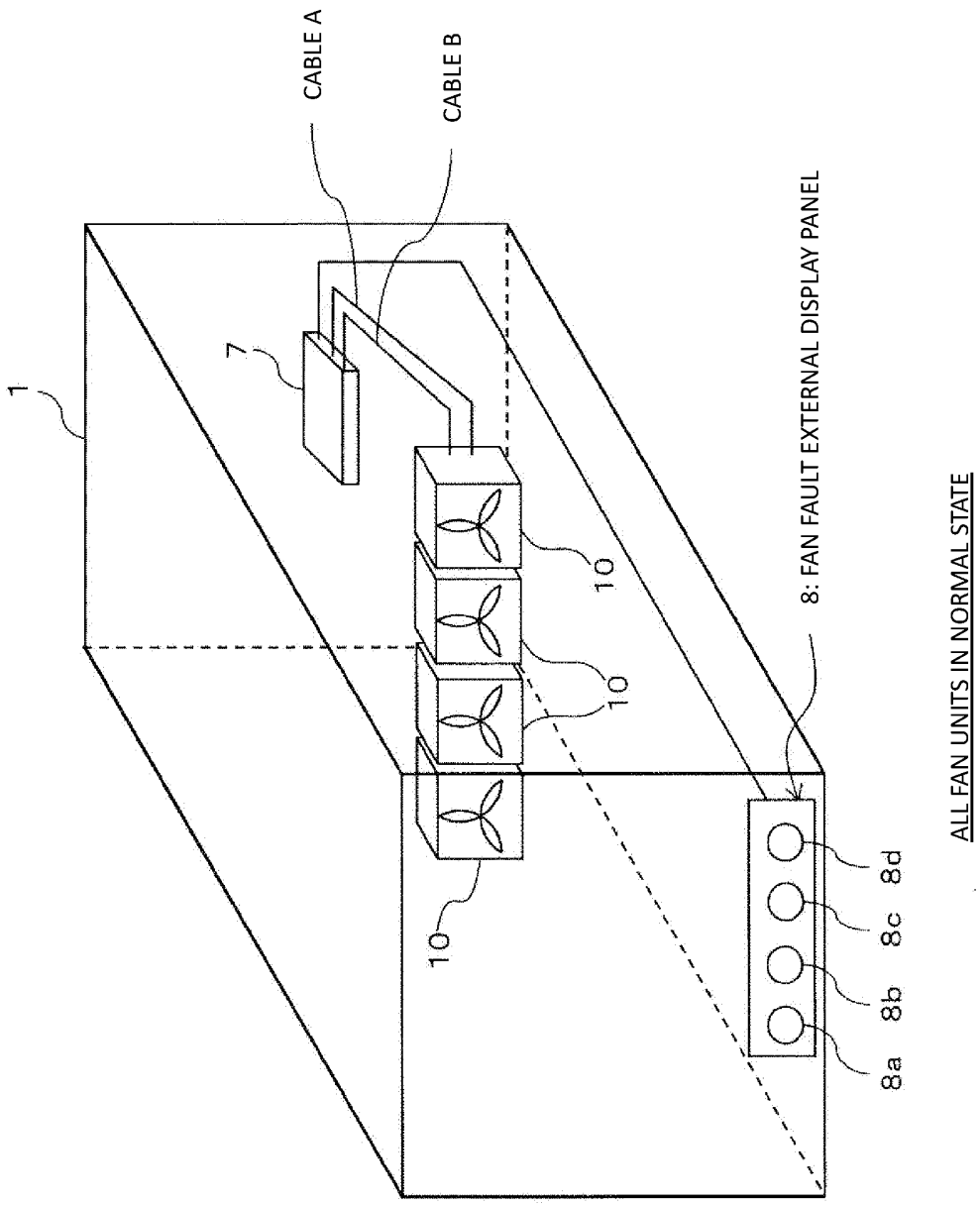
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FIGURE 7



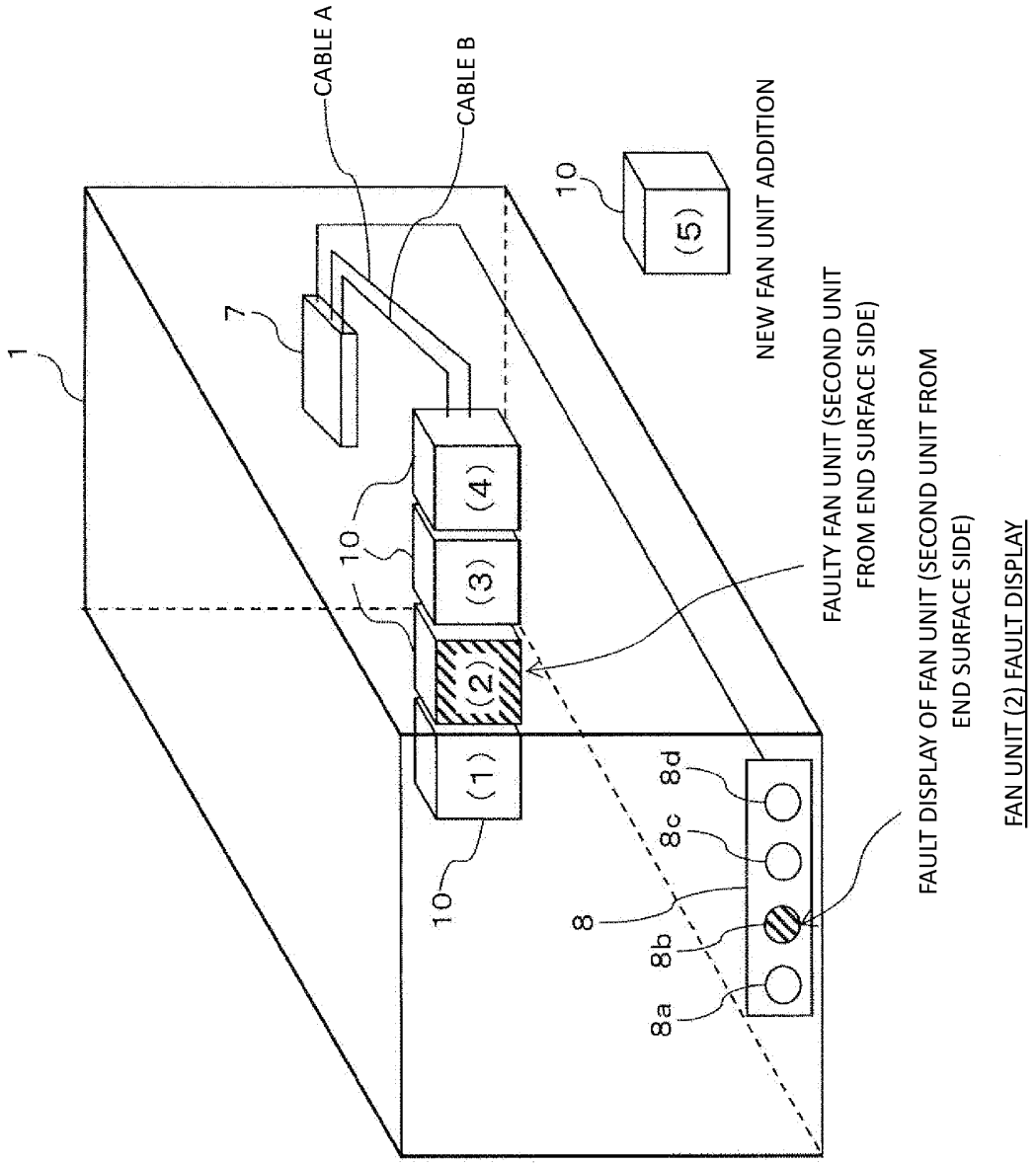
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FIGURE 8



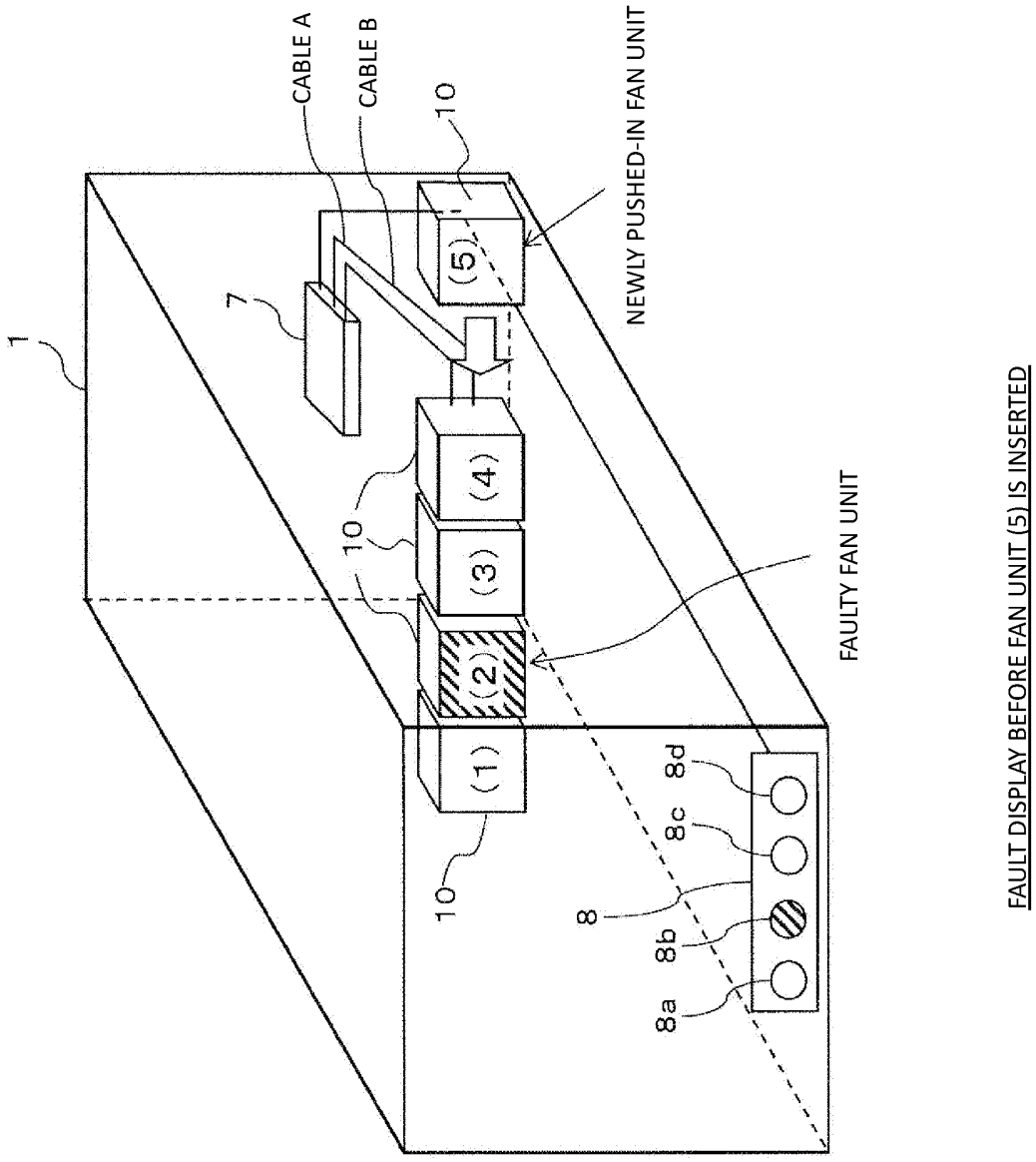
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FIGURE 9



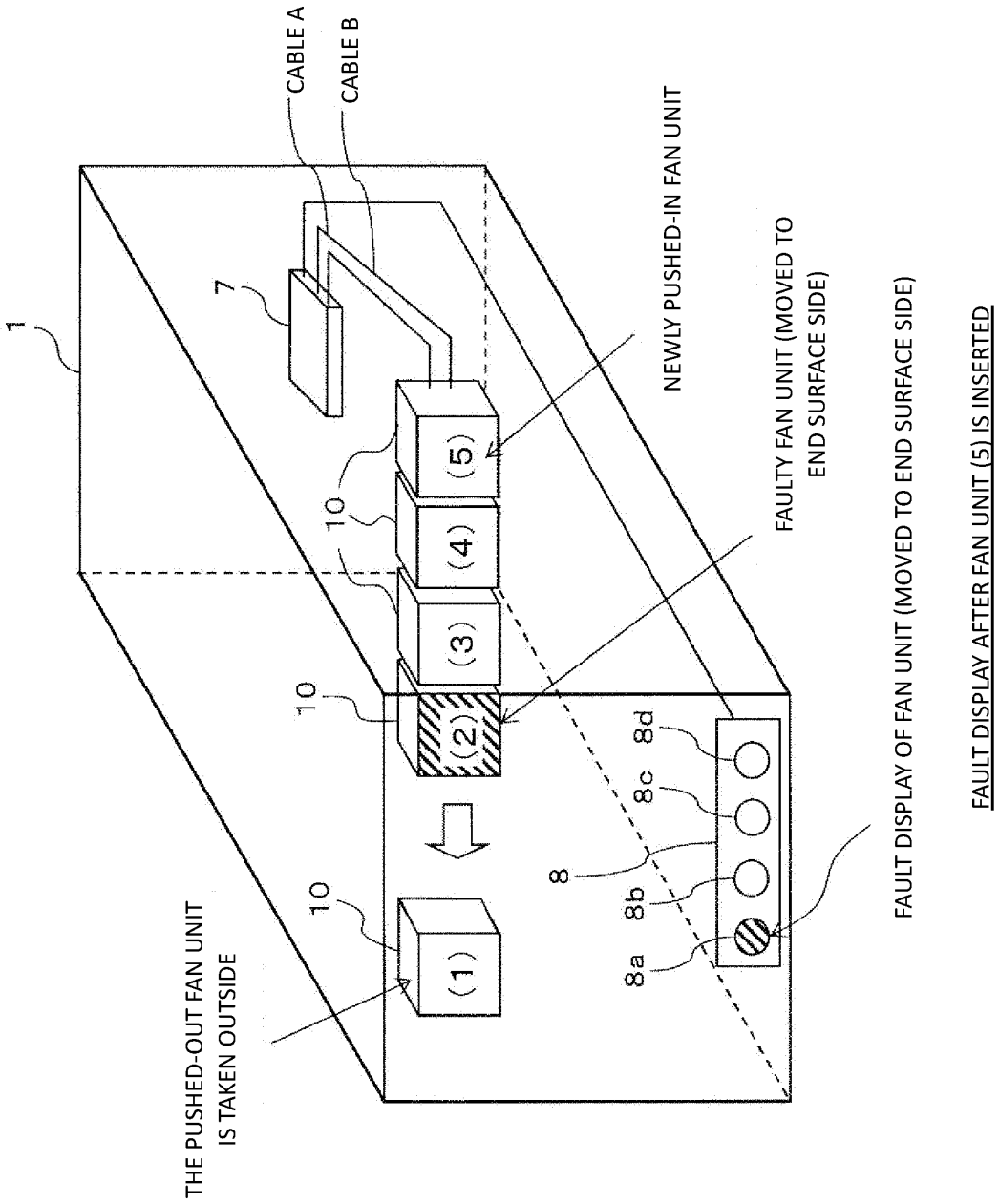
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FIGURE 10



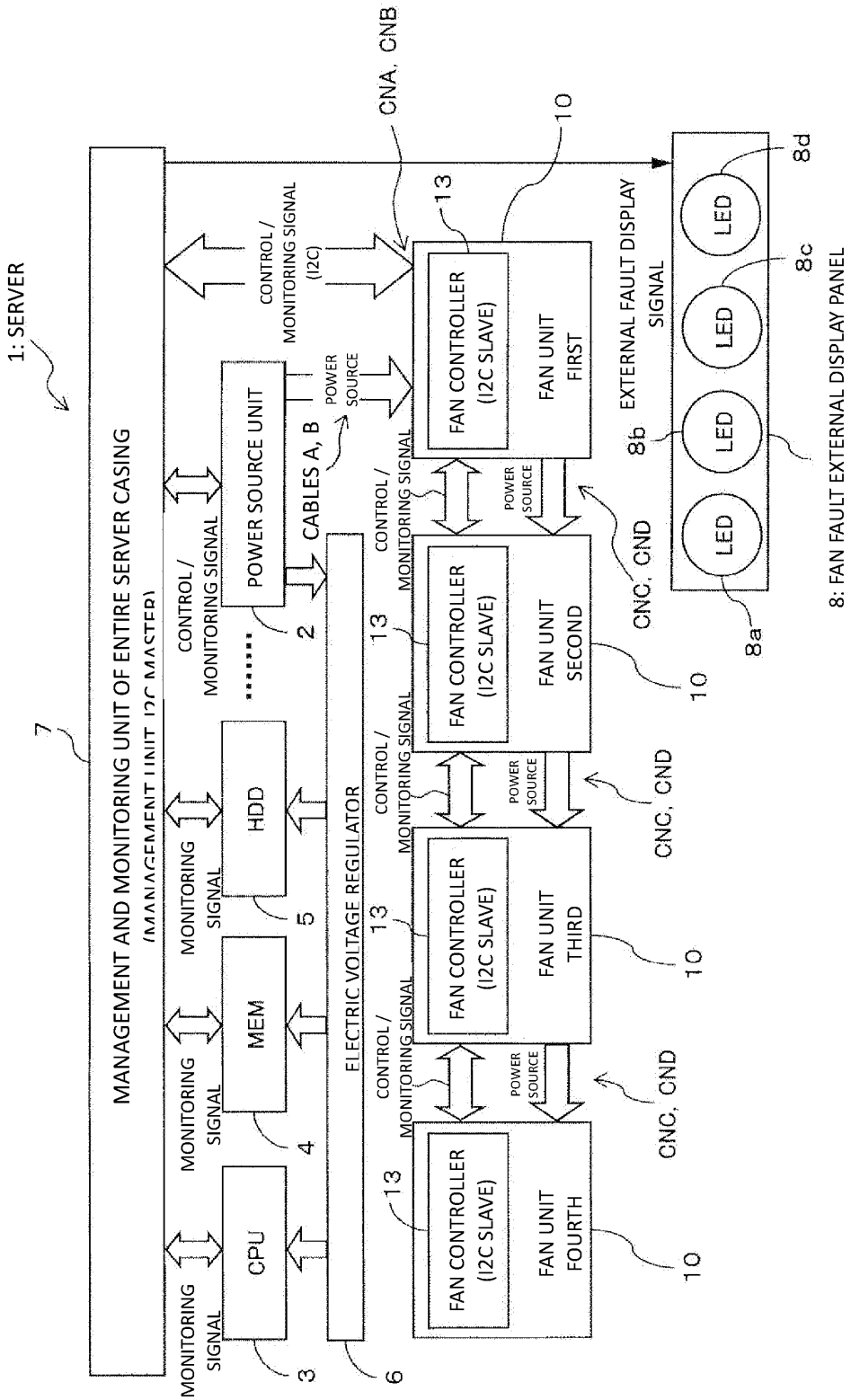
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FIGURE 11



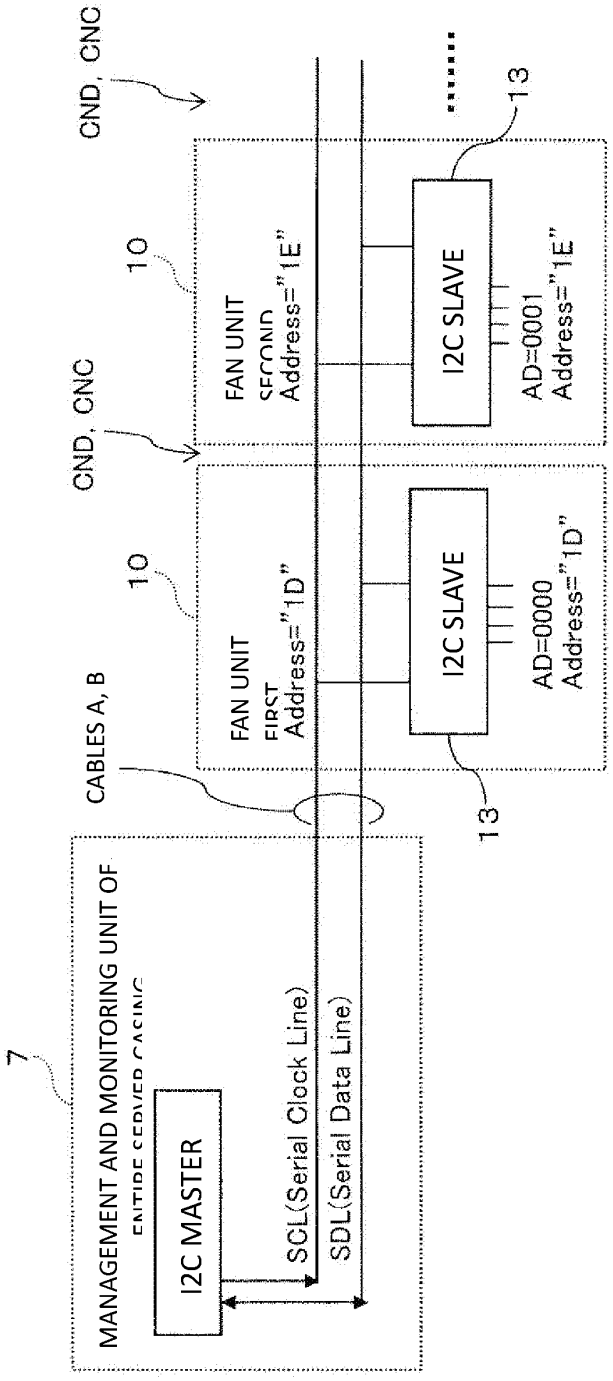
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FIGURE 12



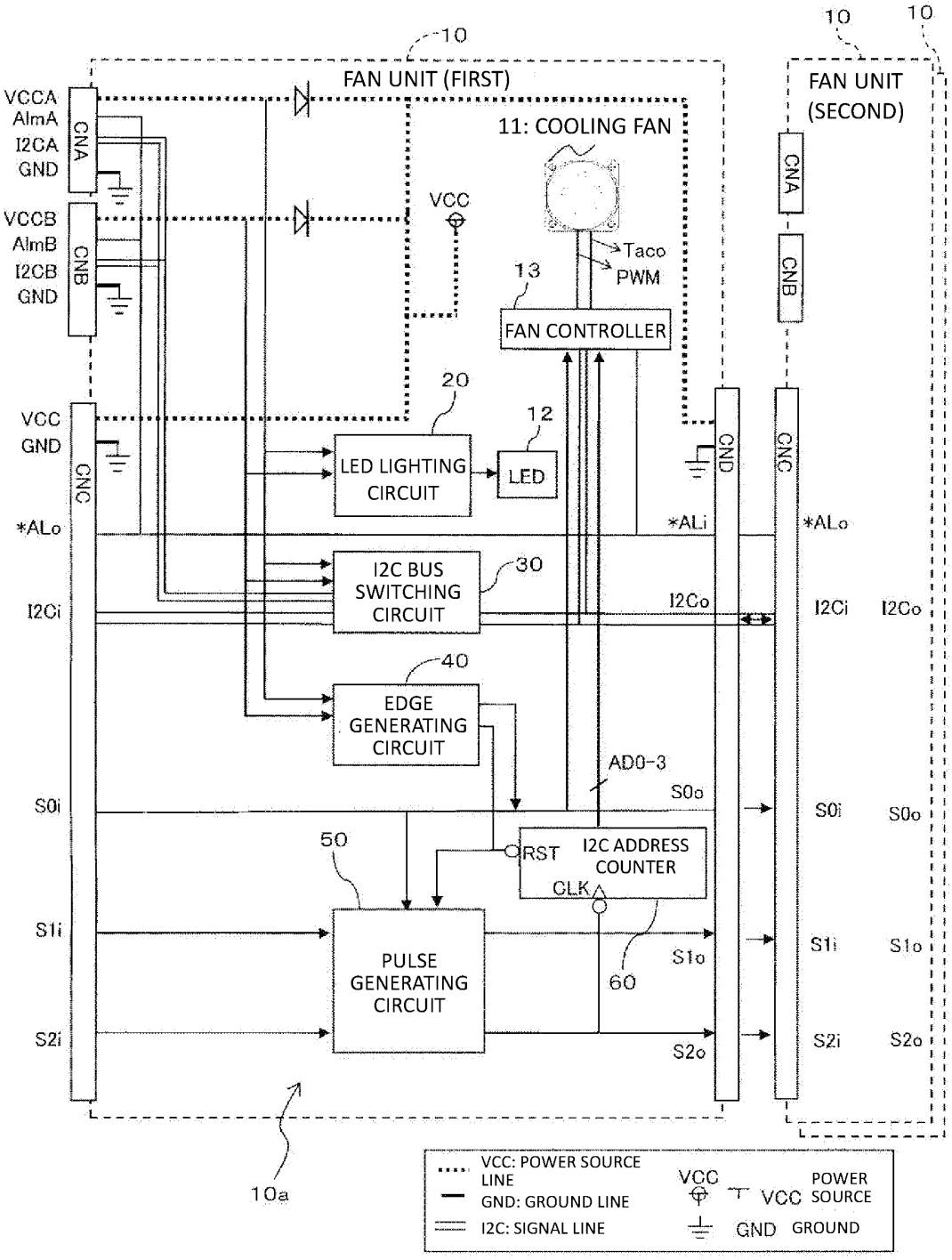
Thermaltake Tech. Co. v. Lian Li Ind. Co., Ex-2007
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FIGURE 13



Thermaltake Tech. Co. v. Lian Li Ind. Co., Ex-2007
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FIGURE 14



Thermaltake Tech. Co. v. Lian Li Ind. Co., Ex-2007
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FIGURE 15

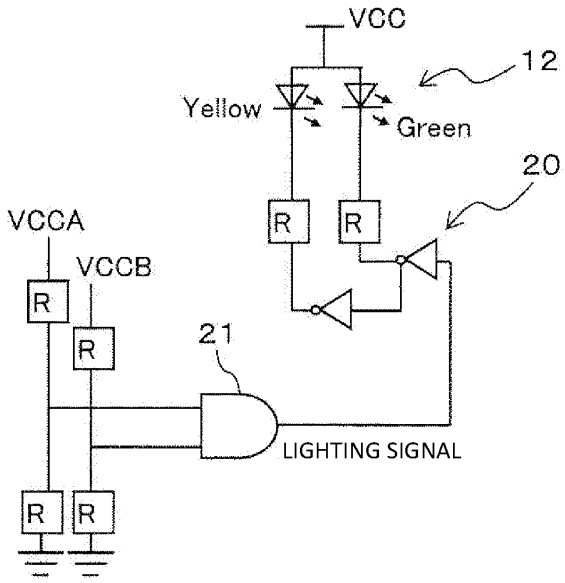


FIGURE 16

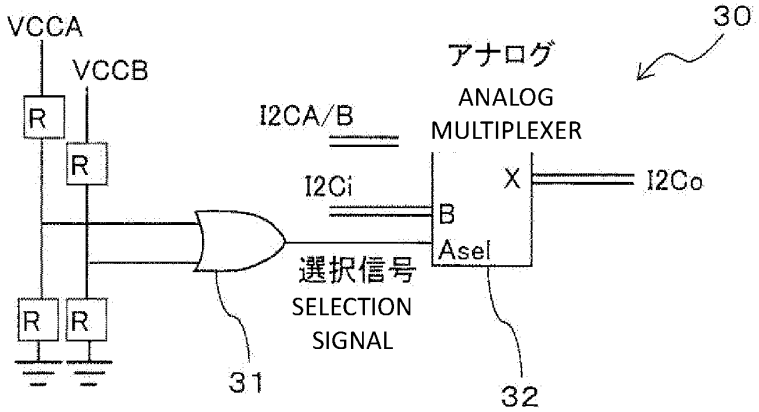
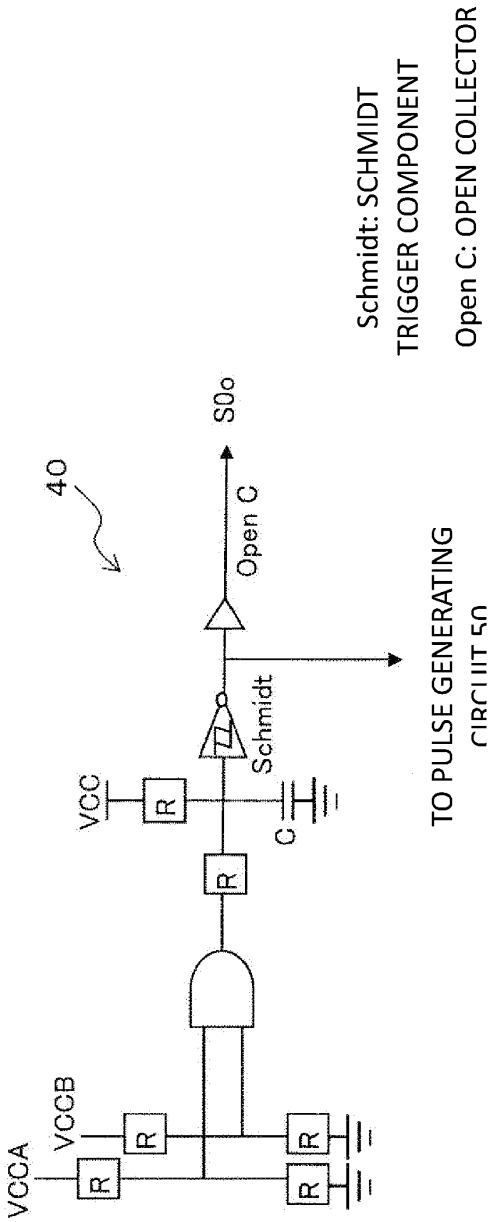


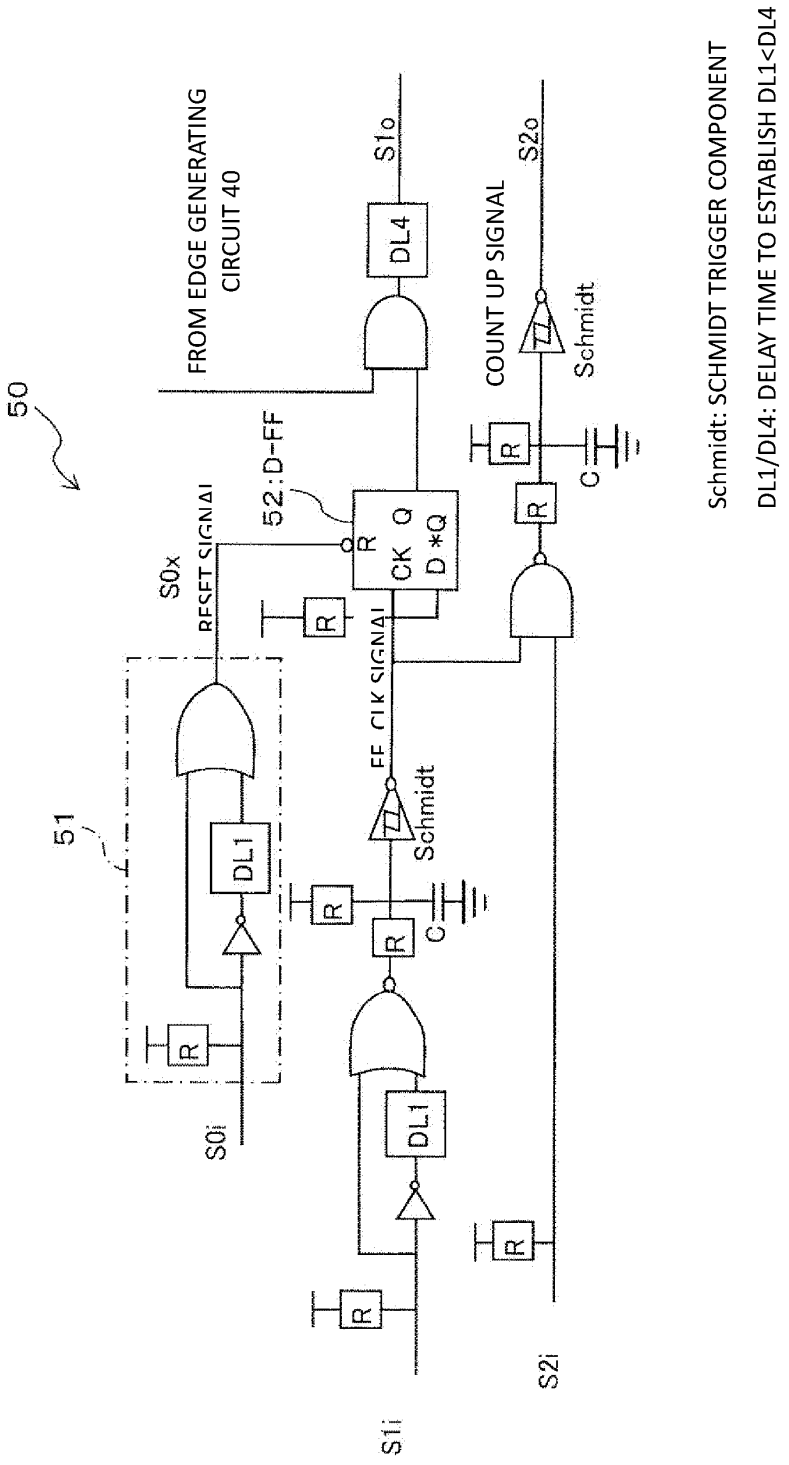
FIGURE 17

Thermaltake Tech. Co. v. Lian Li Ind. Co., Ex-2007
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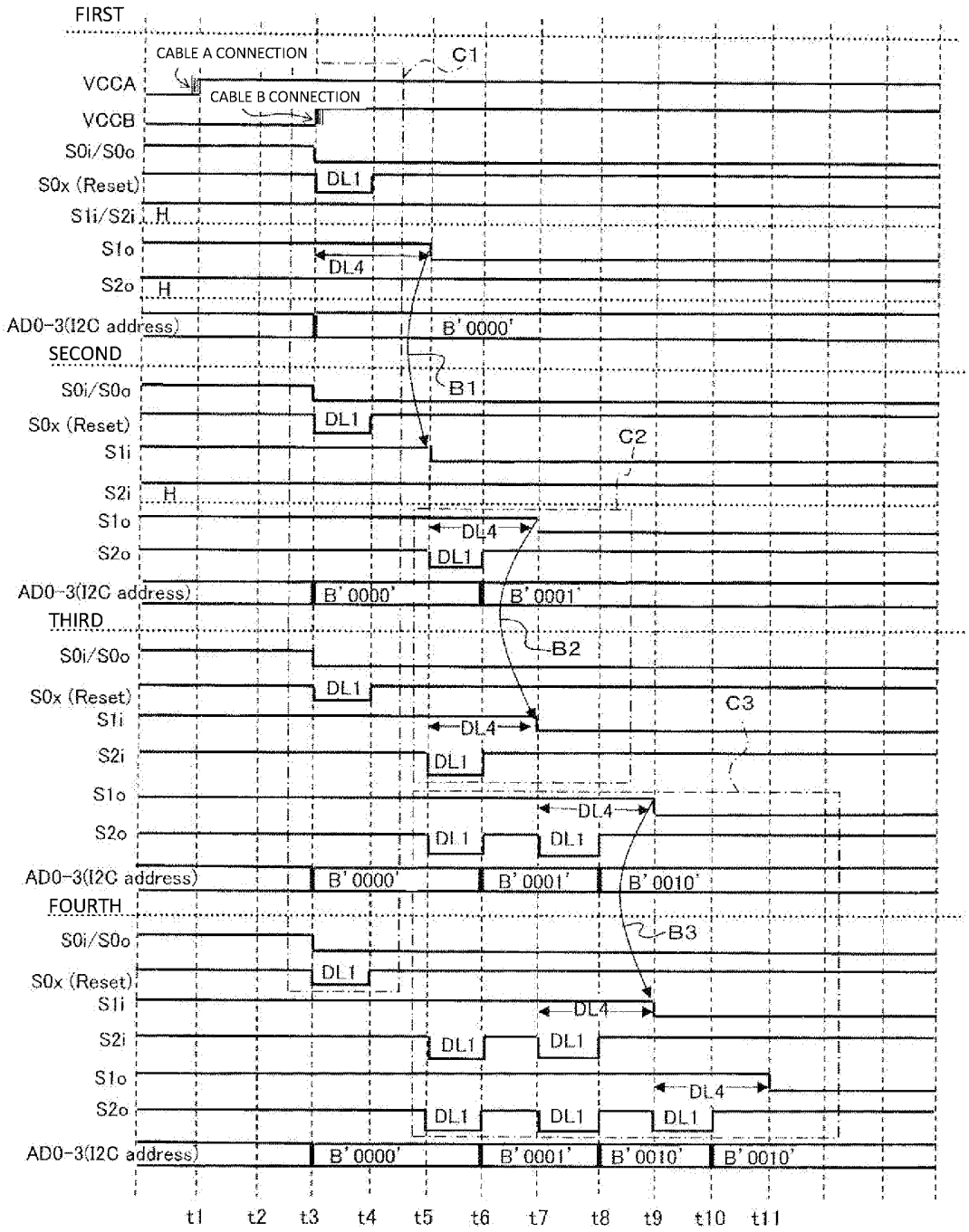
Thermaltake Tech. Co. v. Lian Li Ind. Co., Ex-2007
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FIGURE 18



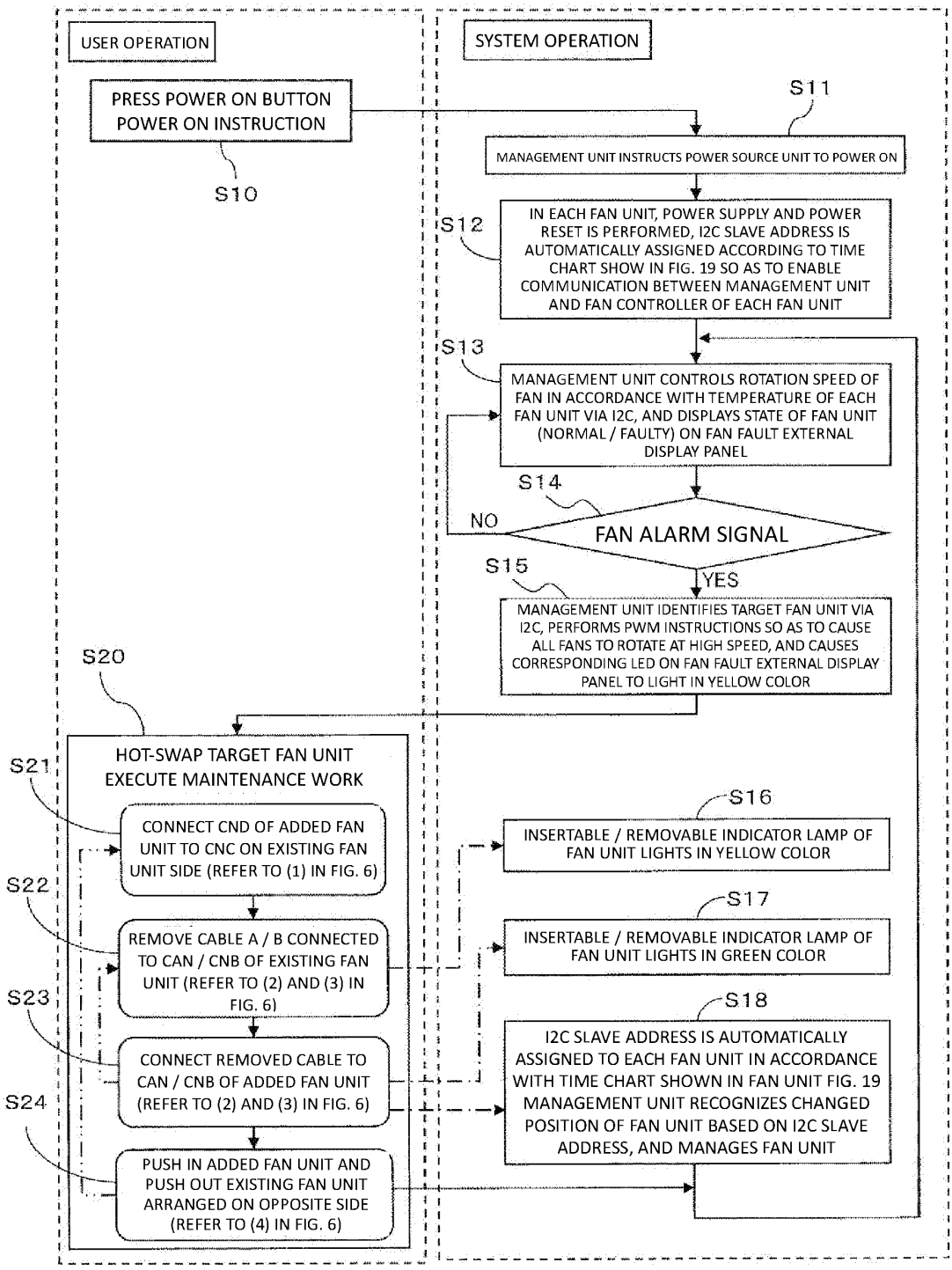
Thermaltake Tech. Co. v. Lian Li Ind. Co., Ex-2007
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FIGURE 19



Thermaltake Tech. Co. v. Lian Li Ind. Co., Ex-2007
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FIGURE 20



Thermaltake Tech. Co. v. Lian Li Ind. Co., Ex-2007
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VERIFICATION OF TRANSLATION

JP Publication No. JP2018-041147A
TITLE: ELECTRONIC DEVICE, COOLING FAN CONTROLLER, COOLING FAN CONTROL PROGRAM, AND COOLING FAN CONTROLLING METHOD

I Amruta Nirgudkar, Address – 2nd Floor, West Wing, Marisoft IT Park 3, Kalyani Nagar, Pune 411014, Maharashtra, India

am the translator of the Japanese specification of the above-mentioned JP patent application and I state that the attached specification is a true and accurate translation to the best of my knowledge and belief.

Signature of translator : Amruta Nirgudkar

Date : 19/1/2024

UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
Alexandria, VA 22313 - 1450
www.uspto.gov

ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
90/019,565	**07/02/2024 10:40:50 AM Z ET**	**16445.0001-00000**

Title of Invention

ILLUMINATION FAN CONNECTABLE WITH AT LEAST ONE ILLUMINATION FAN FOR A COMPUTER

Application Information

APPLICATION TYPE	Utility / ex parte reexam	PATENT #	10690336
CONFIRMATION #	5828	FILED BY	Kai Rajan
PATENT CENTER #	66195073	FILING DATE	-
CUSTOMER #	60601	FIRST NAMED INVENTOR	Chien-Hao CHEN
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Kai Rajan

Documents

TOTAL DOCUMENTS: 23

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
Ex1001_10690336.pdf	9	Copy of patent for which reexamination is requested	1061 KB
Ex1003_JP2018041147A.pdf	32	Reexam - Affidavit/Declaration/Exhibit Filed by 3rd Party	737 KB
Ex1012_336PatentFamily.pdf	2	Reexam - Affidavit/Declaration/Exhibit Filed by 3rd Party	47 KB
Ex1014_WO2008061519_Trans.pdf	18	Reexam - Affidavit/Declaration/Exhibit Filed by 3rd Party	133 KB

Ex1008_CertTransClaimsKR 200494193Y1.pdf	4	Reexam - Affidavit/Declaration/Exhibit Filed by 3rd Party	99 KB
Ex1005_CN207064277U.pdf	11	Reexam - Affidavit/Declaration/Exhibit Filed by 3rd Party	1350 KB
Ex1007_KR200494193Y1.pdf	7	Reexam - Affidavit/Declaration/Exhibit Filed by 3rd Party	3513 KB
Ex1010_US20060012973A1.pdf	8	Reexam - Affidavit/Declaration/Exhibit Filed by 3rd Party	639 KB
EX1009_US20080279694.pdf	10	Reexam - Affidavit/Declaration/Exhibit Filed by 3rd Party	1049 KB
Ex1011_US20170314777.pdf	9	Reexam - Affidavit/Declaration/Exhibit Filed by 3rd Party	942 KB
Ex1013_WO2008061519.pdf	31	Reexam - Affidavit/Declaration/Exhibit Filed by 3rd Party	3242 KB
Ex1002_336FileHistory.pdf	78	Reexam - Affidavit/Declaration/Exhibit Filed by 3rd Party	7596 KB
CN101725571.pdf	29	Foreign Reference	1671 KB
CN2419399.pdf	25	Foreign Reference	1567 KB
CN2861563.pdf	35	Foreign Reference	2820 KB
CN2861564.pdf	28	Foreign Reference	2280 KB

16445 0001 Reexam Request.pdf	106	Receipt of Original Ex Parte Request by Third Party	16316 KB
16445 0001 Certificate of Service.pdf	1	Reexam Certificate of Service	80 KB
16445 0001 Reexam Transmittal.pdf	4	Transmittal Letter	441 KB
Ex1006_CN207064277U_translation.pdf	15	Reexam - Affidavit/Declaration/Exhibit Filed by 3rd Party	3518 KB
Ex1004_JP2018041147A_translation-2.pdf	50	Reexam - Affidavit/Declaration/Exhibit Filed by 3rd Party	10655 KB
SB-08.pdf	3	Information Disclosure Statement (IDS) Form (SB08)	97 KB

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TW282827_wTrans.pdf	22	Foreign Reference	1108 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
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National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Patent Number	10,690,336
Issue Date	June 23, 2020
First Named Inventor	Chien-Hao CHEN
Art Unit	To Be Assigned
Examiner Name	To Be Assigned
Attorney Docket Number	16445.0001-00000

U.S. PATENTS

Examiner Initials*	Cite No.	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, where Relevant Passages or Relevant Figures Appear
	1	US-10,690,336		06-23-2020	Chien-Hao Chen	

U.S. PATENT APPLICATION PUBLICATIONS

Examiner Initials*	Cite No.	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, where Relevant Passages or Relevant Figures Appear
	1	US-2006/0012973		01-19-2006	Jen-Cheng Lin	
	2	US-2008/0279694		11-13-2008	Yi-Fang Chou et al.	
	3	US-2009/0246015		10-01-2009	Chia-Hao Hsu	
	4	US-2017/0314777		11-02-2017	Wen-Hsien Lai	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[5]
	1	JP 2018041147A			03-15-2018	Fujitsu		Y
	2	CN 207064277U			03-02-2018	Super Flower Computer Inc.		Y
	3	TW 282827U			08-01-1996	Wu Goming		Abstract
	4	KR 200494193 Y1			08-18-2021	Chien-Hao Chen		Claims
	5	WO 2008/061519			05-29-2008	Konvekta AG		Y
	6	CN 2419399Y			02-14-2001	Delta Electronics Inc.		Y
	7	CN 2861563Y			01-24-2007	Yen Sun Technology Corp		Y
	8	CN 2861564Y			01-24-2007	Yen Sun Technology Corp		Y
	9	CN 101725571A			06-09-2010	Inventec Corp		Y

EXAMINER SIGNATURE

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	10,690,336
	Filing Date	June 23, 2020
	First Named Inventor	Chien-Hao CHEN
	Art Unit	To Be Assigned
	Examiner Name	To Be Assigned
	Attorney Docket Number	16445.0001-00000

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached certification statement.

☐ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

XX A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Kai Rajan/	Date (YYYY-MM-DD)	2024-07-02
Name/Print	Kai Rajan	Registration Number	70,110

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	10,690,336
	Filing Date	June 23, 2020
	First Named Inventor	Chien-Hao CHEN
	Art Unit	To Be Assigned
	Examiner Name	To Be Assigned
	Attorney Docket Number	16445.0001-00000

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9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

EXHIBIT 1003

(19)日本国特許庁(JP)　(12)公開特許公報(A)　(11)特許出願公開番号
特開2018-41147
(P2018-41147A)
(43)公開日　平成30年3月15日(2018.3.15)

(51)Int.Cl.			F I			テーマコード（参考）
G06F	1/20	(2006.01)	G06F	1/20	E	5E322
H05K	7/20	(2006.01)	H05K	7/20	H	
			G06F	1/20	B	

審査請求 未請求　請求項の数 9　ＯＬ　（全 31 頁）

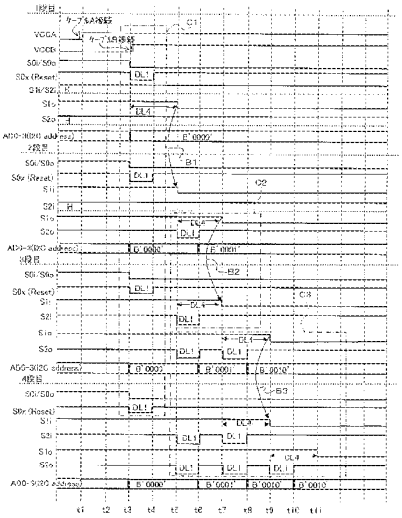
(21)出願番号　特願2016-172771 (P2016-172771)
(22)出願日　平成28年9月5日 (2016.9.5)

(71)出願人　000005223
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Ｆターム(参考)　5E322 AB10　BB03　BB04　BB06　EA05

(54)【発明の名称】電子装置、冷却ファン制御装置、冷却ファン制御プログラム、および冷却ファン制御方法

(57)【要約】
【課題】ファンユニットの交換を行なっても、各ファンユニットの位置と連携したアドレスを各ファンユニットに付与できるようにする。
【解決手段】本電子装置は、電子機器と、直列連結され前記電子機器を冷却する複数のファンユニットと、を有する。前記複数のファンユニットのそれぞれは、前記複数のファンユニットの中から自ファンユニットを特定するアドレスを、前記複数のファンユニット内での前記自ファンユニットの連結位置に対応させて前記自ファンユニットに付与する制御部を有する。
【選択図】図１９



【特許請求の範囲】
【請求項１】
電子機器と、
直列連結され前記電子機器を冷却する複数のファンユニットと、を有し、
前記複数のファンユニットのそれぞれは、
前記複数のファンユニットの中から自ファンユニットを特定するアドレスを、前記複数のファンユニット内での前記自ファンユニットの連結位置に対応させて前記自ファンユニットに付与する制御部を有する、電子装置。
【請求項２】
前記複数のファンユニットのそれぞれに付与される前記アドレスに基づいて前記複数のファンユニットのそれぞれを特定し、前記複数のファンユニットのそれぞれを管理する管理部を有する、請求項１に記載の電子装置。
【請求項３】
前記複数のファンユニットは、追加ファンユニットを前記複数のファンユニットの一端側に追加連結し前記複数のファンユニットの他端側のファンユニットを前記他端側から押し出すことで前記複数のファンユニットのうちの一ファンユニットを活性交換可能に構成され、
前記制御部は、前記追加ファンユニットの追加連結に応じて、前記アドレスを前記自ファンユニットに付与する、請求項１または請求項２に記載の電子装置。
【請求項４】
前記制御部は、
前記自ファンユニットの前段のファンユニットからのパルス信号を計数するカウンタを有し、
前記前段のファンユニットからのパルス信号を所定遅延時間だけ遅延させて前記自ファンユニットの後段のファンユニットへ出力し、
前記カウンタによる計数値に応じた値を、前記アドレスとして前記自ファンユニットに付与する、請求項３に記載の電子装置。
【請求項５】
前記複数のファンユニットのうち隣接する二つのファンユニットは、
前記一端側から前記他端側へ前記パルス信号を伝搬するとともに前記一端側から前記他端側へ電源を供給するファンユニット間コネクタを介して連結される、請求項４に記載の電子装置。
【請求項６】
前記複数のファンユニットのそれぞれは、
前記自ファンユニットが前記複数のファンユニットの前記一端側に配置される際に前記電源を前記自ファンユニットに供給可能な二以上の電源ケーブルを接続される電源コネクタを有する、請求項５に記載の電子装置。
【請求項７】
直列連結され電子機器を冷却する複数のファンユニットを制御する冷却ファン制御装置であって、
前記複数のファンユニットのそれぞれにおいて、前記複数のファンユニットの中から自ファンユニットを特定するアドレスを、前記複数のファンユニット内での前記自ファンユニットの連結位置に対応させて前記自ファンユニットに付与する制御部を有する、冷却ファン制御装置。
【請求項８】
直列連結され電子機器を冷却する複数のファンユニットを制御するプロセッサに、
前記複数のファンユニットのそれぞれにおいて、前記複数のファンユニットの中から自ファンユニットを特定するアドレスを、前記複数のファンユニット内での前記自ファンユニットの連結位置に対応させて前記自ファンユニットに付与する、
処理を実行させる、冷却ファン制御プログラム。

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【請求項９】
プロセッサによって、直列連結され電子機器を冷却する複数のファンユニットを制御する冷却ファン制御方法であって、
前記複数のファンユニットのそれぞれにおいて、前記複数のファンユニットの中から自ファンユニットを特定するアドレスを、前記複数のファンユニット内での前記自ファンユニットの連結位置に対応させて前記自ファンユニットに付与する、冷却ファン制御方法。
【発明の詳細な説明】
【技術分野】
【０００１】
本発明は、電子装置、冷却ファン制御装置、冷却ファン制御プログラム、および冷却ファン制御方法に関する。
【背景技術】
【０００２】
大型の基幹サーバにおいて用いられる冷却ファンには、システム運用状態（通電状態）のまま活性保守交換を可能にすることが望まれる。このため、冷却ファンを含むファンユニットは、サーバ筐体を成すシャーシの前面側や背面側に配置される場合が多い。この場合、シャーシの前面側や背面側に、保守交換の必要な他のデバイスやコネクタを配置できなくなる。
【０００３】
そこで、サーバ筐体からシャーシごと引き出してサーバの上下面や側面からファンユニットを保守可能にする構造を用いることも考えられる。しかし、ファンユニットを着脱する方向に、通電状態のプリント板やケーブルなどが存在する場合、通電状態を維持したままでファンユニットの交換を行なうことは難しい。このため、サーバ筐体の内部中央付近にファンユニットを活性交換可能に配置することは困難である。
【０００４】
そこで、以下のようにして、複数のファンユニットのうちの一ファンユニットをスライド動作によって活性交換可能にする構造も考えられる。当該構造では、複数のファンユニットが、サーバ筐体の一面側から他面側へ貫通するように、連続的に備えられる。そして、追加ファンユニットが複数のファンユニットの一端側に追加され、他端側のファンユニットが他端側から押し出される。
【０００５】
一方、近年のサーバでは、冷却効率の向上や低消費電力化が望まれることから、サーバ全体のマネージメント監視部から複数のファンユニットそれぞれの回転数制御や状態監視が行なわれる。そのため、サーバ筐体内の各ファンユニットを認識して個々に制御すべく、各ファンユニットの制御信号線を物理的に前記マネージメント監視部に接続することが考えられる。しかし、この場合、ファンユニットの搭載数に応じた数の信号線を配線することになるため、ファンユニットの搭載数が増加すると信号線の配線が困難になる。
【０００６】
そこで、上述のごとくファンユニットをスライド動作によって活性交換可能にする構造において、より少ない信号線によって各ファンユニットの監視・制御が可能なシリアルインタフェースを適用することが考えられる。例えば、複数のファンユニットが、Ｉ２Ｃ（Inter-Integrated Circuit）等のシリアルインタフェースによりデイジーチェーン状に接続される。このとき、マネージメント監視部は、各ファンユニットに予め付与される固有アドレス（ＩＤ；識別情報）によって各ファンユニットを特定しながら各ファンユニットの監視・制御を行なう。
【先行技術文献】
【特許文献】
【０００７】
【特許文献１】特開２０１０－２０５９７２号公報
【特許文献２】特開平０８－３３８６７６号公報

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【特許文献３】特開平０６－２４４５７７号公報
【特許文献４】特開平１０－１７３３７６号公報
【発明の概要】
【発明が解決しようとする課題】
【０００８】
しかしながら、ファンユニットをスライド動作によって活性交換可能にする構造において、シリアルインタフェースを適用する場合、以下のような不具合が生じる。マネージメント監視部は、サーバ筐体内の各ファンユニットを特定するための固有アドレスが必要になる。しかし、ファンユニットの活性交換が行なわれた場合、固有アドレスの設定変更を行なうことができないため、各ファンユニットの実装位置（連結位置）と各ファンユニットのアドレスとの連携がとれなくなる。これにより、マネージメント監視部は、ファンユニットを正しく認識して監視・制御を行なうことができなくなる。
【０００９】
一つの側面では、本件明細書に開示の発明は、ファンユニットの交換を行なっても、各ファンユニットの位置と連携したアドレスを各ファンユニットに付与できるようにすることを目的とする。
【課題を解決するための手段】
【００１０】
本件の電子装置は、電子機器と、直列連結され前記電子機器を冷却する複数のファンユニットと、を有する。前記複数のファンユニットのそれぞれは、前記複数のファンユニットの中から自ファンユニットを特定するアドレスを、前記複数のファンユニット内での前記自ファンユニットの連結位置に対応させて前記自ファンユニットに付与する制御部を有する。
【発明の効果】
【００１１】
ファンユニットの交換を行なっても、各ファンユニットの位置と連携したアドレスを各ファンユニットに付与することができる。
【図面の簡単な説明】
【００１２】
【図１】関連技術の第１例を示す図である。
【図２】関連技術の第２例を示す図である。
【図３】関連技術の第３例を示す図である。
【図４】関連技術の第４例を示す図である。
【図５】本実施形態の技術を適用されるサーバおよびファンユニットの連結構造を模式的に示す斜視図である。
【図６】本実施形態におけるファンユニットの連結構造および活性交換手順を説明すべく図５における活性交換可能なファンユニットの連結構造を拡大して示す斜視図である。
【図７】（Ａ）は本実施形態のファンユニットを模式的に示す斜視図、（Ｂ）は本実施形態のファンユニットを模式的に示す正面図である。
【図８】本実施形態におけるファンユニットの活性交換手順および故障表示を説明すべくファンユニットの連結構造を模式的に示す斜視図である。
【図９】本実施形態におけるファンユニットの活性交換手順および故障表示を説明すべくファンユニットの連結構造を模式的に示す斜視図である。
【図１０】本実施形態におけるファンユニットの活性交換手順および故障表示を説明すべくファンユニットの連結構造を模式的に示す斜視図である。
【図１１】本実施形態におけるファンユニットの活性交換手順および故障表示を説明すべくファンユニットの連結構造を模式的に示す斜視図である。
【図１２】本実施形態の技術を適用されるサーバのハードウエア構成を示すブロック図である。
【図１３】本実施形態の技術を適用されるサーバにおける管理部（Ｉ２Ｃマスタ）と各フ

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ファンユニット（Ｉ２Ｃスレーブ）との間のＩ２Ｃ接続を示す図である。
【図１４】本実施形態における各ファンユニットの構成を示すブロック図である。
【図１５】図１４に示すＬＥＤ（Light Emitting Diode）点灯回路の詳細構成を示すブロック図である。
【図１６】図１４に示すＩ２Ｃバス切替回路の詳細構成を示すブロック図である。
【図１７】図１４に示すエッジ生成回路の詳細構成を示すブロック図である。
【図１８】図１４に示すパルス生成回路の詳細構成を示すブロック図である。
【図１９】図１４に示すファンユニットを４段、直列連結した場合の動作を説明するタイムチャートである。
【図２０】本実施形態の技術を適用されるサーバにおけるファンユニットの活性交換手順を説明するフローチャートである。
【発明を実施するための形態】
【００１３】
以下に、図面を参照し、本願の開示する電子装置、冷却ファン制御装置、冷却ファン制御プログラム、および冷却ファン制御方法の実施形態について、詳細に説明する。ただし、以下に示す実施形態は、あくまでも例示に過ぎず、実施形態で明示しない種々の変形例や技術の適用を排除する意図はない。すなわち、本実施形態を、その趣旨を逸脱しない範囲で種々変形して実施することができる。また、各図は、図中に示す構成要素のみを備えるという趣旨ではなく、他の機能を含むことができる。そして、各実施形態は、処理内容を矛盾させない範囲で適宜組み合わせることが可能である。
【００１４】
〔１〕関連技術
前述したように、大型の基幹サーバにおいて用いられる冷却ファンには、システム運用状態（通電状態）のまま活性保守交換を可能にすることが望まれる。このため、例えば図１に示すように、冷却ファンを含むファンユニット１１０は、サーバ１００の筐体を成すシャーシの前面側または背面側に配置され、図１の矢印Ａ１の方向からファンユニット１１０の保守交換が行なわれる場合が多い。この場合、シャーシの前面側または背面側に、保守交換の必要な他のデバイスやコネクタを配置できなくなる。なお、図１は関連技術の第１例を示す図である。図１では、サーバ１００の前面側において左右４台ずつ計８台のファンユニット１１０を備えた例が示される。図１におけるファンユニット１１０は、例えば、サーバ１００に内蔵される各種電子機器１０１を冷却する。
【００１５】
そこで、サーバ１００の筐体からシャーシごと引き出して、図２に示すように、サーバ１００の上下面（例えば矢印Ａ２またはＡ３の方向）や左右側面からファンユニット１１０を保守可能にする構造を用いることも考えられる。しかし、ファンユニット１１０を着脱する方向に、通電状態のプリント板やケーブルなどが存在する場合、通電状態を維持したままでファンユニット１１０の交換を行なうことは難しい。このため、サーバ１００の筐体の内部中央付近にファンユニット１１０を活性交換可能に配置することは困難である。なお、図２は関連技術の第２例を示す図である。図２では、サーバ１００の前後方向の中央付近において上下４台ずつ計８台のファンユニット１１０を備えた例が示される。
【００１６】
そこで、図３や図４に示すように、複数のファンユニット１１０をスライド動作によって活性交換可能にする構造も考えられる。当該構造では、複数のファンユニット１１０が、サーバ１００の筐体の一面側（右側面）から他面側（左側面）へ貫通するように、連続的に備えられる。
【００１７】
図３では、サーバ１００の内部中央付近において、４台のファンユニット１１０が、一対の電源レール１５１，１５２によって左右方向へスライド移動可能に備えられる。なお、図３は関連技術の第３例を示す図である。電源レール１５１，１５２は、サーバ１００の内部電源１２０に接続され、電源レール１５１，１５２から各ファンユニット１１０に

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対し電源供給が行なわれるように構成される。図３に示す構造では、各ファンユニット１１０に対する電源供給を行ないながら交換対象単位である一台のファンユニット１１０を右側から押し込むことで、左側のファンユニット１１０が左側から押し出される。このようにファンユニット１１０を一台ずつ押し出すことで、４台のファンユニット１１０のうちの一台を活性交換することができる。しかし、図３に示す例では、電源レール１５１，１５２等の接点が露出した構造になっている。このため、構造上大がかりになるほか、ファンユニット１１０の近傍は塵埃等による接点の汚れや腐食等の課題がある。さらに、電源投入状態でファンユニット１１０のスライド移動を行なうと、摺動性の抵抗値の変動等により電圧の変動を招くといった課題もある。

【００１８】

図４では、図３に示すような電源レールを使用することなくファンユニット１１０の活性交換を行なう手法の一例が示される。なお、図４は関連技術の第４例を示す図である。図４では、直列連結した３台のファンユニット１１０が、左右方向にスライド移動可能に備えられる。通常動作時、３台のファンユニット１１０には、サーバ１００の内部電源１２０から電源ケーブル１４１を介して電源供給が行なわれる。交換対象単位の３台のファンユニット１１０には、外部電源１３０から電源ケーブル１４２を介して電源供給が行なわれる。隣接するファンユニット１１０，１１０はコネクタを介して連結され、当該コネクタによりファンユニット間の電源供給が行なわれる。図４に示す構造では、交換対象単位である３台のファンユニット１１０を右側から押し込むことで、サーバ１００内の３台のファンユニット１１０が左側から押し出される。この後、押込み後の３台のファンユニット１１０に内部電源１２０から電源を供給するように、電源ケーブル１４１が接続される。これにより、ファンユニット１１０の活性交換が３台単位で行なわれる。図４に示す例では、図３に示すような電源レールを使用することなくファンユニット１１０の活性交換を行なうことは可能である。しかし、複数のファンユニット１１０を一括で交換するため、複数のファンユニット１１０のうちの一部のファンユニット１１０を活性交換することができない。つまり、交換の必要なファンユニット１１０のみの交換を行なうことができないといった課題がある。

【００１９】

一方、近年のサーバ１００では、上述したように、冷却効率の向上や低消費電力化が望まれることから、サーバ全体のマネージメント監視部から複数のファンユニット１１０それぞれの回転数制御や状態監視が行なわれる。そのため、サーバ１００の筐体内の各ファンユニット１１０を認識して個々に制御すべく、各ファンユニット１１０の制御信号線を物理的に前記マネージメント監視部に接続することが考えられる。しかし、この場合、ファンユニット１１０の搭載数に応じた数の信号線を配線することになるため、ファンユニット１１０の搭載数が増加すると信号線の配線が困難になる。

【００２０】

そこで、ファンユニット１１０をスライド動作によって活性交換可能にする構造において、より少ない信号線によって各ファンユニット１１０の監視・制御が可能なシリアルインタフェースを適用することが考えられる。例えば、複数のファンユニット１１０が、Ｉ２Ｃ等のシリアルインタフェースによりデイジーチェーン状に接続される。このとき、マネージメント監視部は、各ファンユニット１１０に予め付与される固有アドレス（ＩＤ；識別情報）によって各ファンユニット１１０を特定しながら各ファンユニット１１０の監視・制御を行なう。

【００２１】

しかしながら、ファンユニット１１０をスライド動作によって活性交換可能にする構造において、シリアルインタフェースを適用する場合、以下のような不具合が生じる。マネージメント監視部は、サーバ１００の筐体内の各ファンユニット１１０を特定するための固有アドレスが必要になる。しかし、ファンユニット１１０の活性交換が行なわれた場合、固有アドレスの設定変更を行なうことができないため、各ファンユニット１１０の実装位置（連結位置）と各ファンユニット１１０のアドレスとの連携がとれなくなる。これに

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より、マネージメント監視部は、ファンユニット１１０を正しく認識して監視・制御を行なうことができなくなる。例えば、実際に故障が生じたファンユニット１１０と、ファン故障外部表示パネルで故障点灯されるべきＬＥＤとの対応（連携）がとれなくなる。

【００２２】

このとき、各ファンユニット１１０にディップスイッチ等を設け、保守員等がディップスイッチを操作して各ファンユニット１１０のＩＤを手動で変更することも考えられる。このとき、複数のファンユニット１１０のうちサーバ１００の外部に露出している面は、両端のファンユニット１１０の一面だけである。このため、保守員は、各ファンユニット１１０のＩＤを目視で確認することができない。また、保守員がＩＤの設定をミスした場合、ファンユニットを監視できなくなる。ＩＤが重複設定された場合、サーバ１００全体のマネージメント監視を行なうことができなくなることもある。

【００２３】

〔２〕本実施形態の概要

そこで、本実施形態では、図１～図４を参照しながら上述した関連技術の各種不具合や課題を解消する技術が開示される。特に、本実施形態では、サーバ等の電子装置においてファンユニットの活性交換を行なっても、各ファンユニットの位置と連携したアドレス（ＩＤ）を各ファンユニットに自動付与できるようにする技術が開示される。

【００２４】

本実施形態では、例えば、各ファンユニットの回転数制御や異常状態監視を行なうサーバ筐体全体のマネージメント監視部を搭載しているサーバにおいて、ファンユニットをシステム稼働状態で活性交換する際に用いられる技術が開示される。このとき、当該技術は、ファンユニットに特別な固有ＩＤを事前に付与することなく、複数のファンユニットの中の特定のファンユニットを活性交換した後、ファンユニットの交換完了と同時に実装位置と連携した各ファンユニット特有のＩＤを自動的に付与する。これにより、当該技術は、交換前と同じ状態で各ファンユニットの回転数制御や異常状態監視を、サーバ筐体全体のマネージメント監視部で可能にする。

【００２５】

当該技術を実現すべく、本実施形態では、図５に示すようなサーバ１が開示される。本実施形態において、サーバ１は、ファンユニット１０によって冷却されるべき電子機器を含む電子装置の一例である。電子装置は、サーバに限られるものではなく、情報処理装置，通信装置など、冷却されるべき各種電子機器を含む装置であればよい。なお、図５は、本実施形態の技術を適用されるサーバ１およびファンユニット１０の連結構造を模式的に示す斜視図である。また、図６は、本実施形態におけるファンユニット１０の連結構造および活性交換手順を説明すべく、図５における活性交換可能なファンユニット１０の連結構造を拡大して示す斜視図である。

【００２６】

本実施形態のサーバ１は、電子機器１０１と、直列連結され、電子機器１０１を冷却する複数のファンユニット１０と、を有する。本実施形態において、ファンユニット１０の数は、例えば４台である。

【００２７】

各ファンユニット１０は、モータ（図示略）によって回転駆動される冷却ファン１１を有するほか、制御部（図示略）を有する。当該制御部は、各ファンユニット１０を制御するもので、後述するファンコントローラ１３，回路２０，３０，４０，５０およびカウンタ６０（図１４参照）を有する。ファンコントローラ１３は、冷却ファン１１の動作を監視・制御する。特に、当該制御部は、複数のファンユニット１０の中から自ファンユニットを特定するアドレス（例えばＩ２Ｃスレーブアドレス）を、複数のファンユニット１０内での自ファンユニットの連結位置に対応させて自ファンユニット（ファンコントローラ１３）に付与する機能を果たす。

【００２８】

また、サーバ１は、管理部７（図８～図１３参照）を有する。管理部７は、各ファンユ

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ニット１０に付与されるアドレスに基づいて各ファンユニット１０を特定し、各ファンユニット１０を管理する。管理部７は、サーバ筐体全体のマネージメント監視部７、もしくはマネージメント監視部７、もしくは監視部７と称される場合がある。

【００２９】

さらに、複数のファンユニット１０は、図５～図１１を参照しながら後述するごとく、複数のファンユニット１０のうちの一ファンユニットを活性交換可能に構成される。つまり、追加ファンユニット１０を複数のファンユニット１０の一端側に追加連結し複数のファンユニット１０の他端側のファンユニット１０を他端側から押し出すことで、複数のファンユニット１０のうちの一ファンユニットを活性交換することが可能に構成される。

【００３０】

前記制御部は、追加ファンユニットの追加連結に応じて、自ファンユニットを特定するアドレスを自ファンユニットに付与する。前記制御部は、自ファンユニットの前段のファンユニットからのパルス信号を計数するカウンタ６０（図１４，図１９参照）を有する。そして、前記制御部は、前段のファンユニットからのパルス信号を所定遅延時間（ＤＬ４；図１９参照）だけ遅延させて自ファンユニットの後段のファンユニットへ出力し、カウンタ６０による計数値に応じた値を、アドレスとして自ファンユニットに付与する。

【００３１】

また、ファンユニット１０の交換を活性状態（通電状態）で実行すべく、各ファンユニット１０は、以下のような構造を有する。つまり、複数のファンユニット１０のうち隣接する二つのファンユニット１０，１０は、一端側から他端側へ前記パルス信号を伝搬するとともに一端側から他端側へ電源を供給するファンユニット間コネクタＣＮＣ，ＣＮＤを介して連結される（図５～図１１参照）。また、各ファンユニット１０は、自ファンユニットが複数のファンユニット１０の一端側に配置される際に電源を自ファンユニットに供給可能な二以上の電源ケーブル（ケーブルＡおよびＢ）を接続される電源コネクタＣＮＡおよびＣＮＢを有する（図５～図７参照）。

【００３２】

上述したサーバ１によれば、以下に詳述するように、露出した電源レール構造を使用することなく、複数のファンユニット１０のうちの一部のファンユニットをスライド動作によって活性交換することが可能になる。また、その際、活性交換直後には、各ファンユニット１０において前記制御部によりＩ２Ｃスレーブアドレスが自動的に付与される。つまり、ファンユニット１０の活性交換を行なった後であっても、各ファンユニット１０の位置と連携したアドレスを各ファンユニット１０に付与することができる。

【００３３】

これにより、特別な操作を行なうことなくサーバ１の筐体内の各ファンユニット１０の実装位置とＩ２Ｃスレーブアドレスとの連携が取れ、管理部７は、各ファンユニット１０を正しく認識して、各ファンユニット１０の回転数制御や異常状態監視を適切に行なうことが可能になる。例えば、図８～図１１を参照しながら後述するごとく、実際に故障が生じたファンユニット１０と、ファン故障外部表示パネル８で故障点灯されるべきＬＥＤ８ａ～８ｄとの対応を正確にとることができる。このようにして、本実施形態のサーバ１によれば、図１～図４を参照しながら上述した関連技術の各種不具合や課題を解消することができる。

【００３４】

〔３〕本実施形態におけるファンユニットの連結構造および活性交換手順

以下、図１～図４を参照しながら上述した関連技術の各種不具合や課題を解消すべく本実施形態において採用される、ファンユニットの連結構造および活性交換手順について、図５～図１１を参照しながら説明する。

【００３５】

なお、前述した通り、図５は、本実施形態のサーバ１およびファンユニット１０の連結構造を模式的に示す斜視図であり、図６は、図５に示す連結構造を拡大して示す斜視図である。また、図７（Ａ）は本実施形態のファンユニット１０を模式的に示す斜視図、図７

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（Ｂ）は本実施形態のファンユニット１０を模式的に示す正面図である。図８～図１１は、本実施形態におけるファンユニット１０の活性交換手順および故障表示を説明すべくファンユニットの連結構造を模式的に示す斜視図である。

【００３６】

図５，図６および図８～図１１に示すように、本実施形態では、複数（図中４台）のファンユニット１０が、サーバ１の筐体の一面側（図中、右面側）から他面側（図中、左面側）へ貫通するように、連続的に備えられる。そして、新規のファンユニット１０を複数のファンユニット１０の一端側（図中、右側）に追加し複数のファンユニット１０の全体を図中左方向へスライド移動させることで、左側のファンユニット１０が筐体の他端側（図中、左側）から押し出されるように構成されている。

【００３７】

このような連結構造を成す各ファンユニット１０には、図５，図６，図７（Ａ）および図７（Ｂ）に示すように、隣接するファンユニット１０に対し電源や制御信号／監視信号を供給・伝搬するためのコネクタＣＮＡ，ＣＮＢ，ＣＮＣ，ＣＮＤが備えられる。なお、以下において、制御信号／監視信号を制御／監視信号と表記する場合がある。

【００３８】

つまり、各ファンユニット１０の前面から見て右側面には、電源および制御信号／監視信号の活性接続が可能なコネクタＣＮＣ（オス）が凸設される。各ファンユニット１０の前面から見て左側面には、電源および制御信号／監視信号の活性接続が可能なコネクタＣＮＤ（メス）が凹設される。隣接する二つのファンユニット１０，１０は、一方のファンユニット１０のコネクタＣＮＣを他方のファンユニット１０のコネクタＣＮＤに嵌合させることにより、電源供給可能に且つ制御信号／監視信号伝搬可能に連結される。

【００３９】

また、各ファンユニット１０の一端側（前面から見て右側）には、電源および制御信号／監視信号の活性接続が可能な、二つのコネクタＣＮＡ，ＣＮＢ（いずれもメス）が設けられている。一方のコネクタＣＮＡは、各ファンユニット１０の前面下部に配置されるとともに、ケーブルＡの端部プラグ（オス）を前面側から挿入されて活性接続されるように配置される。他方のコネクタＣＮＢは、各ファンユニット１０の後面上部に配置されるとともに、ケーブルＢの端部プラグ（オス）を後面側から挿入されて活性接続されるように配置される。コネクタＣＮＡ，ＣＮＢには、各ファンユニット１０が複数のファンユニット１０の最右側（一端側）に配置される際（各ファンユニット１０の追加時）に二系統のケーブルＡ，Ｂがそれぞれ接続される。ケーブルＡ，Ｂは、それぞれ、サーバ１内の電源ユニット（内部電源）２からの電源供給を行なうとともに、管理部７（図８～図１３参照）からの制御信号／監視信号等の伝搬を行なう。

【００４０】

さらに、各ファンユニット１０の前面から見て右側面には、図７（Ａ）に示すように、挿抜可能表示ランプ１２が設けられる。当該右側面は、各ファンユニット１０が複数のファンユニット１０の最右側（一端側）に配置される際（各ファンユニット１０の追加時）に外部に対して露出するため、保守員によって挿抜可能表示ランプ１２の点灯状態を確認することができるようになっている。挿抜可能表示ランプ１２は、例えばデュアルカラーＬＥＤである。挿抜可能表示ランプ１２は、後述するＬＥＤ点灯回路２０（図１４，図１５参照）によって点灯色（発光色）を制御される。例えば、コネクタＣＮＡ，ＣＮＢにそれぞれケーブルＡ，Ｂが接続されている状態、つまりケーブル挿抜可能な状態（ケーブルを一本抜いても電源供給は途絶えない状態）である場合、挿抜可能表示ランプ１２は緑色状態（緑色で発光する状態）に制御される。一方、ケーブルＡ，Ｂのいずれか一方のみがコネクタＣＮＡ，ＣＮＢに接続されている状態（これ以上、ケーブルを抜くと電源供給が途絶える状態）である場合、挿抜可能表示ランプ１２は黄色状態（黄色で発光する状態）に制御される。

【００４１】

上述したケーブルＡ，ＢおよびコネクタＣＮＡ，ＣＮＢ，ＣＮＣ，ＣＮＤによって、直

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列連結された複数のファンユニット１０に対し、電源ユニット２からの電源供給がいもづる式に行なわれる。また、管理部７（Ｉ２Ｃマスタ；図８～図１３参照）と、複数のファンユニット１０のファンコントローラ１３（Ｉ２Ｃスレーブ；図１２，図１３参照）との間が、Ｉ２Ｃ等のシリアルインタフェースによりデイジーチェーン状に接続される。これにより、上述したケーブルＡ，ＢおよびコネクタＣＮＡ，ＣＮＢ，ＣＮＣ，ＣＮＤによって、直列連結された複数のファンユニット１０に対し、管理部７または隣接するファンユニット１０からの制御信号（パルス信号）等が伝搬される。したがって、システム（サーバ１）を停止させることなく、ファンユニット１０の活性交換が可能になっている。

【００４２】

次に、図６を参照しながら、本実施形態におけるファンユニット１０の活性交換手順について説明する。ここでは、新規のファンユニット１０を一端側（右側）に追加し、既にサーバ１内に搭載されているファンユニット１０をスライド移動させて他端側（左側）のファンユニット１０を押し出す場合に、保守員によって実行される作業について説明する。作業開始時点において、サーバ１には、直列連結された４台のファンユニット１０が搭載され、最右側のファンユニットのコネクタＣＮＡ，ＣＮＢにそれぞれケーブルＡ，Ｂが連結されている。

【００４３】

このとき、保守員は、既にサーバ１内に搭載されているファンユニット１０のうち最右側のファンユニット１０の右面における挿抜可能表示ランプ１２が緑色状態であることを確認する。つまり、最右側のファンユニット１０のコネクタＣＮＡ，ＣＮＢのそれぞれにケーブルＡ，Ｂが接続され、ケーブル挿抜が可能な状態であることを確認する。

【００４４】

保守員は、挿抜可能表示ランプ１２を視認してケーブル挿抜が可能な状態であることを確認すると、最右側のファンユニット１０のコネクタＣＮＣ（オス）を、新規のファンユニット１０のコネクタＣＮＤ（メス）に嵌め込む（図６の矢印(1)参照）。これにより、新規のファンユニット１０が５番目のファンユニット１０として最右側のファンユニット１０に連結される。

【００４５】

ついで、保守員は、最右側のファンユニット１０のコネクタＣＮＡに接続されているケーブルＡを引き抜き、図６の矢印(2)に示すように、追加連結された新規のファンユニット１０のコネクタＣＮＡに接続する。このとき、挿抜可能表示ランプ１２は、ケーブルＡを引き抜いた時点で、一旦、緑色状態から黄色状態に切り替わってから、ケーブルＡを新規のファンユニット１０のコネクタＣＮＡに接続した時点で、黄色状態から緑色状態に戻る。

【００４６】

さらに、保守員は、最右側のファンユニット１０のコネクタＣＮＢに接続されているケーブルＢを引き抜き、図６の矢印(3)に示すように、追加連結された新規のファンユニット１０のコネクタＣＮＢに接続する。このときも、挿抜可能表示ランプ１２は、ケーブルＢを引き抜いた時点で、一旦、緑色状態から黄色状態に切り替わってから、ケーブルＢを新規のファンユニット１０のコネクタＣＮＢに接続した時点で、黄色状態から緑色状態に戻る。

【００４７】

この後、保守員は、最右側に新規ファンユニット１０を追加連結された５台のファンユニット１０の全体を、図６の矢印(4)方向（左方向）へスライド移動させる。これにより、新規のファンユニット１０がサーバ１内へ押し入れられ、右から５段目（最左側）のファンユニット１０がサーバ１から外部へ押し出される。

【００４８】

このとき、押し出されたファンユニット１０が、交換対象の故障ファンユニット（対象ファンユニット）であれば、押し出されたファンユニット１０を取り外すことで交換作業は終了する。押し出されたファンユニット１０が対象ファンユニットでない場合、保守員

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は、当該押し出されたファンユニット１０を、新規ファンユニット１０として、上述と同様、最右側に追加連結してサーバ１内に押し入れる。保守員は、このような作業を対象ファンユニットが押し出されるまで繰り返す。

【００４９】

このようにして、直列連結された４台のファンユニット１０のうちの特定の一部（故障したファンユニット）を、各ファンユニット１０への給電を停止することなく、新規のファンユニット１０に交換することができる。これにより、各ファンユニット１０における冷却ファン１１の回転を維持したままの状態、つまり活性状態でのファンユニット１０の交換が可能になる。

【００５０】

ところで、本実施形態では、上述のようにケーブルＡ，Ｂの抜き挿しを行なって挿抜可能表示ランプ１２が緑色の点灯状態に戻った時点、即ち新規のファンユニット１０を追加連結した時点で、各ファンユニット１０の制御部によりアドレスの自動付与が行なわれる。つまり、各ファンユニット１０の制御部により、各ファンユニット１０のファンコントローラ１３（Ｉ２Ｃスレーブ；図１２～図１４参照）に対し、以下のように、Ｉ２Ｃスレーブアドレスが自動的に付与設定される。

【００５１】

例えば、ケーブルＡ，Ｂを接続されている１段目（最右側）のファンユニット１０には、Ｉ２Ｃスレーブアドレスとして最小番号（例えば０）が付与される。右から２段目のファンユニット１０には、Ｉ２Ｃスレーブアドレスとして最小番号＋１（例えば１）が付与される。同様に、右から３～５段目のファンユニット１０には、それぞれＩ２Ｃスレーブアドレスとして、最小番号＋２、最小番号＋３、最小番号＋４（例えば２，３，４）が付与される。

【００５２】

このようにして、各ファンユニット１０を特定するアドレスを、複数のファンユニット１０内での各ファンユニット１０の連結位置に対応させて各ファンユニット１０に付与することができる。

【００５３】

なお、Ｉ２Ｃスレーブアドレスの、より具体的な自動付与設定手法については、図１４～図１９を参照しながら後述する。

【００５４】

管理部７（Ｉ２Ｃマスタ）は、上述のごとく各ファンユニット１０のファンコントローラ１３に自動付与設定されたＩ２Ｃスレーブアドレスに基づいて各ファンユニット１０を特定し、各ファンユニット１０（ファンコントローラ１３）を管理する。管理部７は、図８～図１１を参照しながら以下に説明するごとく、複数のファンユニット１０についての正常／故障表示の制御も行なう。図８～図１１は、本実施形態におけるファンユニット１０の活性交換手順および故障表示について説明する図である。

【００５５】

本実施形態のサーバ１の前面下部には、図８～図１１に示すように、ファン故障外部表示パネル８が備えられる。ファン故障外部表示パネル８には４個のＬＥＤ（デュアルカラーＬＥＤ）８ａ，８ｂ，８ｃ，８ｄが備えられる。ＬＥＤ８ａ～８ｄは、それぞれ、管理部７によって、サーバ１内に搭載された４台のファンユニット１０の状態に応じて点灯色を制御される。

【００５６】

ＬＥＤ８ａは、最左側のファンユニット１０、つまり、図９～図１１において(1)を付した、右から４段目のファンユニット１０の正常／故障状態を示す。ＬＥＤ８ｂは、左から２段目のファンユニット１０、つまり、図９～図１１において(2)を付した、右から３段目のファンユニット１０の正常／故障状態を示す。ＬＥＤ８ｃは、左から３段目のファンユニット１０、つまり、図９～図１１において(3)を付した、右から２段目のファンユニット１０の正常／故障状態を示す。ＬＥＤ８ｄは、左から４段目のファンユニット１０

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、つまり、図９～図１１において(4)を付した、最右側のファンユニット１０の正常／故障状態を示す。

【００５７】

例えば、ＬＥＤ８ａ～８ｄのそれぞれは、対応ファンユニット１０が正常状態の場合に緑色状態（緑色で発光する状態）に制御される。一方、ＬＥＤ８ａ～８ｄのそれぞれは、対応ファンユニット１０が故障状態の場合に黄色状態（黄色で発光する状態）に制御される。

【００５８】

図８に示すように、全てのファンユニット１０が正常状態である場合、ファン故障外部表示パネル８の全てのＬＥＤ８ａ～８ｄは、管理部７によって、緑色状態に維持される。

【００５９】

ここで、管理部７と各ファンユニット１０のファンコントローラ１３との間は、図１３に示すごとくＩ２Ｃ接続され、管理部７がＩ２Ｃマスタとなり、各ファンコントローラ１３は、固有のアドレス（Ｉ２Ｃスレーブアドレス）を付与されたＩ２Ｃスレーブとなる。したがって、管理部７は、各ファンコントローラ１３から状態を読み取り、その状態が故障状態である場合、外部故障表示信号（図１２参照）をファン故障外部表示パネル８へ送信する。これにより、固有のアドレスによって特定される故障ファンユニット１０に対応するＬＥＤ８ａ～８ｄのいずれかが黄色状態で点灯される。このため、各ファンユニット１０の実装位置とＩ２Ｃスレーブアドレスとは対応している必要がある。本実施形態では、各ファンユニット１０の上記制御部を含む構成を図１４～図１８に示す構成とすることで、ファンユニット１０を押し出して交換した後にファンユニットの実装位置とＩ２Ｃスレーブアドレスとを自動的に同期させることができる。

【００６０】

例えば、図８に示すような状態で管理部７によってファンユニット(2)の故障が検知されると、管理部７は、ファンユニット(2)についての外部故障表示信号（図１２参照）をファン故障外部表示パネル８に送信する。ファン故障外部表示パネル８において、外部故障表示信号に応じて、図９に示すように、ファンユニット(2)に対応するＬＥＤ８ｂは緑色状態から黄色状態に切り替わる。保守員は、ファン故障外部表示パネル８を参照してファンユニット(2)の故障を認識し、新規ファンユニット(5)を一台、追加準備する。

【００６１】

このとき、４台のファンユニット(1)～(4)には、各ファンユニット１０の上記制御部の機能により、各ファンユニット１０を特定するＩ２Ｃスレーブアドレスとして、各ファンユニット１０の連結位置に対応させたアドレス、例えば３，２，１，０が付与されているものとする。したがって、故障の生じたファンユニット(2)はアドレス“２”によって特定される。

【００６２】

そして、保守員は、図６を参照しながら上述した手順で、図１０に示すように、新規ファンユニット(5)を、サーバ１内の４台のファンユニット(1)～(4)の最右側に追加連結する。保守員は、直列連結された５台のファンユニット(1)～(5)の全体を、図１１に示すように、図１１の左方向へスライド移動させる。これにより、新規ファンユニット(5)がサーバ１内へ押し入れられ、ファンユニット(1)がサーバ１から外部へ押し出される。

【００６３】

この時点で、サーバ１内には４台のファンユニット(2)～(5)が搭載される。そして、これらの４台のファンユニット(2)～(5)には、各ファンユニット１０の上記制御部の機能により、各ファンユニット１０を特定するＩ２Ｃスレーブアドレスとして、各ファンユニット１０の連結位置に対応させたアドレス、例えば３，２，１，０が付与される。したがって、故障の生じたファンユニット(2)はアドレス“３”によって特定される。

【００６４】

これに伴い、管理部７は、アドレス“３”で特定されるファンユニット(2)の故障を検知し、ファンユニット(2)についての外部故障表示信号（図１２参照）をファン故障外部

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表示パネル８に送信する。ファン故障外部表示パネル８において、外部故障表示信号に応じて、図１１に示すように、ファンユニット(2)に対応するＬＥＤ８ａは緑色状態から黄色状態に切り替わるとともに、ファンユニット(3)～(5)に対応するＬＥＤ８ｂ～８ｄは緑色状態になる。

【００６５】

この後、保守員は、ファン故障外部表示パネル８を参照してファンユニット(2)の故障を認識し、引き続き、押し出されたファンユニット(1)を、サーバ１内の４台のファンユニット(2)～(5)の最右側に追加連結する。そして、保守員は、直列連結された５台のファンユニット(2)～(5)，(1)の全体を、図１１中の左方向へスライド移動させる。これにより、ファンユニット(1)がサーバ１内へ押し入れられ、故障ファンユニット(2)がサーバ１から外部へ押し出される。

【００６６】

これにより、故障ファンユニット(2)の活性交換が完了する。このとき、４台のファンユニット(3)～(5)，(1)には、それぞれ、例えばアドレス３，２，１，０が付与される。また、全てのファンユニット１０が正常状態であるので、図８に示すように、ファン故障外部表示パネル８の全てのＬＥＤ８ａ～８ｄは、管理部７によって、緑色状態に維持される。

【００６７】

〔４〕本実施形態におけるサーバのハードウエア構成

次に、図１２および図１３を参照しながら、本実施形態におけるサーバのハードウエア構成について説明する。図１２は、本実施形態の技術を適用されるサーバ１のハードウエア構成を示すブロック図である。図１３は、本実施形態の技術を適用されるサーバ１における管理部７（Ｉ２Ｃマスタ）と各ファンユニット１０（Ｉ２Ｃスレーブ）との間のＩ２Ｃ接続を示す図である。

【００６８】

上述したように、サーバ１は、ファンユニット１０によって冷却されるべき電子機器を含む電子装置の一例である。図１２に示すように、本実施形態のサーバ１は、例えば、電源ユニット２、ＣＰＵ３、ＭＥＭ４、ＨＤＤ５、電圧レギュレータ６、マネージメント監視部７、ファン故障外部表示パネル８および４台のファンユニット１０を含む。ＣＰＵはCentral Processing Unitの略記であり、ＭＥＭはmemoryの略記であり、ＨＤＤはHard Disk Driveの略記である。

【００６９】

電源ユニット２は、サーバ１に内蔵される内部電源であり、上述したように、ケーブルＡ，ＢやコネクタＣＮＡ～ＣＮＤを介して、複数のファンユニット１０に対する電源の供給を行なう。また、電源ユニット２は、電圧レギュレータ６を介して、ＣＰＵ３，ＭＥＭ４，ＨＤＤ５などの電子機器のほか、その他の各種電子機器等（図示略）に対する電源の供給を行なう。

【００７０】

ＣＰＵ３は、種々の制御や演算を行なうプロセッサの一例である。ＣＰＵ３は、ＭＥＭ４，ＨＤＤ５，マネージメント監視部７や、その他の各種電子機器等と、バスを介して相互に通信可能に接続される。なお、プロセッサとしては、ＣＰＵ３等の演算処理装置に代えて、電子回路、例えばＭＰＵ（Micro Processing Unit）、ＡＳＩＣ（Application Specific Integrated Circuit）、ＦＰＧＡ（Field Programmable Gate Array）等の集積回路（ＩＣ）が用いられてもよい。

【００７１】

ＭＥＭ４は、種々のデータやプログラム等の情報を格納する揮発性記憶部のハードウェアの一例である。ＭＥＭ４としては、例えばＲＡＭ（Random Access Memory）等のメモリが挙げられる。

【００７２】

ＨＤＤ５は、種々のデータやプログラム等の情報を格納する不揮発性記憶部のハードウ

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ェアの一例である。不揮発性記憶部としては、例えば、ＨＤＤ等の磁気ディスク装置のほかに、ＳＳＤ（Solid State Drive）等の半導体ドライブ装置、フラッシュメモリ、ＲＯＭ（Read Only Memory）等の不揮発性メモリなどの各種記憶装置が挙げられる。ＨＤＤ５は、サーバ１の各種機能の全部若しくは一部を実現する各種プログラムを格納してよい。

【００７３】

ＣＰＵ３は、例えばＨＤＤ５に格納された各種プログラムをＭＥＭ４に展開して実行することにより、サーバ１の各種機能を実現することができる。

【００７４】

電圧レギュレータ６は、電源ユニット２からの電源電圧を調整し、電圧調整後の電源を、サーバ１内の電子機器、例えばＣＰＵ３，ＭＥＭ４，ＨＤＤ５などに供給する。

【００７５】

サーバ筐体全体のマネージメント監視部７は、サーバ１のハードウエア構成を監視するもので、例えばサービスプロセッサとして捉えることができる。本実施形態のマネージメント監視部７は、電源ユニット２，ＣＰＵ３，ＭＥＭ４，ＨＤＤ５，ファンユニット１０との間で監視信号をやり取りすることで、電源ユニット２，ＣＰＵ３，ＭＥＭ４，ＨＤＤ５，ファンユニット１０の状態を管理する。また、マネージメント監視部７は、電源ユニット２やファンユニット１０に対して制御信号を送信することで、電源ユニット２やファンユニット１０の状態を制御する。

【００７６】

本実施形態において、サーバ１内の４台のファンユニット１０における電源ラインおよび制御／監視信号ラインは、ケーブルＡ，ＢやコネクタＣＮＡ，ＣＮＢ，ＣＮＣ，ＣＮＤを介してデイジーチェーン状に結合される。特に、図１３に示すように、Ｉ２Ｃマスタとしての監視部７と各ファンユニット１０におけるＩ２Ｃスレーブとしてのファンコントローラ１３との間は、Ｉ２Ｃシリアルインタフェースを成す制御／監視信号ラインＳＣＬおよびＳＤＬによって、接続されている。ＳＣＬはSerial Clock Lineの略記であり、ＳＤＬはSerial Data Lineの略記である。

【００７７】

このとき、各ファンユニット１０において、Ｉ２Ｃアドレスカウンタ６０によって得られる計数値ＡＤ０－３（図１９参照）を、そのままＩ２ＣスレーブアドレスとしてＩ２Ｃスレーブ１３に付与設定してもよい。また、図１３に示すように、計数値ＡＤ０－３（図１９参照）を、それぞれ１Ｄ，１Ｅ，１Ｆ…等の対応アドレス値に変換した上で、変換後の対応アドレス値を、Ｉ２ＣスレーブアドレスとしてＩ２Ｃスレーブ１３に付与設定してもよい。

【００７８】

これにより、監視部７（Ｉ２Ｃマスタ）は、各ファンユニット１０のファンコントローラ１３に自動付与設定されたＩ２Ｃスレーブアドレスに基づいて各ファンユニット１０を特定し、各ファンユニット１０（ファンコントローラ１３）を管理制御することが可能になっている。また、監視部７は、図８～図１１を参照しながら上述したように、外部故障表示信号によって、４台のファンユニット１０についての正常／故障表示の制御、つまりファン故障外部表示パネル８におけるＬＥＤ８ａ～８ｄの制御も行なう。

【００７９】

ファン故障外部表示パネル８は、図８～図１１を参照しながら上述したように、サーバ１の前面下部に配置され、４台のファンユニット１０にそれぞれ対応するＬＥＤ８ａ～８ｄを有する。ＬＥＤ８ａ～８ｄは、それぞれ、監視部７によって、サーバ１内に搭載された４台のファンユニット１０の状態に応じて点灯色を制御される。

【００８０】

４台のファンユニット１０は、直列連結され、ＣＰＵ３，ＭＥＭ４，ＨＤＤ５などを含む電子機器を冷却する。各ファンユニット１０は、モータ（図示略）によって回転駆動される冷却ファン１１を有する。また、４台のファンユニット１０は、図５～図１１を参照しながら上述したように、一部のファンユニット１０をスライド動作によって活性交換可

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能にする構造を有している。

【００８１】

各ファンユニット１０には、図７（Ａ）を参照しながら前述した挿抜可能表示ランプ１２のほかに、ファンコントローラ１３を含む制御部が備えられる。ファンコントローラ１３は、冷却ファン１１の回転数制御や異常状態監視（温度監視）を行なう。また、上記制御部は、４台のファンユニット１０の中から自ファンユニットを特定するＩ２Ｃスレーブアドレスを、４台のファンユニット１０内での自ファンユニットの連結位置に対応させて自ファンユニットのファンコントローラ１３に付与する。当該制御部は、図１４を参照しながら後述するごとく、ファンコントローラ１３のほかに、回路２０，３０，４０，５０およびカウンタ６０を有する。

【００８２】

〔５〕本実施形態における各ファンユニットの構成

次に、図１４～図１８を参照しながら、本実施形態における各ファンユニット１０の構成について説明する。ここでは、各ファンユニット１０のファンコントローラ１３に対しＩ２Ｃスレーブアドレスを自動的に生成付与設定するための構成について説明する。

【００８３】

なお、図１４は、本実施形態における各ファンユニット１０の構成を示すブロック図である。図１５は、図１４に示すＬＥＤ点灯回路２０の詳細構成を示すブロック図である。図１６は、図１４に示すＩ２Ｃバス切替回路３０の詳細構成を示すブロック図である。図１７は、図１４に示すエッジ生成回路４０の詳細構成を示すブロック図である。図１８は、図１４に示すパルス生成回路５０の詳細構成を示すブロック図である。

【００８４】

図１４に示すように、各ファンユニット１０には、前述した、ケーブルＡ，Ｂ用のコネクタ（電源コネクタ）ＣＮＡ，ＣＮＢとファンユニット間コネクタＣＮＣ，ＣＮＤとが備えられる。

【００８５】

また、各ファンユニット１０には、前述した、冷却ファン１１、挿抜可能表示ランプ１２およびファンコントローラ１３が備えられる。

【００８６】

さらに、各ファンユニット１０には、ＬＥＤ点灯回路２０、Ｉ２Ｃバス切替回路３０、エッジ生成回路４０、パルス生成回路５０およびＩ２Ｃアドレスカウンタ６０が備えられる。ここで、Ｉ２Ｃバス切替回路３０、エッジ生成回路４０、パルス生成回路５０およびＩ２Ｃアドレスカウンタ６０は、各ファンユニット１０のファンコントローラ１３に対しＩ２Ｃスレーブアドレスを自動的に生成付与設定する制御部として機能する。

【００８７】

以下、ＬＥＤ点灯回路２０、Ｉ２Ｃバス切替回路３０、エッジ生成回路４０、パルス生成回路５０およびＩ２Ｃアドレスカウンタ６０の機能および動作について説明する。

【００８８】

なお、ＬＥＤ点灯回路２０、Ｉ２Ｃバス切替回路３０、エッジ生成回路４０、パルス生成回路５０およびＩ２Ｃアドレスカウンタ６０としての機能の一部または全部は、各ファンユニット１０に備えられるプロセッサ１０ａが冷却ファン制御プログラムを実行することで実現されてもよい。

【００８９】

このとき、プロセッサ１０ａとしてはＣＰＵ等の演算処理装置や、ＭＰＵ，ＡＳＩＣ，ＦＰＧＡ等の集積回路が用いられてもよい。また、プロセッサ１０ａによって実行されるプログラムは、光ディスク，メモリ装置，メモリカード等の非一時的な可搬型記録媒体に記録された状態で提供されてもよいし、ネットワークを介して提供されてもよい。

【００９０】

なお、光ディスクは、光の反射によって読み取り可能にデータを記録された可搬型の非一時的な記録媒体である。光ディスクとしては、Ｂｌｕ－ｒａｙ（登録商標），ＤＶＤ（

Digital Versatile Disc），ＤＶＤ－ＲＡＭ，ＣＤ－ＲＯＭ（Compact Disc Read Only Memory），ＣＤ－Ｒ（Recordable）／ＲＷ（ReWritable）等が挙げられる。メモリ装置は、機器接続インタフェースとの通信機能を搭載した非一時的な記録媒体、例えばＵＳＢ（Universal Serial Bus）メモリである。メモリカードは、メモリリーダライタを介し処理部２２に接続されてデータの書込／読出対象になる、カード型の非一時的な記録媒体である。

【００９１】

さて、図１４において、ＣＮＡおよびＣＮＢは、前述の通り、サーバ１の本体側に接続されるケーブルＡおよびＢをそれぞれ接続されるコネクタである。ただし、ケーブルＡ，Ｂは、１段目のファンユニット１０におけるコネクタＣＮＡ，ＣＮＢにのみ接続可能である。ＣＮＣおよびＣＮＤは、前述の通り、隣接するファンユニット１０，１０どうしを接続するコネクタである。

【００９２】

１段目のファンユニット１０におけるコネクタＣＮＡは、ケーブルＡを通じてサーバ１の本体側に接続され、第１系統Ａの電源および信号（電源ＶＣＣＡ，Ｉ２Ｃ制御／監視信号ライン（ＳＣＬ，ＳＤＬ）Ｉ２ＣＡ，アラーム信号Ａｌｍ Ａ，グランドＧＮＤ）と接続される。同様に、１段目のファンユニット１０におけるコネクタＣＮＢは、ケーブルＢを通じてサーバ１の本体側に接続され、第２系統Ｂの電源および信号（電源ＶＣＣＢ，Ｉ２Ｃ制御／監視信号ラインＩ２ＣＢ，アラーム信号Ａｌｍ Ｂ，グランドＧＮＤ）と接続される。

【００９３】

また、図１４において、ＶＣＣは電源を示し、ＧＮＤはグランドを示す。また、信号＊ＡＬｏ，Ｉ２Ｃｏ，Ｓ０ｏ，Ｓ１ｏ，Ｓ２ｏに付された“ｏ”は、当該信号が各ファンユニット１０から出力される信号であることを示す。同様に、信号＊ＡＬｉ，Ｉ２Ｃｉ，Ｓ０ｉ，Ｓ１ｉ，Ｓ２ｉに付された“ｉ”は、当該信号が各ファンユニット１０へ入力される信号であることを示す。

【００９４】

＊ＡＬは、各ファンユニット１０のファンコントローラ１３によって検出されたファン異常を負論理で示すアラーム信号である。アラーム信号＊ＡＬは、前段のファンユニット１０のコネクタＣＮＣの＊ＡＬｏ端子から自ファンユニット１０のコネクタＣＮＤの＊ＡＬｉ端子へ入力される。そして、アラーム信号＊ＡＬは、自ファンユニット１０においてコネクタＣＮＤの＊ＡＬｉ端子からコネクタＣＮＣの＊ＡＬｏ端子へリアルタイム伝搬される。また、１段目のファンユニット１０において、アラーム信号＊ＡＬは、コネクタＣＮＡのＡｌｍＡ端子およびケーブルＡを経由して監視部７に通知されるとともに、コネクタＣＮＢのＡｌｍＢ端子およびケーブルＢを経由して監視部７に通知される。

【００９５】

アラーム信号＊ＡＬは、ファンコントローラ１３によって、冷却ファン１１における回転数異常や、冷却ファン１１における温度センサからの温度異常を検知した際に、その異常を通知する信号である。当該異常に関する詳細情報（回転数，温度等）は、Ｉ２Ｃマスタである監視部７がＩ２Ｃライン経由でＩ２Ｃスレーブであるファンコントローラ１３にアクセスすることによって収集される。

【００９６】

ＬＥＤ点灯回路２０は、図７（Ａ）を参照しながら前述したように、ファンユニット１０の活性交換時に挿抜可能表示ランプ１２の点灯色（発光色）を制御すべく、図１５に示すごとく構成される。ＬＥＤ点灯回路２０は、ＡＮＤゲート２１を含む。図１５において、ＶＣＣＡは、コネクタＣＮＡから供給される第１系統Ａの電源を示し、ＶＣＣＢは、コネクタＣＮＢから供給される第２系統Ｂの電源を示す。

【００９７】

ファンユニット１０の活性交換時に一時的にコネクタＣＮＡとＣＮＢとの一方のみにケーブルＡまたはＢが接続された状態では、ＡＮＤゲート２１からの点灯信号の状態は“０

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”になって挿抜可能表示ランプ１２は緑色点灯状態から黄色点灯状態になる。また、新規ファンユニット１０のコネクタＣＮＡとＣＮＢとの両方にケーブルＡおよびＢが接続されると、その時点で、ＡＮＤゲート２１からの点灯信号の状態は“１”になって挿抜可能表示ランプ１２は黄色点灯状態から緑色点灯状態になる。

【００９８】

このようにして、コネクタＣＮＡ，ＣＮＢにそれぞれケーブルＡ，Ｂが接続されている状態、つまりケーブル挿抜可能な状態（ケーブルを一本抜いても電源供給は途絶えない状態）である場合、挿抜可能表示ランプ１２は緑色状態に制御される。一方、ケーブルＡ，Ｂのいずれか一方のみがコネクタＣＮＡ，ＣＮＢに接続されている状態（これ以上、ケーブルを抜くと電源供給が途絶える状態）である場合、挿抜可能表示ランプ１２は黄色状態に制御される。

【００９９】

Ｉ２Ｃバス切替回路３０は、各ファンユニット１０内でのＩ２Ｃバスの接続先を、各ファンユニット１０が１段目に配置されている場合と２段目以降に配置されている場合とに応じて、適切な接続先に切り替えるべく、図１６に示すごとく構成される。Ｉ２Ｃバス切替回路３０は、ＯＲゲート３１およびアナログマルチプレクサ３２を含む。Ｉ２Ｃ（ＳＣＬ，ＳＤＬ）は、Ｉ２Ｃインタフェース規格に則った信号であり、監視部７にあるＩ２Ｃマスタと各ファンユニット１０のＩ２Ｃスレーブ（ファンコントローラ１３）とに接続される。

【０１００】

１段目のファンユニット１０では、Ｉ２Ｃｉが開放状態になるため、Ｉ２Ｃｏを、Ｉ２Ｃｉではなく、コネクタＣＮＡおよびＣＮＢからのＩ２ＣＡ信号およびＩ２ＣＢ信号に接続するように切り替える必要がある。また、２段目以降のファンユニット１０では、コネクタＣＮＡおよびＣＮＢのＩ２Ｃバスが開放状態になり、且つ、Ｉ２Ｃｉが前段のファンユニット１０のＩ２Ｃｏと接続されることから、Ｉ２ＣｏをＩ２Ｃｉに接続する必要がある。

【０１０１】

図１６において、コネクタＣＮＡおよびＣＮＢのいずれか一方にケーブルＡまたはＢのプラグが挿入接続されると、ＯＲゲート３１からの選択信号が“１”になる。つまり、１段目のファンユニット１０では、コネクタＣＮＡ，ＣＮＢにケーブルＡ，Ｂが接続されるため、選択信号が“１”になり、当該選択信号によってアナログマルチプレクサ３２はポートＡとポートＸとが接続されるように切り替えられる。これにより、ポートＡに接続されたＩ２ＣＡ／Ｉ２ＣＢとＩ２Ｃｏとが接続される。

【０１０２】

一方、２段目以降のファンユニット１０では、コネクタＣＮＡおよびＣＮＢのいずれにもケーブルＡ，Ｂが接続されないため、選択信号が“０”になり、当該選択信号によってアナログマルチプレクサ３２はポートＢとポートＸとが接続されるように切り替えられる。これにより、ポートＢに接続されたＩ２Ｃｉと Ｉ２Ｃｏとが接続される。

【０１０３】

このように図１６に示すＩ２Ｃバス切替回路３０を用いることで、Ｉ２Ｃマスタである監視部７は、各ファンユニット１０のコネクタＣＮＤのＩ２Ｃｏ端子経由で、直列連結された全てのファンユニット１０内のＩ２Ｃスレーブ（ファンコントローラ１３）と接続される。これにより、Ｉ２Ｃマスタ（監視部７）は、各Ｉ２Ｃスレーブに自動付与されたＩ２Ｃスレーブアドレスを用いてＩ２Ｃスレーブを特定し、Ｉ２Ｃスレーブとの通信を行なうことが可能になる。

【０１０４】

エッジ生成回路４０は、１段目のファンユニット１０において、本体電源投入時および当該ファンユニット１０の挿抜時にリセットの起点となるエッジを生成すべく、図１７に示すごとく構成される。エッジ生成回路４０は、ＡＮＤゲート、シュミットトリガ素子およびオープンコレクタを含む。

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【０１０５】
冷却ファン１１に故障が発生していない状態でのシステムの電源投入時には、１段目のファンユニット１０のコネクタＣＮＡ，ＣＮＢにそれぞれケーブルＡ，Ｂが接続されている。このとき、電源ＶＣＣの立ち上がりに対して遅延をもったシュミットトリガ素子によって、Ｈｉｇｈ（Ｈ）からＬｏｗ（Ｌ）へのエッジがＳＯｏ信号に発生する。
【０１０６】
冷却ファン１１に故障が発生した後のファンユニット１０の交換に際し、新規ファンユニット（１段目のファンユニット）１０のコネクタＣＮＡにケーブルＡを挿した時点では、シュミットトリガ素子の出力（ＳＯｏ）はＨ状態になる。この後、新規ファンユニット（１段目のファンユニット）１０のコネクタＣＮＢにケーブルＢを挿すと、コネクタＣＮＡ，ＣＮＢにそれぞれケーブルＡ，Ｂが接続される。これに伴い、シュミットトリガ素子によって、ＨからＬへのエッジがＳＯｏ信号に発生する。
【０１０７】
この変化（エッジ）は、コネクタＣＮＡ，ＣＮＢのそれぞれにケーブルＡ，Ｂが接続される１段目のファンユニット１０のエッジ生成回路４０のみで発生する。１段目のファンユニット１０のエッジ生成回路４０で発生したエッジは、コネクタＣＮＤのＳＯｏ端子を介して２段目以降の全てのファンユニット１０に伝搬する（図１９の領域Ｃ１参照）。
【０１０８】
パルス生成回路５０は、各ファンユニット１０において、Ｉ２Ｃスレーブアドレスを生成（計算）するのに使用するパルス信号を生成すべく、図１８に示すごとく構成される。パルス生成回路５０は、後述する回路５１およびＤ－ＦＦ（フリップフロップ）５２を含む。
【０１０９】
図１８に示すパルス生成回路５０を用いることで、パルス信号が、各ファンユニット１０内で遅延時間ＤＬ４を伴って生成され、Ｉ２Ｃアドレスカウンタ６０のカウントＵＰ信号として用いられるとともに、次段（後段）のファンユニット１０に伝搬される。各ファンユニット１０内において、Ｉ２Ｃアドレスカウンタ６０によって計数された計数値ＡＤ０－３、もしくは当該計数値を変換したアドレス値が、一意のＩ２Ｃスレーブアドレスとして、ファンコントローラ１３に自動的に付与設定される。
【０１１０】
パルス生成回路５０における回路５１においては、入力信号ＳＯｉと、遅延時間ＤＬ１を伴う当該入力信号ＳＯｉの反転信号との論理和（ＯＲ）が、ＳＯｘ（Reset）信号として出力される。このため、ＳＯｉ信号の状態にかかわらず、ＯＲゲートの出力であるＳＯｘ（Reset）信号は、Ｈ状態である。ＳＯｉ信号がＨ状態からＬ状態に変化する場合のみ、時間幅ＤＬ１のパルス信号が、ＯＲゲートの出力であるＳＯｘ（Reset）信号に発生する（図１９参照）。パルス生成回路５０のより具体的な機能や動作については図１９を参照しながら後述する。
【０１１１】
〔６〕本実施形態における各ファンユニットの動作
次に、図１９を参照しながら、本実施形態における各ファンユニット１０の動作について説明する。ここでは、図１９に示すタイムチャートに従って、図１４～図１８に示すファンユニット１０を４段、直列連結した場合の動作（各ファンモジュール１０の上記制御部としての機能）について説明する。特に、各ファンユニット１０のファンコントローラ１３に対しＩ２Ｃスレーブアドレスを自動的に生成付与設定する動作について説明する。なお、図１９について、ｔ１～ｔ１１は、一定時間間隔（例えば本実施形態では時間幅ＤＬ１）のタイミングを示す。例えば、ｔ１はケーブルＡの接続タイミングを示し、ｔ３はケーブルＢの接続タイミングを示している。
【０１１２】
１段目のファンユニット１０に対しては、２本のケーブルＡ，Ｂの少なくとも一方を介し電源ユニット２および監視部７から電源および制御信号がそれぞれ供給される。ケーブ

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ルＡまたはＢは、一つずつコネクタＣＮＡまたはＣＮＢから抜かれ、新規ファンユニット１０のコネクタＣＮＡまたはＣＮＢに接続される。新規ファンユニット１０のコネクタＣＮＡおよびＣＮＢにケーブルＡおよびＢの両方が接続された時点（図１９のｔ３参照）を起点にして、図１９に示すごとく、全てのファンユニット１０に対し、時間幅ＤＬ１の内部リセット信号Ｓ０ｘ（Reset）が生成される（図１９のｔ３～ｔ４参照）。

【０１１３】

このとき、図１９の領域Ｃ１に示すように、内部リセット信号Ｓ０ｘ（Reset）は、全てのファンユニット１０において、時間幅ＤＬ１だけＬ状態に同時に変化し、リセット処理が行なわれる。リセット処理としては、例えば、カウンタ６０の計数値ＡＤ０－３をゼロにリセットする処理や、パルス生成回路５０のＤ－ＦＦ５２をリセットする処理が行なわれる。各ファンユニット１０において、入力Ｓ０ｉと出力Ｓ０ｏとが直結されているため、内部リセット信号Ｓ０ｘ（Reset）は、全てのファンユニット１０に即時に伝達される。

【０１１４】

内部リセット信号Ｓ０Ｘ（Reset）によるリセット解除後に、次段のファンユニット１０に対し、各ファンユニット１０内部で計数用のパルス信号が生成される。各ファンユニット１０は、前段のファンユニット１０からのパルス信号を、次段のファンユニット１０へ、所定の遅延時間ＤＬ４だけ遅延させて伝搬する（図１９のｔ３～ｔ５および矢印Ｂ１；ｔ５～ｔ７および矢印Ｂ２；ｔ７～ｔ９および矢印Ｂ３参照）。各ファンユニット１０は、前段のファンユニット１０から受け取ったパルス信号を、各ファンユニット１０の内部カウンタ６０で計数し、その計数値を各ファンユニット１０のアドレスＡＤ０－３として認識する。

【０１１５】

特に、図１７に示すエッジ生成回路４０では、１段目のファンユニット１０から通知されるエッジ（図１９のｔ３参照）に応じて、内部信号Ｓ０ｘ上に遅延時間（時間幅，パルス幅）ＤＬ１を伴うパルス信号が生成される。これにより、Ｉ２Ｃアドレスカウンタ６０とパルス生成回路５０のＤ－ＦＦ５２とがリセットされる。コネクタＣＮＣのＳ０ｉ端子とコネクタＣＮＤのＳ０ｏ端子とは電気的に直結されており、全てのファンユニット１０内でＤ－ＦＦ５２とＩ２Ｃアドレスカウンタ６０とがリセットされる。

【０１１６】

また、図１８に示すパルス生成回路５０では、入力信号Ｓ１ｉから、Ｉ２Ｃスレーブアドレスを決定するカウンタ６０への入力パルス信号（計数用パルス信号）が生成される。このとき、入力信号Ｓ１ｉを、ノイズによる誤動作を防ぐＲＣ積分回路と、シュミットトリガ素子とを経由させることで、ＦＦ＿ＣＬＫ（clock）信号が生成される。そして、当該ＦＦ＿ＣＬＫ信号は、Ｄ－ＦＦ５２でラッチされた後、Ｄ－ＦＦ５２の＊Ｑ端子から、負のＬｏｗパルス信号が作成出力される。さらに、負のＬｏｗパルス信号は、所定の遅延時間ＤＬ４（＞上述した時間幅ＤＬ１）だけ遅延されてから、出力信号Ｓ１ｏとしてコネクタＣＮＤのＳ１ｏ端子から後段のファンユニット１０へ伝搬される。

【０１１７】

上述したＦＦ＿ＣＬＫ信号は、同時に、Ｉ２Ｃアドレスカウンタ６０のＣＬＫ端子にも入力されており、Ｉ２Ｃアドレスカウンタ６０において、自ファンユニット１０で発生するパルス信号も併せて計数する。なお、１段目のファンユニット１０において、Ｓ１ｉ端子は開放状態であるので、エッジ生成回路４０からの信号Ｓ０ｏと同期する信号を利用して、信号Ｓ１ｏに、所定の遅延時間ＤＬ４を含む信号変化（ＨからＬへの変化；エッジ）が生成される（図１９のｔ５参照）。

【０１１８】

各ファンユニット１０のＳ２ｉ端子からは、前段のファンユニット１０までのファンユニット１０において発生したパルス信号が入力される。入力されたパルス信号は、ノイズによる誤動作を防ぐＲＣ積分回路と、シュミットトリガ素子とを経由し、Ｉ２Ｃアドレスカウンタ６０に入力される。そして、前段までのパルス信号に加え、自ファンユニット１

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０で生成するパルス信号をＩ２Ｃアドレスカウンタ６０に入力することで、当該カウンタ６０による計数値は、前段のファンユニット１０のカウンタ６０による計数値よりも１だけ大きくなる。このような計数値を、自ファンユニット１０についてのＩ２Ｃスレーブアドレスとして用いることで、各ファンユニット１０に固有のＩ２Ｃスレーブアドレスが、各ファンユニット１０に自動付与設定することができる。

【０１１９】

計数値ＡＤ０－３を計数するＩ２Ｃアドレスカウンタ６０としては、例えば、４ビットカウンタが使用される。図１２に示すサーバ１では、１段目のファンユニット１０のカウンタ６０による計数値は“０”、２段目のファンユニット１０のカウンタ６０による計数値は“１”となる。また、３段目のファンユニット１０のカウンタ６０による計数値は“２”、４段目のファンユニット１０のカウンタ６０による計数値は“３”となる。これらの計数値は、それぞれ、例えばＩ２Ｃスレーブアドレス“１Ｄ”，“１Ｅ”，“１Ｆ”，“２０”に変換され、各ファンユニット１０におけるファンコントローラ１３に付与される。

【０１２０】

ここで、時間幅（パルス幅）ＤＬ１は、上述したように、パルス生成回路５０で生成されるパルス信号の時間幅である。また、所定の遅延時間ＤＬ４は、時間幅ＤＬ１よりも大きく設定される（例えば図１９に示す例ではＤＬ４＝２ｘＤＬ１）。これにより、４台のファンユニット１０の間で、パルス信号の伝搬遅延が意図的に発生されることになり、各ファンユニット１０で発生するカウントアップ用パルス信号（Ｓ２ｏ）が、遅延時間ＤＬ４だけ遅れて次段のファンユニット１０に伝搬される。

【０１２１】

このように、各ファンユニット１０において生成されるパルス信号は、所定の遅延時間ＤＬ４の遅延を伴って次段のファンユニット１０に送られる。そのため、Ｎ番目（Ｎは１以上の整数）に配置されているファンユニット１０には、１番目からＮ－１番目までのパルス信号が重なることなく伝搬される。各ファンユニット１０で次段のファンユニット１０へのパルス伝搬を遅らせることで、前段までのファンユニット１０で発生したパルス信号と、自ファンユニット１０で発生したパルス信号とを、次段のファンユニット１０に確実に送ることが可能になる。

【０１２２】

なお、図１９の領域Ｃ２に示すように、前段のファンユニット１０から遅延時間ＤＬ４を伴って伝えられる信号Ｓ１ｉを用いてパルス信号を生成する。このため、前段のファンユニット１０で生成されたパルス信号と自ファンユニット１０で生成するパルス信号とは、重なることなく生成され、次段のファンユニット１０へ伝達される。

【０１２３】

図１９の領域Ｃ３に示すように、信号Ｓ２ｉによって、前段のファンユニット１０までのパルス信号が重なることなく、一定の遅延間隔ＤＬ４で全て伝わる。このように各ファンユニット１０に伝達されたパルス信号は、各ファンユニット１０のカウンタ６０でカウントアップされ、一意のＩ２Ｃスレーブアドレスがファンコントローラ１３に付与される。

【０１２４】

本実施形態における各ファンコントローラ１３は、Ｉ２Ｃインタフェースを介して監視部７によって監視され、ＰＷＭ（Pulse Width Modulation）信号により冷却ファン１１（駆動モータ）の回転数を制御することができる。このとき、冷却ファン１１の回転数は、Ｔaco信号のパルス数として読み取られる。温度センサの電圧を読み取ることで、冷却ファン１１による冷却環境の温度が検出される。また、冷却ファン１１の回転数異常や温度異常などの異常は、各ファンコントローラ１３およびＩ２Ｃインタフェースを介して監視部７によって監視される。異常の検出時に、その異常を負論理で示すアラーム信号＊ＡＬが出力される。

【０１２５】

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〔７〕本実施形態のサーバにおけるファンユニットの活性交換手順

次に、図２０に示すフローチャート（ステップＳ１０～Ｓ１８およびＳ２０～Ｓ２４）に従って、本実施形態の技術を適用されるサーバ１におけるファンユニット１０の活性交換手順について説明する。

【０１２６】

図２０に示すように、オペレータ，保守員等のユーザが、サーバ１を起動すべく、電源投入ボタンを押下して電源投入指示を入力すると（ステップＳ１０）、システムが、動作を開始し、ステップＳ１１～Ｓ１８の処理を実行する。

【０１２７】

外部から電源投入指示を受けると、管理部（マネージメント監視部）７は、電源ユニット２に対して電源投入指示を行なう（ステップＳ１１）。

【０１２８】

電源ユニット２への電源投入指示に伴い、各ファンユニット１０において、電源供給と電源投入リセットとが実行される。そして、図１９に示すタイムチャートに従って前述した手順により、各ファンユニット１０のファンコントローラ１３に対し、Ｉ２Ｃスレーブアドレスが自動付与される。これにより、管理部７と各ファンコントローラ１３との間の通信が可能になる（ステップＳ１２）。

【０１２９】

管理部７は、Ｉ２Ｃインタフェース経由で、各ファンユニット１０（冷却ファン１１による冷却環境）の温度を監視し、その温度に応じて冷却ファン１１の回転数を制御する。また、管理部７は、ファン故障外部表示パネル８に各ファンユニット１０の状態（正常／故障）を表示する（ステップＳ１３）。例えば、ファン故障外部表示パネル８におけるＬＥＤ８ａ～８ｄのそれぞれは、対応ファンユニット１０が正常状態の場合に緑色状態に制御される。一方、ＬＥＤ８ａ～８ｄのそれぞれは、対応ファンユニット１０が故障状態の場合に黄色状態に制御される。

【０１３０】

この後、管理部７は、Ｉ２Ｃインタフェースを介し、各ファンコントローラ１３によって冷却ファン１１のアラーム信号（異常状態）が検出されたか否かを監視する（ステップＳ１４）。アラーム信号が検出されない場合（ステップＳ１４のＮＯルート）、管理部７は、ステップＳ１３の処理に戻る。

【０１３１】

一方、アラーム信号が検出された場合（ステップＳ１４のＹＥＳルート）、管理部７は、Ｉ２Ｃインタフェース経由で、対象ファンユニット（故障ファンユニット）１０を特定し、対象ファンユニット１０の温度を読み取る。また、管理部７は、全てのファンユニット１０において冷却ファン１１に、１００％の高速回転を強制的にさせるように、各ファンコントローラ１３から冷却ファン１１へのＰＷＭ信号を制御する。さらに、管理部７は、ファン故障外部表示パネル８における、対象ファンユニット１０に対応するＬＥＤ８ａ～８ｄのいずれかを黄色に点灯させる（ステップＳ１５）。

【０１３２】

なお、本実施形態において、各ファンコントローラ１３は、冷却ファン１１の回転状態を、１００％の高速回転と、通常回転とのいずれか一方に切替可能に構成されている。管理部７は、冷却ファン１１の故障を検出した場合やコネクタＣＮＡ，ＣＮＢのいずれか一方のみにケーブルが接続されている場合、つまりファンユニット１０の活性交換時を認識すると、風量を確保すべく、冷却ファン１１の回転状態を高速回転に強制的に切り替えてもよい。

【０１３３】

この後、ユーザによって対象ファンユニット１０を活性交換する保守作業（ステップＳ２１～Ｓ２４）が行なわれる（ステップＳ２０）。

【０１３４】

その際、まず、追加ファンユニット１０のコネクタＣＮＤが、既存ファンユニット側面

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のコネクタＣＮＣに結合される（ステップＳ２１；図６の矢印(1)参照）。

【０１３５】

ついで、既存ファンユニット１０のコネクタＣＮＡまたはＣＮＢに接続されているケーブルＡまたはＢが、コネクタＣＮＡまたはＣＮＢから引き抜かれる（ステップＳ２２；図６の矢印(2)または(3)参照）。この作業に伴い、ファンユニット１０側面の挿抜可能表示ランプ１２は、黄色点灯状態になる（ステップＳ１６）。

【０１３６】

そして、引き抜かれたケーブルＡまたはＢは、追加ファンユニット１０のコネクタＣＮＡまたはＣＮＢに接続される（ステップＳ２３；図６の矢印(2)または(3)参照）。この作業に伴い、ファンユニット１０側面の挿抜可能表示ランプ１２は、緑色点灯状態になる（ステップＳ１７）。

【０１３７】

本実施形態において、ステップＳ２２，Ｓ２３およびステップＳ１６，Ｓ１７の処理はケーブルＡとケーブルＢとのそれぞれについて、一回ずつ順番に実行される。

【０１３８】

ケーブルＡ，Ｂを追加ファンユニット１０のコネクタＣＮＡ，ＣＮＢに接続した後、追加ファンユニット１０は、サーバ１内に押し込まれ、追加ファンユニット１０とは反対側の既存ファンユニット１０がサーバ１内から押し出される（ステップＳ２４；図６の矢印(4)参照）。

【０１３９】

ステップＳ２４で押し出されたファンユニット１０が、対象ファンユニットであれば、押し出されたファンユニット１０を取り外すことで作業は終了する。押し出されたファンユニット１０が対象ファンユニットでない場合、当該押し出されたファンユニット１０が、新規ファンユニット１０として追加連結され、ステップＳ２１～Ｓ２４の作業が、対象ファンユニットが押し出されるまで繰り返される。

【０１４０】

そして、ステップＳ２３で追加ファンユニット１０のコネクタＣＮＡ，ＣＮＢの双方にケーブルが連結されると、各ファンユニット１０において、図１９に示すタイムチャートに従って前述した手順により、各ファンユニット１０のファンコントローラ１３に対し、Ｉ２Ｃスレーブアドレスが自動付与される。これにより、管理部７は、Ｉ２Ｃスレーブアドレスに基づき、活性交換（スライド動作）によって変更された各ファンユニット１０の実装位置を認識し、各ファンユニット１０を管理する（ステップＳ１８）。この後、管理部７は、ステップＳ１３の処理に戻る。

【０１４１】

このように、本実施形態によれば、ファンユニット１０を交換しても自動的に実装位置とＩ２Ｃスレーブアドレスとが自動的に同期される。このため、活性交換後もＩ２Ｃスレーブアドレスを手動で設定することなく、マジメント監視部７から各ファンユニット１０の状態監視および制御が可能になる。

【０１４２】

つまり、上述したサーバ１によれば、露出した電源レール構造を使用することなく、複数のファンユニット１０のうちの一部のファンユニットをスライド動作によって活性交換することが可能になる。その際、活性交換直後には、各ファンユニット１０において前記制御部によりＩ２Ｃスレーブアドレスが自動的に付与される。したがって、ファンユニット１０の活性交換を行なった後であっても、各ファンユニット１０の位置と連携したアドレスを各ファンユニット１０に付与することができる。

【０１４３】

これにより、特別な操作を行なうことなくサーバ１の筐体内の各ファンユニット１０の実装位置とＩ２Ｃスレーブアドレスとの連携が取れ、管理部７は、各ファンユニット１０を正しく認識して、各ファンユニット１０の回転数制御や異常状態監視を適切に行なうことが可能になる。また、本実施形態のサーバ１によれば、図１～図４を参照しながら上述

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した関連技術の各種不具合や課題を解消することもできる。

【０１４４】

〔８〕その他

以上、本発明の好ましい実施形態について詳述したが、本発明は、係る特定の実施形態に限定されるものではなく、本発明の趣旨を逸脱しない範囲内において、種々の変形、変更して実施することができる。

【０１４５】

例えば、上述した実施形態では、ファンユニット１０の数を４台としたが、本発明は、これに限定されるものではなく、ファンユニット１０の数が２台，３台，５台以上の場合にも、上述した実施形態と同様に適用され、上述した実施形態と同様の作用効果得ることができる。

【０１４６】

〔９〕付記

以上の実施形態に関し、さらに以下の付記を開示する。

【０１４７】

（付記１）

電子機器と、

直列連結され前記電子機器を冷却する複数のファンユニットと、を有し、

前記複数のファンユニットのそれぞれは、

前記複数のファンユニットの中から自ファンユニットを特定するアドレスを、前記複数のファンユニット内での前記自ファンユニットの連結位置に対応させて前記自ファンユニットに付与する制御部を有する、電子装置。

【０１４８】

（付記２）

前記複数のファンユニットのそれぞれに付与される前記アドレスに基づいて前記複数のファンユニットのそれぞれを特定し、前記複数のファンユニットのそれぞれを管理する管理部を有する、付記１に記載の電子装置。

【０１４９】

（付記３）

前記複数のファンユニットは、追加ファンユニットを前記複数のファンユニットの一端側に追加連結し前記複数のファンユニットの他端側のファンユニットを前記他端側から押し出すことで前記複数のファンユニットのうちの一ファンユニットを活性交換可能に構成され、

前記制御部は、前記追加ファンユニットの追加連結に応じて、前記アドレスを前記自ファンユニットに付与する、付記１または付記２に記載の電子装置。

【０１５０】

（付記４）

前記制御部は、

前記自ファンユニットの前段のファンユニットからのパルス信号を計数するカウンタを有し、

前記前段のファンユニットからのパルス信号を所定遅延時間だけ遅延させて前記自ファンユニットの後段のファンユニットへ出力し、

前記カウンタによる計数値に応じた値を、前記アドレスとして前記自ファンユニットに付与する、付記３に記載の電子装置。

【０１５１】

（付記５）

前記複数のファンユニットのうち隣接する二つのファンユニットは、

前記一端側から前記他端側へ前記パルス信号を伝搬するとともに前記一端側から前記他端側へ電源を供給するファンユニット間コネクタを介して連結される、付記４に記載の電子装置。

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【０１５２】
（付記６）
前記複数のファンユニットのそれぞれは、
前記自ファンユニットが前記複数のファンユニットの前記一端側に配置される際に前記電源を前記自ファンユニットに供給可能な二以上の電源ケーブルを接続される電源コネクタを有する、付記５に記載の電子装置。
【０１５３】
（付記７）
直列連結され電子機器を冷却する複数のファンユニットを制御する冷却ファン制御装置であって、
前記複数のファンユニットのそれぞれにおいて、前記複数のファンユニットの中から自ファンユニットを特定するアドレスを、前記複数のファンユニット内での前記自ファンユニットの連結位置に対応させて前記自ファンユニットに付与する制御部を有する、冷却ファン制御装置。
【０１５４】
（付記８）
前記複数のファンユニットのそれぞれに付与される前記アドレスに基づいて前記複数のファンユニットのそれぞれを特定し、前記複数のファンユニットのそれぞれを管理する管理部を有する、付記７に記載の冷却ファン制御装置。
【０１５５】
（付記９）
前記複数のファンユニットは、追加ファンユニットを前記複数のファンユニットの一端側に追加連結し前記複数のファンユニットの他端側のファンユニットを前記他端側から押し出すことで前記複数のファンユニットのうちの一ファンユニットを活性交換可能に構成され、
前記制御部は、前記追加ファンユニットの追加連結に応じて、前記アドレスを前記自ファンユニットに付与する、付記７または付記８に記載の冷却ファン制御装置。
【０１５６】
（付記１０）
前記制御部は、
前記自ファンユニットの前段のファンユニットからのパルス信号を計数するカウンタを有し、
前記前段のファンユニットからのパルス信号を所定遅延時間だけ遅延させて前記自ファンユニットの後段のファンユニットへ出力し、
前記カウンタによる計数値に応じた値を、前記アドレスとして前記自ファンユニットに付与する、付記９に記載の冷却ファン制御装置。
【０１５７】
（付記１１）
前記複数のファンユニットのうち隣接する二つのファンユニットは、
前記一端側から前記他端側へ前記パルス信号を伝搬するとともに前記一端側から前記他端側へ電源を供給するファンユニット間コネクタを介して連結される、付記１０に記載の冷却ファン制御装置。
【０１５８】
（付記１２）
前記複数のファンユニットのそれぞれは、
前記自ファンユニットが前記複数のファンユニットの前記一端側に配置される際に前記電源を前記自ファンユニットに供給可能な二以上の電源ケーブルを接続される電源コネクタを有する、付記１１に記載の冷却ファン制御装置。
【０１５９】
（付記１３）

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直列連結され電子機器を冷却する複数のファンユニットを制御するプロセッサに、
前記複数のファンユニットのそれぞれにおいて、前記複数のファンユニットの中から自ファンユニットを特定するアドレスを、前記複数のファンユニット内での前記自ファンユニットの連結位置に対応させて前記自ファンユニットに付与する、
処理を実行させる、冷却ファン制御プログラム。
【０１６０】
（付記１４）
前記複数のファンユニットのそれぞれに付与される前記アドレスに基づいて前記複数のファンユニットのそれぞれを特定し、前記複数のファンユニットのそれぞれを管理する、処理を、前記プロセッサに実行させる、付記１３に記載の冷却ファン制御プログラム。
【０１６１】
（付記１５）
前記複数のファンユニットは、追加ファンユニットを前記複数のファンユニットの一端側に追加連結し前記複数のファンユニットの他端側のファンユニットを前記他端側から押し出すことで前記複数のファンユニットのうちの一ファンユニットを活性交換可能に構成され、
前記追加ファンユニットの追加連結に応じて、前記アドレスを前記自ファンユニットに付与する、処理を、前記プロセッサに実行させる、付記１３または付記１４に記載の冷却ファン制御プログラム。
【０１６２】
（付記１６）
前記自ファンユニットの前段のファンユニットからのパルス信号をカウンタによって計数し、
前記前段のファンユニットからのパルス信号を所定遅延時間だけ遅延させて前記自ファンユニットの後段のファンユニットへ出力し、
前記カウンタによる計数値に応じた値を、前記アドレスとして前記自ファンユニットに付与する、
処理を、前記プロセッサに実行させる、付記１５に記載の冷却ファン制御プログラム。
【０１６３】
（付記１７）
プロセッサによって、直列連結され電子機器を冷却する複数のファンユニットを制御する冷却ファン制御方法であって、
前記複数のファンユニットのそれぞれにおいて、前記複数のファンユニットの中から自ファンユニットを特定するアドレスを、前記複数のファンユニット内での前記自ファンユニットの連結位置に対応させて前記自ファンユニットに付与する、冷却ファン制御方法。
【０１６４】
（付記１８）
前記複数のファンユニットのそれぞれに付与される前記アドレスに基づいて前記複数のファンユニットのそれぞれを特定し、前記複数のファンユニットのそれぞれを管理する、付記１７に記載の冷却ファン制御方法。
【０１６５】
（付記１９）
前記複数のファンユニットは、追加ファンユニットを前記複数のファンユニットの一端側に追加連結し前記複数のファンユニットの他端側のファンユニットを前記他端側から押し出すことで前記複数のファンユニットのうちの一ファンユニットを活性交換可能に構成され、
前記追加ファンユニットの追加連結に応じて、前記アドレスを前記自ファンユニットに付与する、付記１７または付記１８に記載の冷却ファン制御方法。
【０１６６】
（付記２０）

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前記自ファンユニットの前段のファンユニットからのパルス信号をカウンタによって計数し、
前記前段のファンユニットからのパルス信号を所定遅延時間だけ遅延させて前記自ファンユニットの後段のファンユニットへ出力し、
前記カウンタによる計数値に応じた値を、前記アドレスとして前記自ファンユニットに付与する、付記１９に記載の冷却ファン制御方法。

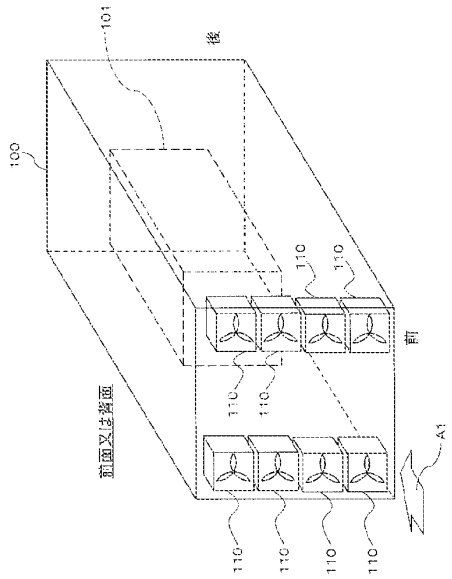
【符号の説明】

【０１６７】

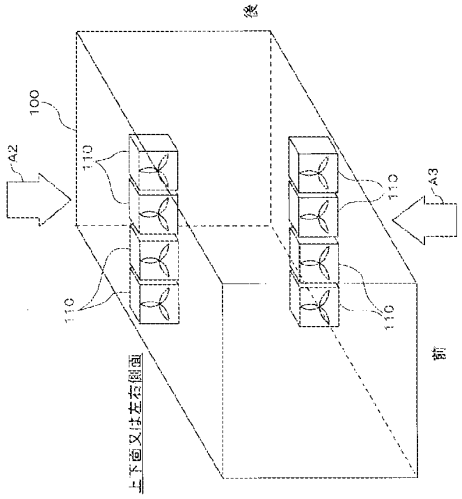
１　サーバ（電子装置）
２　電源ユニット（内部電源）
３　ＣＰＵ
４　ＭＥＭ
５　ＨＤＤ
６　電圧レギュレータ
７　マネージメント監視部（管理部，Ｉ２Ｃマスタ）
８　ファン故障外部表示パネル
８ａ，８ｂ，８ｃ，８ｄ　ＬＥＤ（デュアルカラーＬＥＤ）
１０　ファンユニット
１０ａ　プロセッサ
１１　冷却ファン
１２　挿抜可能表示ランプ（デュアルカラーＬＥＤ）
１３　ファンコントローラ（Ｉ２Ｃスレーブ，制御部）
２０　ＬＥＤ点灯回路（制御部）
２１　ＡＮＤゲート
３０　Ｉ２Ｃバス切替回路（制御部）
３１　ＯＲゲート
３２　アナログマルチプレクサ
４０　エッジ生成回路（制御部）
５０　パルス生成回路（制御部）
５１　回路
５２　Ｄ－ＦＦ
６０　Ｉ２Ｃアドレスカウンタ（カウンタ，制御部）
１０１　電子機器
ＣＮＡ，ＣＮＢ　ケーブル用コネクタ（電源コネクタ）
ＣＮＣ，ＣＮＤ　ファンユニット間コネクタ

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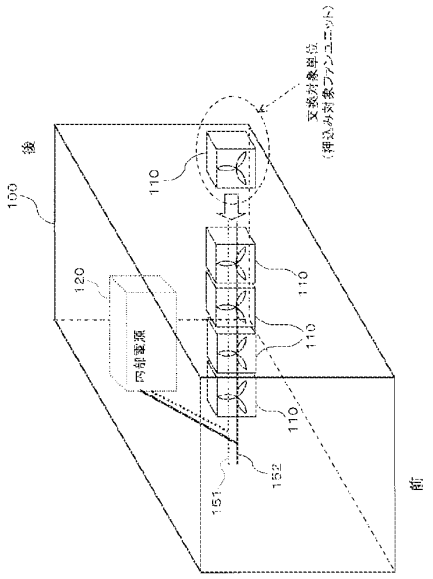
【図１】


101
後
100
110
前
前面又は背面
A1

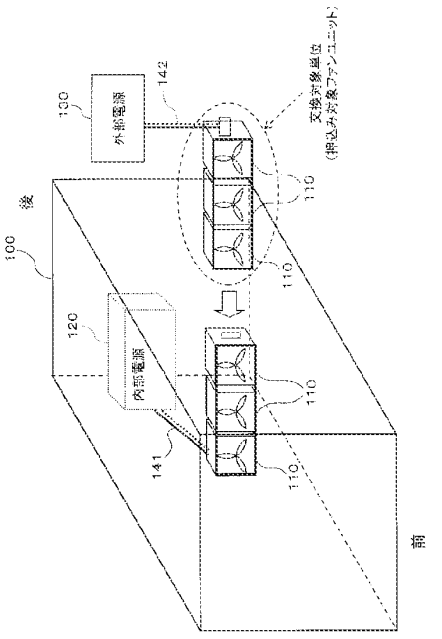
【図２】


後
100
A2
110
A3
前
上下面又は左右側面

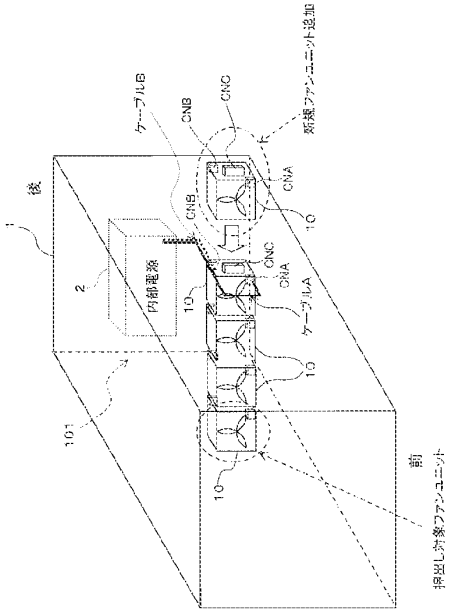
【図３】


交換対象単位
（挿込み対象ファンユニット）
後
100
110
120
内部電源
151
152
前

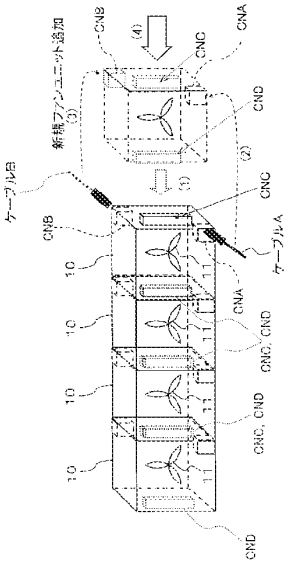
【図４】


交換対象単位
（挿込み対象ファンユニット）
130
外部電源
142
後
100
110
120
内部電源
141
前

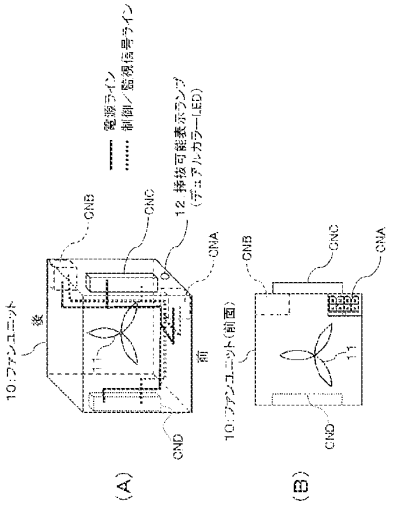
【図５】


後
前
内部電源
ケーブルB
ケーブルA
CNB
CNC
CNA
新規ファンユニット追加
排気対象ファンユニット
101
10
11
2

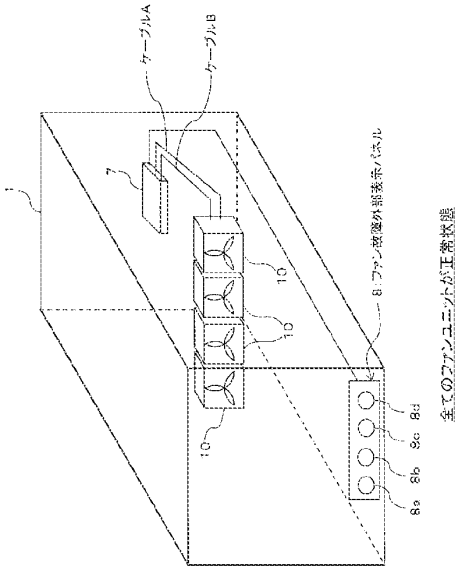
【図６】


新規ファンユニット追加
(3)
(4)
(2)
(1)
ケーブルB
ケーブルA
CNB
CNC
CNA
CND
CNC, CND
10
11

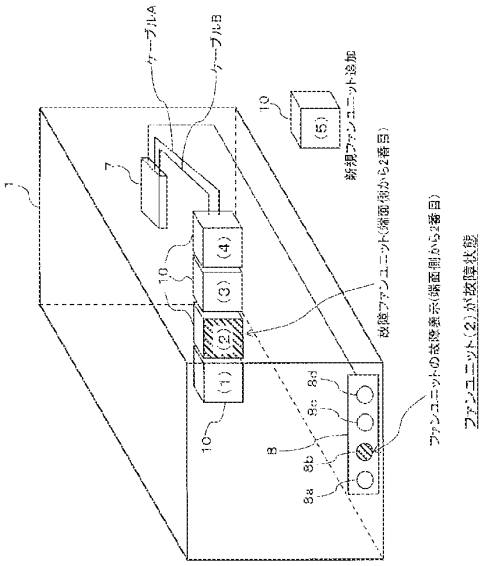
【図７】


電源ライン
制御／監視信号ライン
12 接続可能表示ランプ
(デュアルカラーLED)
10:ファンユニット
後
前
10:ファンユニット(前面)
CNB
CNC
CNA
CND
11
(A)
(B)

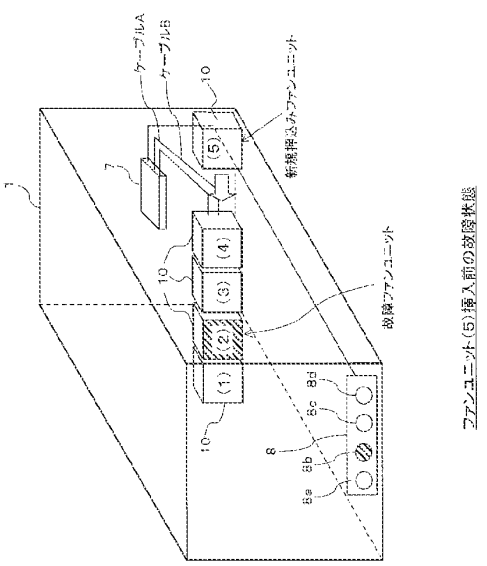
【図８】


ケーブルA
ケーブルB
7
8:ファン故障外部表示パネル
全てのファンユニットが正常状態
8a
8b
8c
8d
10

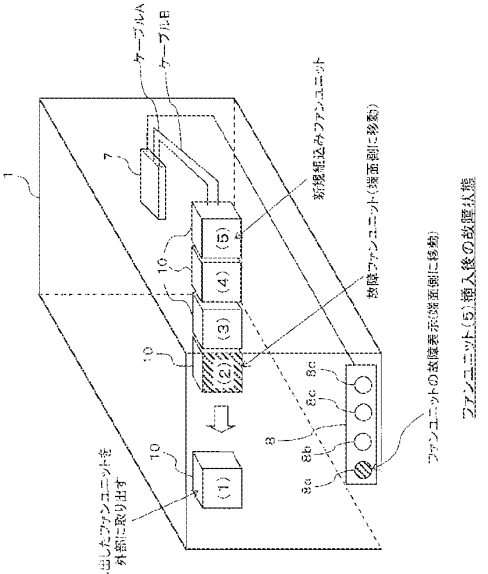
【図９】



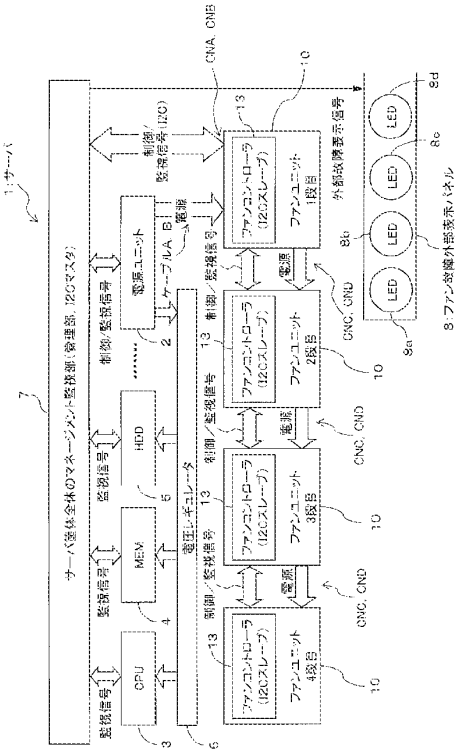
【図１０】



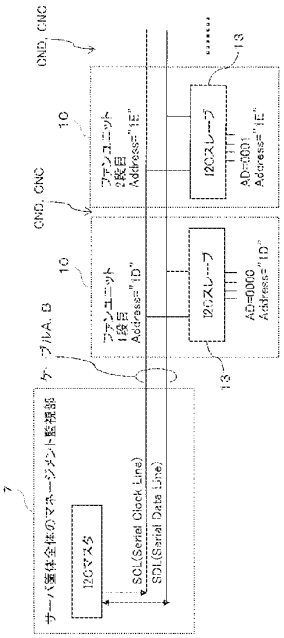
【図１１】



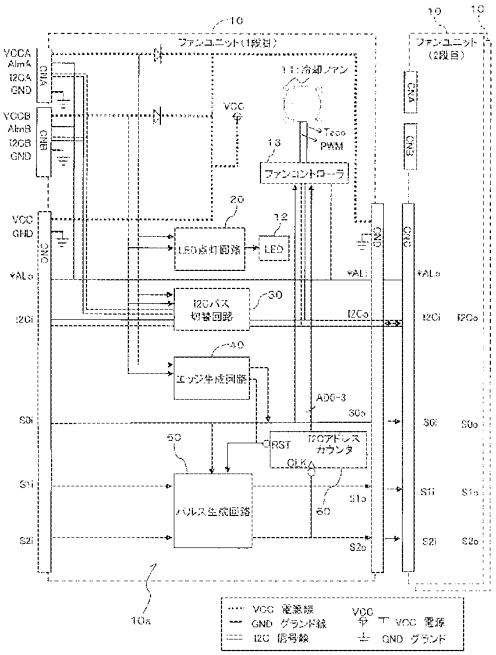
【図１２】



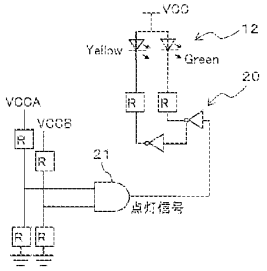
【図１３】



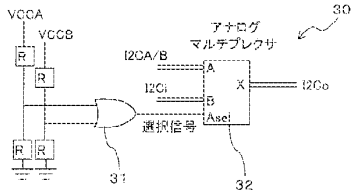
【図１４】



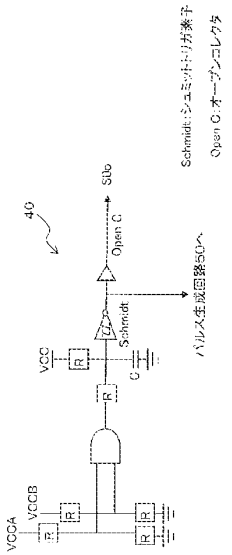
【図１５】



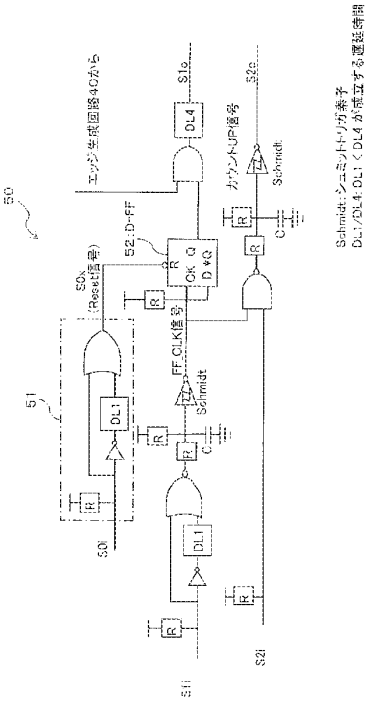
【図１６】



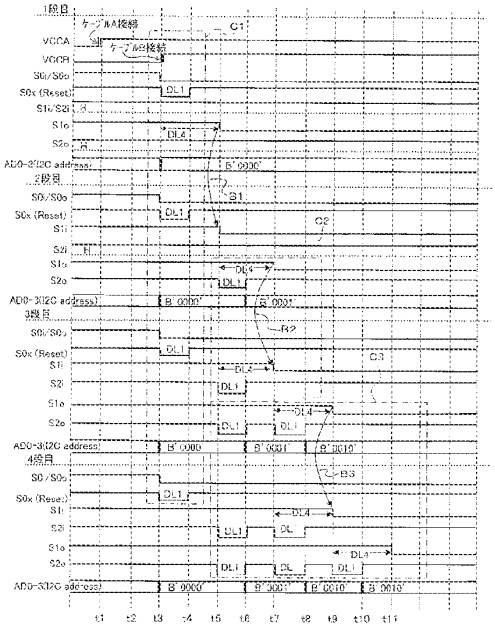
【図１７】



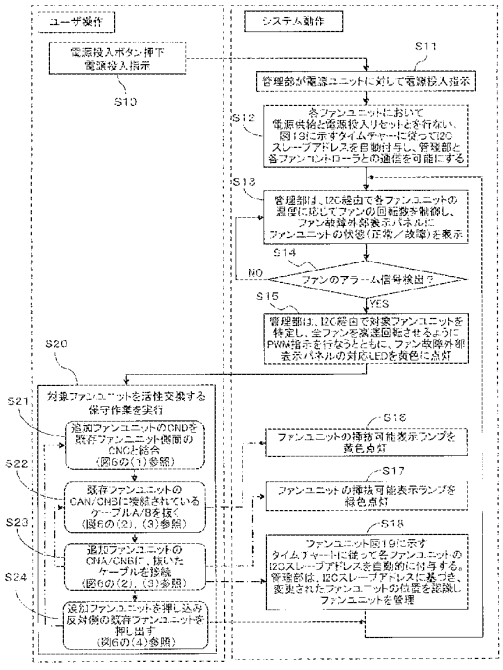
【図１８】


エッジ生成回路40から
S1o
DL4
S2o
カウントUP信号
Schmidt
Schmidt：シュミットトリガ素子
DL1＜DL4＜DL1＜DL4が成立する遅延時間
50
S2：D-FF
R
C
S0x
(Reset信号)
FF CLK信号
S0i
51
DL1
S1i
S2i

【図１９】


1段目
ケーブルA接続
ケーブルB接続
C1
VCCA
VCCB
S0i/S0o
S0x (Reset)
S1i/S2i
S1o
S2o
A00-3I2C address
B'0000
2段目
S1
C2
B'0001
3段目
R2
C3
B'0010
4段目
R3
B'0011
DL1
DL4
DL
t1
t2
t3
t4
t5
t6
t7
t8
t9
t10
t11

【図２０】


ユーザ操作
システム動作
電源投入ボタン押下
電源投入指示
S10
S11
管理部が電源ユニットに対して電源投入指示
S12
各ファンユニットにおいて
電源供給と電源投入リセットとを行ない、
図19に示すタイムチャートに従ってI2C
スレーブアドレスを自動付与し、管理部と
各ファンコントローラとの通信を可能にする
S13
管理部は、I2C経由で各ファンユニットの
温度に応じてファンの回転数を制御し、
ファン故障外部表示パネルに
ファンユニットの状態（正常／故障）を表示
S14
ファンのアラーム信号検出？
NO
YES
S15
管理部は、I2C経由で対象ファンユニットを
特定し、全ファンを高速回転させるように
PWM指示を行なうとともに、ファン故障外部
表示パネルの対応LEDを黄色に点灯
S20
対象ファンユニットを活性交換する
保守作業を実行
S21
追加ファンユニットのCNDを
既存ファンユニット側面の
CND2接続
（図6の（1）参照）
S22
既存ファンユニットの
CAN/CNB2に接続されている
ケーブルA/Bを抜く
（図6の（2），（3）参照）
S23
追加ファンユニットの
CNA/CNB1，抜いた
ケーブルを接続
（図6の（2），（3）参照）
S24
追加ファンユニットを押し込み
反対側の既存ファンユニットを
押し出す
（図6の（4）参照）
S16
ファンユニットの稼働可能表示ランプを
黄色点灯
S17
ファンユニットの稼働可能表示ランプを
緑色点灯
S18
ファンユニット図19に示す
タイムチャートに従って各ファンユニットの
I2Cスレーブアドレスを自動的に付与する。
管理部は、I2Cスレーブアドレスに基づき、
変更されたファンユニットの位置を認識し、
ファンユニットを管理

REEXAMINATION TITLE REPORT
(PATENT ASSIGNMENT ABSTRACT OF TITLE)

REEXAMINATION TYPE: ☑ EX PARTE ☐ STREAMLINE

CONTROL NO:	90/019565	FILING DATE:	07/02/2024
SERIAL NUMBER:	16/403867	FILING DATE:	05/06/2019
PATENT NUMBER:	10/690336	ISSUE DATE:	06/23/2020

SOLE INVENTOR(S) NAME: Chien-Hao Chen

ET. AL: NO ☒

CONTINUITY DATA (IF ANY):

ASSIGNMENT RECORD DATA

THE ASSIGNMENT RECORDS REVEAL THAT THE TITLE REPORT APPEARS TO BE VESTED IN:

☐ INVENTOR: Chien-Hao Chen

☐ LEGAL REPRESENTATIVE:

MUNCY, GEISSLER, OLDS & LOWE, PC

125 S. ROYAL STREET

ALEXANDRIA, VA 22314

☐ SECURITY ASSIGNMENT/LICENSEE (PLEASE NOTE THAT THE OWNERSHIP OF THE PATENT IS STILL REFLECTED IN THE *ASSIGNOR*. THE *ASSIGNEE* IN THIS CASE CANNOT OWN THE PATENT. (SEE ACCOMPANYING PAGES, IF ANY.)

☐ WHEN THE ASSIGNMENT IS RECORDED, THE PATENT SHOULD BELONG TO: Chien-Hao Chen

☐ NOTES/COMMENTS: Please see section 306 of the Manual of Patent Examining Procedure Regarding the Assignment of a Division, Continuation, Substitute, and Continuation-in-Part in Relation to Parent Application.

EXAMINED UP TO AND INCLUDING THIS CERTIFICATE DATED 07/03/2024

LEGAL INSTRUMENTS EXMR, CENTRAL REEXAMINATION UNIT

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

BIB DATA SHEET

CONFIRMATION NO. 5828

SERIAL NUMBER	FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
90/019,565	07/02/2024 RULE	362	3992	16445.0001-00000

APPLICANTS

INVENTORS

10690336, Residence Not Provided;
LLP FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER, Residence Not Provided;
Chien-Hao Chen (PO), Yilan County, TAIWAN;
Axpertic Inc. (aka Phanteks USA) (3rd Pty Req.), N. City of Industry, CA;

**** CONTINUING DATA ***************************

This application is a REX of 16/403,867 05/06/2019 PAT 10690336

**** FOREIGN APPLICATIONS ***************************

TAIWAN 107217659 U 12/26/2018

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ****

Foreign Priority claimed ☐ Yes ☐ No 35 USC 119(a-d) conditions met ☐ Yes ☐ No Verified and Acknowledged Examiner's Signature	☐ Met after Allowance Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
				5	1

ADDRESS

Muncy, Geissler, Olds & Lowe, P.C.
125 S. Royal St.
Alexandria, VA 22314
UNITED STATES

TITLE

ILLUMINATION FAN CONNECTABLE WITH AT LEAST ONE ILLUMINATION FAN FOR A COMPUTER

FILING FEE RECEIVED		
0.00	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

BIB (Rev. 05/07).

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REEXAM CONTROL NUMBER	FILING OR 371 (c) DATE	PATENT NUMBER
90/019,565	07/02/2024	10690336

CONFIRMATION NO. 5828

REEXAMINATION REQUEST NOTICE

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER LLP
901 NEW YORK AVENUE, NW
WASHINGTON, DISTRICT OF COLUMBIA 20001-4413

OC000000074970845

Date Mailed: 07/10/2024

NOTICE OF REEXAMINATION REQUEST FILING DATE

(Third Party Requester)

Requester is hereby notified that the filing date of the request for reexamination is 07/02/2024, the date that the filing requirements of 37 CFR § 1.510 were received.

A decision on the request for reexamination will be mailed within three months from the filing date of the request for reexamination. (See 37 CFR 1.515(a)).

A copy of the Notice is being sent to the person identified by the requester as the patent owner. Further patent owner correspondence will be the latest attorney or agent of record in the patent file. (See 37 CFR 1.33). Any paper filed should include a reference to the present request for reexamination (by Reexamination Control Number).

cc: Patent Owner
60601
Muncy, Geissler, Olds & Lowe, P.C.
125 S. Royal St.
Alexandria, VA 22314

/rbell/

Legal Instruments Examiner
Central Reexamination Unit 571-272-7705; FAX No. 571-273-9900

UNITED STATES PATENT AND TRADEMARK OFFICE

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United States Patent and Trademark Office
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REEXAM CONTROL NUMBER	FILING OR 371 (c) DATE	PATENT NUMBER
90/019,565	07/02/2024	10690336

CONFIRMATION NO. 5828

60601
Muncy, Geissler, Olds & Lowe, P.C.
125 S. Royal St.
Alexandria, VA 22314

REEXAM ASSIGNMENT NOTICE

OC00000007497084G

Date Mailed: 07/10/2024

NOTICE OF ASSIGNMENT OF REEXAMINATION REQUEST

The above-identified request for reexamination has been assigned to Art Unit 3992. All future correspondence to the proceeding should be identified by the control number listed above and directed to the assigned Art Unit.

A copy of this Notice is being sent to the latest attorney or agent of record in the patent file or to all owners of record. (See 37 CFR 1.33(c)). If the addressee is not, or does not represent, the current owner, he or she is required to forward all communications regarding this proceeding to the current owner(s). An attorney or agent receiving this communication who does not represent the current owner(s) may wish to seek to withdraw pursuant to 37 CFR 1.36 in order to avoid receiving future communications. If the address of the current owner(s) is unknown, this communication should be returned within the request to withdraw pursuant to Section 1.36.

NOTICE OF USPTO EX PARTE REEXAMINATION PATENT OWNER STATEMENT WAIVER PROGRAM

The USPTO has implemented a pilot program where, after a reexamination proceeding has been granted a filing date and before the examiner begins his or her review, the patent owner may orally waive the right to file a patent owner's statement. See *"Pilot Program for Waiver of Patent Owner's Statement in Ex Parte Reexamination Proceedings,"* 75 FR 47269 (August 5, 2010). One goal of the pilot program is to reduce the pendency of reexamination proceedings and improve the efficiency of the reexamination process.

Ordinarily when ex parte reexamination is ordered, the USPTO must wait until after the receipt of the patent owner's statement and the third party requester's reply, or after the expiration of the time period for filing the statement and reply (a period that can be as long as 5 to 6 months), before mailing a first determination of patentability. The USPTO's first determination of patentability is usually a first Office action on the merits or a Notice of Intent to Issue Reexamination Certificate (NIRC).

Under the pilot program, the patent owner's oral waiver allows the USPTO to act on the first determination of patentability immediately after determining that reexamination will be ordered, and in a suitable case issue the reexamination order and the first determination of patentability (which could be a NIRC if the claims under reexamination are confirmed) at the same time.

Benefits to the Patent Owner for participating in this pilot program include reduction in pendency.

To participate in this pilot program, Patent Owners may contact the USPTO's Central Reexamination Unit (CRU) at 571-272-7705. The USPTO will make the oral waiver of record in the reexamination file in an interview summary and a copy will be mailed to the patent owner and any third party requester.

cc: Third Party Requester(if any)
FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER
LLP
901 NEW YORK AVENUE, NW
WASHINGTON, DISTRICT OF COLUMBIA 20001-4413

/rbell/

Legal Instruments Examiner
Central Reexamination Unit 571-272-7705; FAX No. 571-273-9900

Thermaltake Tech. Co. v. Lian Li Ind. Co., Ex-2007
Page 547 of 1016, IPR2024-01230

Litigation Search Report CRU 3999

Reexamination Control No. 90/019,565

To:	DAVISON, Laura	**From:**	GRAVES, Monica A.
Location:	OCRU	**Location:**	OCRU
Art Unit:	3993	**Phone:**	2-7253
Date:	17 July 2024	**E-mail:**	monica.graves@uspto.gov

Search Notes

US PATENT NO : 10,690,336 - See attached

1. Performed a KeyCite Search in Westlaw, which retrieves all history on the patent including any litigation.
2. Performed a search on the patent in Lexis CourtLink for any open dockets or closed cases.
3. Performed a search in Lexis in the Federal Courts and Administrative Materials databases for any cases found.
4. Performed a search in Lexis in the IP Journal and Periodicals database for any articles on the patent.
5. Performed a search in Lexis in the news databases for any articles about the patent or any articles about litigation on this patent.

Paper No. 20240717

Citing References (10)

Treatment	Title	Date	Type	Depth	Headnote(s)
—	**1. ILLUMINATION FAN FOR DESKTOP COMPUTER, HAS POWER SOCKET CONNECTED TO TWO CONNECTORS, WHERE FIRST CONNECTOR OF HOUSING IS CONNECTED TO SECOND CONNECTOR, AND LIGHTING AREA OF HOUSING OF FAN UNIT IS ROTATED AND ILLUMINATED** Out Of Plan DWPI 2019-52607N ... F04D-29/646 F21V-33/0052 F21V-33/0096 G06F-1/20 H05K-7/20172 Language:Chinese First Derwent Appearance:2019.77 Publication No. (Derwent): US 10690336 B1 Original Title (English):ILLUMINATION FAN CONNECTABLE WITH AT LEAST ONE ILLUMINATION FAN FOR A COMPUTER Publication Date:2020-06-23 Application No.:US ...	Dec. 26, 2018	DWPI	—	—
—	**2. Lian Li Industrial Co., Ltd. ET AL v. Thermaltake Technology Co., Ltd. ET AL**	Sep. 08, 2023	Docket Summaries	—	—
—	**3. Lian Li Industrial Co., Ltd. ET AL v. Phanteks Europe ET AL**	Sep. 08, 2023	Docket Summaries	—	—
—	**4. SMART-FAN COMPONENTS, CONTROLS AND SYSTEMS** Out Of Plan US PAT 11962220 , U.S. PTO Utility A network-controllable cooling fan can have a recessed connector port with an internal tongue that defines an edge connector having a plurality of electrical contacts. The tongue... ... 48 H05K 7/20727 cited by examiner US United States US 9477438 B1 2016/10 Hochman H01R 13/665 cited by examiner US United States US 10690336 B1 2020/06 Chen G06F 1/20 cited by examiner US United States US 20050135060 A1 2005/06 Cote G11B 33/127 cited by ...	Apr. 16, 2024	Patents	—	—
—	**5. LUMINOUS FAN CONNECTION STRUCTURE** Out Of Plan US PAT 11686467 , U.S. PTO Utility A luminous fan connection structure. The luminous fans are disposed adjacent to each other in a side-by-side manner. A blade is arranged in a frame base. A light guide ring... ... 522 F04D 29/002 F04D 29/023 F04D 29/601 Drawing Pages:9 9 Language:English References Cited US Patents and Applications:US United States US 10690336 B1 2020/06 Chen F21V 33/0096 cited by examiner US United States US 20110116234 A1 2011/05 Ye 362/096 F21V 33/0096 ...	June 27, 2023	Patents	—	—

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Treatment	Title	Date	Type	Depth	Headnote(s)
—	**6. MAGNETICALLY ATTRACTED FAN SET** Out Of Pass US PAT APP 20230366407+ , U.S. PTO Application A magnetically attracted fan set comprises N+1 fans, the N#1, and each of the N+1 fans has a fan frame and an airflow generating component disposed on the fan frame. Any two... ... order to improve the aforementioned problems, fan manufacturers have changed to join the fans without using additional fixing members, as disclosed in patents such as U.S. Pat. No. 10,690,336B and CN 101725571B Taking U.S. Pat. No. 10,690,336B as an example, the fans are provided with slots or positioning blocks on the ...	Nov. 16, 2023	Patents	—	—
—	**7. MAGNETICALLY ATTRACTED FAN SET** Out Of Pass US PAT APP 20220381253+ , U.S. PTO Application A magnetically attracted fan set comprises N+1 fans, the N#1, and each of the N+1 fans has a fan frame and an airflow generating component disposed on the fan frame. Any two... ... order to improve the aforementioned problems, fan manufacturers have changed to join the fans without using additional fixing members, as disclosed in patents such as U.S. Pat. No. 10,690,336B and CN 101725571B Taking U.S. Pat. No. 10,690,336B as an example, the fans are provided with slots or positioning blocks on the ...	Dec. 01, 2022	Patents	—	—
—	**8. Magnetic fan group** Out Of Pass CN PAT 214837258 U A magnetic suction fan group includes N+1 fans, where N1, and each of the N+1 fans has a fan frame and an airflow generating component arranged on the fan frame. Any two adjacent... ... order to improve the aforementioned problems, fan manufacturers have changed to splicing these fans without using additional fasteners, as disclosed in US patents such as US 10,690,336B and China CN 101725571B. Taking US 10,690,336B as an example, the fans are provided with card slots or positioning blocks on the fan frame ...	Nov. 23, 2021	Patents	—	—
—	**9. Magnetic fan unit** Out Of Pass CN PAT APP 115388019 A A magnetic suction fan group, the fan group includes N+1 fans, where N1, each of the N+1 fans has a fan frame and an air flow generating component arranged on the fan frame. Any... ... to improve the above-mentioned problems, the fan manufacturers have spliced these fans together without using additional fixing parts, as disclosed in patents such as US 10,690,336B and Chinese CN 101725571B. Take the United States US10,690,336B as an example, these fans are provided with slots or positioning blocks on the ...	Nov. 25, 2022	Patents	—	—

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Treatment	Title	Date	Type	Depth	Headnote(s)
—	**10.** Fan assembly with a magnetic attachment Out Of Plan DE PAT 202021102818 U1 A fan assembly with a magnetic attachment or coupling, the fan assembly having N + 1 fans (10, 20), where N is greater than or equal to 1, and wherein each of the fans (10, 20) has... ... or utility model application. The DPMA assumes no liability for any errors or omissions.Patent literature cited[0000] TW M396884 [0002]US 2017/0331346 [0002] US 10690336 [0003]CN 101725571 B [0003 ...	Aug. 05, 2021	Patents	—	—

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Results for: 10,690,336 or 10690336 Terms and Connectors

Cases 0

No documents found in Cases

Try the following:

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- Modify your search (edit or remove some search terms or add synonyms).
- Check for spelling errors.
- Note: Some content may not be visible based on the restrictions of your subscription.

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Results for: 10,690,336 or 10690336

Dockets (1) Sort by: Relevance

1.

Norandal USA, Inc.

United States Bankruptcy Court, Missouri Eastern | Feb 08, 2016 | 4:16bk40743 | MEGA, MEMBER, PlnDue, JNTADMN, DISMISSED, CLOSED, DsclsDue

... 2158 HOLLYWOOD Dr JACKSON TN 38305 0 10693684 1 WILLIAMS **PATENT** CRUSHER C cr WILLIAMS **PATENT** CRUSHER 2016-02-09T08:30:00 2701 TO 2723 N BRdWAY ST LOUIS MO 63102 ...
... MOBILE WATER, INC. C cr GE MOBILE WATER INC 2016-02-09T08:29:00 4545 **PATENT** RD NORFOLK VA 23502 0 10687361 1 GELENA TIPPY C cr ...
... MILTON RICARDO DONALDSON C cr MILTON RICARDO DONALDSON 2016-02-09T08:29:00 REDACTED 0 **10690336** 1 MILTON ROY CO. INC. C cr MILTON ROY CO INC ...

Content type: Dockets

Terms: 10,690,336 or 10690336

Search Type: Boolean - Fewer Results

Narrow By: Search Within Results: patent

Date and Time: Jul 17, 2024 08:05:44 a.m. EDT

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LexisNexis

User Name: Monica Graves
Date and Time: Wednesday, July 17, 2024 8:07:00 AM EDT
Job Number: 229028224

Documents (13)

1. *Exhibit A*
   Client/Matter: -None-
   Search Terms: 10,690,336 or 10690336
   Search Type: Terms and Connectors
   Narrowed by:

Content Type	Narrowed by
	-None-

2. *Exhibit A*
   Client/Matter: -None-
   Search Terms: 10,690,336 or 10690336
   Search Type: Terms and Connectors
   Narrowed by:

Content Type	Narrowed by
	-None-

3. *ANSWER to Complaint (Attorney Civil Case Opening), 1 filed by Defendant Thermaltake Technology Co., Ltd. (Attorney Nicolas S Gikkas added to party Thermaltake Technology Co., Ltd.(plv-df1))(Gikkas, Nicolas) (Entered: 12/21/2023)*
   Client/Matter: -None-
   Search Terms: 10,690,336 or 10690336
   Search Type: Terms and Connectors
   Narrowed by:

Content Type	Narrowed by
	-None-

4. *[10690336] Appellant brief filed by Keith Bryan Webb-El. Original and 4 copies. Required 10th Cir. R. 28.2 Attachments included? n. [19-1326]*
   Client/Matter: -None-
   Search Terms: 10,690,336 or 10690336
   Search Type: Terms and Connectors
   Narrowed by:

Content Type	Narrowed by
	-None-

5. *ANSWER to Amended Complaint/Petition 23 Defendants Phanteks Taiwan Inc.'s and Phanteks Shenzhen Inc.'s Answer to First Amended Complaint for Patent Infringement filed by Defendant Phanteks China, Phanteks Taiwan Inc.. (Attorney Ming-Tao Yang added to party Phanteks China(pty:dft), Attorney Ming-Tao Yang added to party Phanteks Taiwan Inc.(pty:dft))(Yang, Ming-Tao) (Entered: 02/27/2024)*

Client/Matter: -None-

Search Terms: 10,690,336 or 10690336

Search Type: Terms and Connectors

Narrowed by:

Content Type	Narrowed by
	-None-

6. *ANSWER to Complaint (Attorney Civil Case Opening), 1 with JURY DEMAND filed by Defendants Axpertec Inc..(Attorney Ming-Tao Yang added to party Axpertec Inc.(pty:dft))(Yang, Ming-Tao) (Entered: 11/02/2023)*

Client/Matter: -None-

Search Terms: 10,690,336 or 10690336

Search Type: Terms and Connectors

Narrowed by:

Content Type	Narrowed by
	-None-

7. *COMPLAINT Receipt No: ACACDC-36004909 - Fee: $402, filed by Plaintiffs Lian Li Industrial Co., Ltd., Chien-Hao Chen. (Attachments: # 1 Exhibit A) (Attorney Kyle Dakai Chen added to party Chien-Hao Chen(pty:pla), Attorney Kyle Dakai Chen added to party Lian Li Industrial Co., Ltd.(pty:pla))(Chen, Kyle) (Entered: 09/08/2023)*

Client/Matter: -None-

Search Terms: 10,690,336 or 10690336

Search Type: Terms and Connectors

Narrowed by:

Content Type	Narrowed by
	-None-

8. *Exhibit A)(Chen, Kyle) : Proceeding Number : 20-1*

Client/Matter: -None-

Search Terms: 10,690,336 or 10690336

Search Type: Terms and Connectors

Narrowed by:

Content Type	Narrowed by
	-None-

9. *FIRST AMENDED COMPLAINT against Defendants Axpertec Inc., Phanteks Europe, Phanteks Taiwan Inc., Phanteks China amending Complaint (Attorney Civil Case Opening), 1, filed by Plaintiffs Lian Li Industrial Co., Ltd., Chien-Hao Chen(Chen, Kyle) (Entered: 11/21/2023)*

Client/Matter: -None-

Search Terms: 10,690,336 or 10690336

Search Type: Terms and Connectors

Narrowed by:

Content Type	Narrowed by
	-None-

10. *JOINT REPORT Rule 26(f) Discovery Plan ; estimated length of trial 5 days. filed by Plaintiffs Chien-Hao Chen, Lian Li Industrial Co., Ltd.. (Attachments: # 1 Exhibit A (Proposed Schedule of Pretrial and Trial Dates))(Chen, Kyle) (Entered: 02/08/2024)*

Client/Matter: -None-

Search Terms: 10,690,336 or 10690336

Search Type: Terms and Connectors

Narrowed by:

Content Type	Narrowed by
	-None-

11. *ORDER DENYING DEFENDANTS' APPLICATION TO CONTINUE INITIAL SCHEDULING CONFERENCE by Judge Hernan D. Vera. (lom) (Entered: 02/14/2024)*

Client/Matter: -None-

Search Terms: 10,690,336 or 10690336

Search Type: Terms and Connectors

Narrowed by:

Content Type	Narrowed by
	-None-

12. *JOINT REPORT Rule 26(f) Discovery Plan ; estimated length of trial 5 days. filed by Plaintiffs Chien-Hao Chen, Lian Li Industrial Co., Ltd.. (Attachments: # 1 Exhibit A)(Chen, Kyle) (Entered: 04/17/2024)*

Client/Matter: -None-

Search Terms: 10,690,336 or 10690336

Search Type: Terms and Connectors

Narrowed by:

Content Type	Narrowed by
	-None-

13. *JOINT APPENDIX, volume 25 of 26, (pp. 6505-6741), on behalf of Appellant New York City Department of Education. FILED. Service date 12/03/2014 by CM/ECF [1384234] [14-3078]*

Client/Matter: -None-

Search Terms: 10,690,336 or 10690336

Search Type: Terms and Connectors

Narrowed by:

Content Type	Narrowed by
	-None-

Lian Li Industrial Co., Ltd. Et Al V. Phanteks Europe Et Al

2:23cv7471

US District Court for the Central District of California

September 8, 2023, Filed

Reporter

State: US-CA

Type: Complaint (Attorney Civil Case Opening)

Title

Exhibit A

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Monica Graves

Lian Li Industrial Co., Ltd. Et Al V. Thermaltake Technology, Co., Ltd. Et Al

2:23cv7470

US District Court for the Central District of California

September 8, 2023, Filed

Reporter

State: US-CA

Type: Complaint (Attorney Civil Case Opening)

Title

Exhibit A

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Monica Graves

Lian Li Industrial Co., Ltd. Et Al V. Thermaltake Technology, Co., Ltd. Et Al

2:23cv7470

US District Court for the Central District of California

December 21, 2023, Filed

Reporter

State: US-CA

Type: Answer to Complaint (Attorney Civil Case Opening)

Title

ANSWER to Complaint (Attorney Civil Case Opening), 1 filed by Defendant Thermaltake Technology, Co., Ltd..(Attorney Nicolas S Gikkas added to party Thermaltake Technology, Co., Ltd.(pty:dft))(Gikkas, Nicolas) (Entered: 12/21/2023)

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End of Document

Monica Graves

Webb-El v. United States Parole

19-1326

US Court of Appeals for the Tenth Circuit

October 28, 2019, Filed

Reporter

State: US-CO

Type: Brief

Title

[***10690336***] Appellant brief filed by Keith Bryan Webb-El. Original and 4 copies. Required 10th Cir. R. 28.2 Attachments Included? n. [19-1326]

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End of Document

Monica Graves

Lian Li Industrial Co., Ltd. Et Al V. Phanteks Europe Et Al

2:23cv7471

US District Court for the Central District of California

February 27, 2024, Filed

Reporter

State: US-CA

Type: Answer to Complaint (Attorney Civil Case Opening)

Title

ANSWER to Amended Complaint/Petition 23 Defendants Phanteks Taiwan Inc.'s and Phanteks Shenzhen Inc.'s Answer to First Amended Complaint for ***Patent*** Infringement filed by Defendant Phanteks China, Phanteks Taiwan Inc..(Attorney Ming-Tao Yang added to party Phanteks China(pty:dft), Attorney Ming-Tao Yang added to party Phanteks Taiwan Inc.(pty:dft))(Yang, Ming-Tao) (Entered: 02/27/2024)

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Monica Graves

Lian Li Industrial Co., Ltd. Et Al V. Phanteks Europe Et Al

2:23cv7471

US District Court for the Central District of California

November 2, 2023, Filed

Reporter

State: US-CA

Type: Answer to Complaint (Attorney Civil Case Opening)

Title

ANSWER to Complaint (Attorney Civil Case Opening), 1 with JURY DEMAND filed by Defendants Axpertec Inc..(Attorney Ming-Tao Yang added to party Axpertec Inc.(pty:dft))(Yang, Ming-Tao) (Entered: 11/02/2023)

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Monica Graves

Lian Li Industrial Co., Ltd. Et Al V. Thermaltake Technology, Co., Ltd. Et Al

2:23cv7470

US District Court for the Central District of California

September 8, 2023, Filed

Reporter

State: US-CA

Type: Complaint (Attorney Civil Case Opening)

Title

COMPLAINT Receipt No: ACACDC-36004909 - Fee: $402, filed by Plaintiffs Lian Li Industrial Co., Ltd., Chien-Hao Chen. (Attachments: # 1 Exhibit A) (Attorney Kyle Dakai Chen added to party Chien-Hao Chen(pty:pla), Attorney Kyle Dakai Chen added to party Lian Li Industrial Co., Ltd.(pty:pla))(Chen, Kyle) (Entered: 09/08/2023)

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Monica Graves

Lian Li Industrial Co., Ltd. Et Al V. Thermaltake Technology, Co., Ltd. Et Al

2:23cv7470

US District Court for the Central District of California

October 26, 2023, Filed

Reporter

State: US-CA

Type: Declaration (Motion related)

Title

Exhibit A)(Chen, Kyle) ; Proceeding Number : 20-1

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Monica Graves

Lian Li Industrial Co., Ltd. Et Al V. Phanteks Europe Et Al

2:23cv7471

US District Court for the Central District of California

November 21, 2023, Filed

Reporter

State: US-CA

Type: Amended Complaint/Petition

Title

FIRST AMENDED COMPLAINT against Defendants Axpertec Inc., Phanteks Europe, Phanteks Taiwan Inc., Phanteks China amending Complaint (Attorney Civil Case Opening), 1 , filed by Plaintiffs Lian Li Industrial Co., Ltd., Chien-Hao Chen(Chen, Kyle) (Entered: 11/21/2023)

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Monica Graves

Lian Li Industrial Co., Ltd. Et Al V. Thermaltake Technology Co., Ltd. Et Al

2:23cv7470

US District Court for the Central District of California

February 8, 2024, Filed

Reporter

State: US-CA

Type: Joint Report Rule 26(f) Discovery Plan

Title

JOINT REPORT Rule 26(f) Discovery Plan ; estimated length of trial 5 days, filed by Plaintiffs Chien-Hao Chen, Lian Li Industrial Co., Ltd... (Attachments: # 1 Exhibit A (Proposed Schedule of Pretrial and Trial Dates)))(Chen, Kyle) (Entered: 02/08/2024)

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Lian Li Industrial Co., Ltd. Et Al V. Thermaltake Technology, Co., Ltd. Et Al

2:23cv7470

US District Court for the Central District of California

February 14, 2024, Filed

Reporter

State: US-CA

Type: Continue

Title

ORDER DENYING DEFENDANTS' APPLICATION TO CONTINUE INITIAL SCHEDULING CONFERENCE by Judge Hernan D. Vera. (lom) (Entered: 02/14/2024)

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Monica Graves

Lian Li Industrial Co., Ltd. Et Al V. Phanteks Europe Et Al

2:23cv7471

US District Court for the Central District of California

April 17, 2024, Filed

Reporter

State: US-CA

Type: Joint Report Rule 26(f) Discovery Plan

Title

JOINT REPORT Rule 26(f) Discovery Plan ; estimated length of trial 5 days, filed by Plaintiffs Chien-Hao Chen, Lian Li Industrial Co., Ltd... (Attachments: # 1 Exhibit A)(Chen, Kyle) (Entered: 04/17/2024)

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Monica Graves

T.K. v. New York City Department of Ed

14-3078

US Court of Appeals for the Second Circuit

December 3, 2014, Filed

Reporter
2014 U.S. 2nd Cir. Briefs LEXIS 4136

State: US-NY

Type: Unknown

Title

JOINT APPENDIX, volume 25 of 26, (pp. 6505-6741), on behalf of Appellant New York City Department of Education, FILED. Service date 12/03/2014 by CM/ECF.[1384234] [14-3078]

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Results for: 10,690,336 or 10690336 Terms and Connectors

Intellectual Property 0

No documents found in Intellectual Property

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Job Number: 229028637

Documents (4)

1. *US Patent issued on June 23 for "Illumination fan connectable with at least one illumination fan for a computer" (Taiwanese Inventor)*
   Client/Matter: -None-
   Search Terms: 10,690,336 or 10690336
   Search Type: Terms and Connectors
   Narrowed by:

Content Type	Narrowed by
	-None-

2. *Head Line: Chen: Chien-Hao Yilan granted US Patent for "illumination fan connectable with at least one illumination fan for a computer"*
   Client/Matter: -None-
   Search Terms: 10,690,336 or 10690336
   Search Type: Terms and Connectors
   Narrowed by:

Content Type	Narrowed by
	-None-

3. *Page 21*
   Client/Matter: -None-
   Search Terms: 10,690,336 or 10690336
   Search Type: Terms and Connectors
   Narrowed by:

Content Type	Narrowed by
	-None-

4. *3 Days Leadership Training of SSG Advisers and SSG Presidents*
   Client/Matter: -None-
   Search Terms: 10,690,336 or 10690336
   Search Type: Terms and Connectors
   Narrowed by:

Content Type	Narrowed by
	-None-

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US Patent Issued on June 23 for "Illumination fan connectable with at least one illumination fan for a computer" (Taiwanese Inventor)

US Fed News

June 24, 2020 Wednesday GENERAL_EDIT_CORRECTION ERROR Document ID 927 Has error Validate old format failed - Input Date Invalid - 00:42: Unparseable date: "00:42" EST

Load-Date: June 23, 2020

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Length: 265 words

Dateline: ALEXANDRIA, Va.

End of Document

Body

ALEXANDRIA, Va., June 24 -- United States ***Patent*** no. ***10,690,336***, issued on June 23.

"Illumination fan connectable with at least one illumination fan for a computer" was invented by Chien-Hao Chen (Yilan County, Taiwan). According to the abstract* released by the U.S. ***Patent*** & Trademark Office: "An illumination fan connectable with at least one illumination fan for a computer includes a body, provided with a fan in center of the body, an illumination area on at least two sides of the fan at 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. The power socket is electrically connected with the first connector, the second connector, the fan and the illumination area. When the power socket is supplied with power, the fan and the illumination area of the body is 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 is respectively driven into rotation and illumination." The ***patent*** was filed on May 6, 2019, under Application No. 16/403,867. *For further information, including images, charts and tables, please visit:

http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&Sect2=HITOFF&p=1&u=%2Fnetahtml%2FPTO%2Fsearch-bool.html&r=1&f=G&l=50&co1=AND&d=PTXT&s1=10690336&OS=10690336&RS=10690336 For any query with respect to this article or any other content requirement, please contact Editor at *contentservices@htlive.com*

Monica Graves

Head Line: Chen; Chien-Hao Yilan granted US Patent for "Illumination fan connectable with at least one illumination fan for a computer"

Impact Financial News

June 24, 2020 Wednesday

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End of Document

Length: 221 words

Body

ALEXANDRIA, Va: Chen; Chien-Hao Yilan has been granted a ***patent*** no. ***10,690,336*** on June 23, 2020, by United States ***Patent*** And Trademark Office.

The ***patent*** has been granted for "Illumination fan connectable with at least one illumination fan for a computer"Inventors: Chen; Chien-Hao (Yilan County, TW)Assignee: Chen; Chien-Hao Yilan County N/A TWAccording to the abstract released by the U.S ***Patent*** & Trademark Office: "An illumination fan connectable with at least one illumination fan for a computer includes a body, provided with a fan in center of the body, an illumination area on at least two sides of the fan at 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. The power socket is electrically connected with the first connector, the second connector, the fan and the illumination area. When the power socket is supplied with power, the fan and the illumination area of the body is 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 is respectively driven into rotation and illumination."The ***patent*** was filed on May 6, 2019 by Application No. 16/403,867

Load-Date: June 25, 2020

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Section: BOLETIN OFICIAL, PROVINCIA DE CORDOBA; Pg. 21

Length: 1466 words

Body

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BOLETIN OFICIAL DE LA PROVINCIA DE CORDOBA

AÑO CX -TOMO DCCVII - Nº 210

CORDOBA,(R.A.),VIERNES 3 DE NOVIEMBRE DE 2023

BOLETIN OFICIAL DE LA PROVINCIA DE CORDOBA

JUDICIALES

2

a

"1983/2023 - 40 AÑOS DE DEMOCRACIA"

a la parte demandada SUCESION INDIVISA DE BERNIOVICTOR HUGO DNI:6980023, para que en el término de veinte (20) días comparez- ca a estar a derecho, bajo apercibimiento de ley .Cítesela de remate en la misma diligencia para que en el término de tres (3) días subsiguien- tes al del vencimiento del comparendo, oponga excepcionesyofrezcalaspruebasquehacen a su derecho, bajo apercibimiento.Fdo Cristina Pereyro.Procuradora Fiscal.MP:1-32095.Liq: 502953562022.

1 día - Nº 491148 - $ 630,55 - 3/11/2023 - BOE

En los autos DIRECCION GENERAL DE RENTAS C/ SUCESION INDIVISA DE ROMERO CLAUDIA ELISABET - EJECUTIVO FISCAL - DGR - Expte N° 10690309, que se tramitan ante la Secretaria de Gestión Común de losTrib.de Ejec Fiscal N.º 2° , sito en calleArturo M.Bas 244, P.B.Córdoba.Se notifica de conformidad conelart.2delaLey9024"Cíteseyemplácese a la parte demandada SUCESION INDIVISA DE ROMERO CLAUDIA ELISABET DNI:16493758, para que en el término de veinte (20) días comparezca a estar a derecho, bajo apercibimiento de ley .Cítesela de remate en la misma dili- gencia para que en el término de tres (3) días subsiguientes al del vencimiento del comparen- do, oponga excepciones y ofrezca las pruebas quehacenasuderecho,bajoapercibimiento. Fdo Cristina Pereyro.Procuradora Fiscal.MP: 1-32095.Liq:200320132022

1 día - Nº 491149 - $ 640 - 3/11/2023 - BOE

En los autos DIRECCION GENERAL DE RENTASC/SUCESIONINDIVISADEHERCEHILDA NELIDA I - EJECUTIVO FISCAL - DGR - Expte N° 10690335, que se tramitan ante la Secretaria de Gestión Común de losTrib.de Ejec Fiscal N.º 2° , sito en calleArturo M.Bas 244, P.B.Córdoba. Se notifica de conformidad con el art.2 de la Ley 9024"Cítesey emplácese ala partedemandada SUCESION INDIVISA DE HERCE HILDA NELI- DA I DNI:9746241, para que en el término de veinte (20) días comparezca a estar a derecho, bajo apercibimiento de ley .Cítesela de remate en la misma diligencia para que en el término de tres (3) días subsiguientes al del vencimiento del comparendo, oponga excepcionesy ofrezca las pruebas que hacen a su derecho, bajo apercibimiento.Fdo Cristina Pereyro.Procuradora Fiscal. MP:1-32095.Liq:500192402022.

1 día - Nº 491150 - $ 634,75 - 3/11/2023 - BOE

En los autos DIRECCION GENERAL DE RENTAS C/ SUCESION INDIVISA DE ROJOS MA- RIA IDA - EJECUTIVO FISCAL - DGR - Expte N° ***10690336***, que se tramitan ante la Secretaria

de Gestión Común de losTrib.de Ejec Fiscal N.º 2° , sito en calleArturo M.Bas 244, P.B.Córdoba. Se notifica de conformidad con el art.2 de la Ley

Thermaltake Tech. Co. v. Lian Li Ind. Co., Ex-2007
Page 574 of 1016, IPR2024-01230

9024"Cítese y emplácese a la parte demandada SUCESIONINDIVISA DE ROJOS MARIA IDA DNI:7945139, para que en el término de veinte (20) días comparezca a estar a derecho, bajo apercibimiento de ley .Cítesela de remate en la misma diligencia para que en el término de tres (3) días subsiguientes al del vencimiento del comparendo, oponga excepcionesy ofrezca las pruebas que hacen a su derecho, bajo apercibimiento.Fdo Cristina Pereyro.Procuradora Fiscal. MP:1-32095.Liq:500193212022.

1 día - Nº 491151 - $ 623,20 - 3/11/2023 - BOE

En los autos DIRECCIÓN GENERAL DE RENTAS DE LA PROVINCIA DE CÓRDOBA C/ SUCESION INDIVISA DE GATTI ELENA MAGDA - EJECUTIVO FISCAL - DGR - Expte N° 10632355, que se tramitan ante la Sec.de GestiónComúndelosTrib.deEjecFiscalNº3,sito en calleArturo M.Bas 244 - P.B.Córdoba.Se notifica a la de conformidad con el art.2 de la Ley 9024"Cítesey emplácese ala partedemandada SUCESION INDIVISA DE GATTI ELENA MAGDADNI:3.103.248, paraque eneltérmino de veinte (20) días comparezca a estar a derecho, bajo apercibimiento de ley .Cítesela de remate en la misma diligencia para que en el término de tres (3) días subsiguientes al del vencimiento del comparendo, oponga excepcionesy ofrezca las pruebas que hacen a su derecho, bajo apercibimiento.Fdo Cristina Pereyro.Procuradora Fiscal. MP:1-32095.Liq:503343692021

1 día - Nº 491155 - $ 657,85 - 3/11/2023 - BOE

En los autos caratulados:DDIRECCIÓN DE RENTAS DE LA PROVINCIA DE CÓRDOBA c/ SUCESION INDIVISA DE MEDINA, PEDRO ADRIAN - PRESENTACION MULTIPLE FISCAL-EXPTE:8717426-OFICINAUNICADE EJECUCION FISCAL - JUZG 6A NOM - RIO CUARTO.Se ordena:"...cítese y emplácese a los herederos y/o representantes legales de Perdo Adrián Medina en los términos del art.2 de la ley 9024, para que en el plazo de veinte días comparezcanaestaraderecho,bajoapercibimiento de rebeldía(cfme.art.4de laley 9024modif. por ley 9118) y dentro de los tres días subsiguientes a los del plazo de comparendo, oponga excepciones legítimas si las tuviere, bajo apercibimiento del art.7 de la citada ley a cuyo fin publíquense edictos en el Boletín Oficial por el término de 5 días, conforme lo previsto por art. 4delaley9024,sinperjuiciodelacitaciónal domicilio tributario denunciado.Notifíquese.Río Cuarto, 7 de noviembre de 2019."Fdo.:MARTINEZ Mariana, JUEZ/A DE 1RA.INSTANCIA, RODRIGUEZ Raúl Francisco, PROSECRETARIO/A LETRADO.

5 días - Nº 491170 - $ 8561,50 - 3/11/2023 - BOE

SEC.DEGESTIONCOMUNDEEJECUCION FISCAL N° 1(EX21),Arturo M Bas 244 P.B.-Cordoba;en autos"DIRECCION DE RENTAS C/ SUCESION INDIVISA DE GILESKY ELENA-Pres Multiple Fiscal Expte N° 11952904, De conformidad a lo dispuesto por la ley 9201, se ordena:Libre sin mas tramite mandamiento de ejecución y embargo por la suma reclamada con mas el treinta por ciento (30%);comprensiva del capital reclamado, interés y costas provisoria del juicio.Cítese y emplácese al demandado para que en el termino de 20 días comparezca a estar a derecho bajo apercibimiento de ley y cíteselo de remate en la misma diligencia, para que en el termino de tres días subsiguientes al vencimiento del plazo de comparendo, oponga excepciones y ofrezca las pruebas que hacen a su derecho bajo apercibimiento.Notifíquese.

5 días - Nº 491200 - $ 6581 - 3/11/2023 - BOE

SEC.DEGESTIONCOMUNDEEJECUCION FISCAL N° 1(EX21),Arturo M Bas 244 P.B.-Cordoba;en autos"DIRECCION DE RENTAS C/ SUCESION INDIVISA DEAGUERO JUAN CANAS-Pres Multiple Fiscal Expte N° 11952873, De conformidad a lo dispuesto por la ley 9201, se ordena:Libre sin mas tramite mandamiento de ejecución y embargo por la suma reclamada con masel treintapor ciento(30%);comprensiva del capital reclamado, interés y costas provisoria del juicio.Cítese y emplácese al demandado para que en el termino de 20 días comparezca a estar a derecho bajo apercibimiento de ley y cíteselo de remate en la misma diligencia, para que en el termino de tres días subsiguientes al vencimiento del plazo de comparendo, oponga excepciones y ofrezca las pruebas que hacen a su derecho bajo apercibimiento.Notifíquese.

5 días - Nº 491203 - $ 6615 - 3/11/2023 - BOE

SEC.DEGESTIONCOMUNDEEJECUCION FISCAL N° 1(EX21),Arturo M Bas 244 P.B.-Cordoba;en autos"DIRECCION DE RENTAS C/

SUCESION INDIVISA DETEREZA LUISA-Pres Multiple Fiscal Expte N° 11952888, De conformidad a lo dispuesto por la ley 9201, se ordena: Libre sin mas tramite mandamiento de ejecución y embargo por la suma reclamada con mas el treinta por ciento (30%);comprensiva del capital reclamado,interésycostasprovisoriadeljuicio. Cítese y emplácese al demandado para que en el termino de 20 días comparezca a estar a derecho bajo apercibimiento de ley y cíteselo de re-

Load-Date: November 4, 2023

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3 Days Leadership Training of SSG Advisers and SSG Presidents

Tenders Monitor Africa-Asia

August 14, 2018 Tuesday

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Brief: Three Days Leadership Training of SSG Advisers and SSG Presidents for 80 pax

on September 14-16, 2018.

Document : http://www.bidsinfo.com /adminexe/documents/-PH1~20180814-***10690336***.html

Length: 144 words

Load-Date: August 14, 2018

Body

Company : DEPARTMENT OF EDUCATION - DVISION OF PUERTO PRINCESA CITY

Address : Corner Rafols-PSU Road, Government Center,

Brgy. Sta. Monica,

Puerto Princesa City. Palawan

Puerto Princesa City

Palawan 5300

Attn: ANNA MYLENE FERRER NATIVIDAD, BAC Secretariat

Tel: +63-048-4349438

Fax: +63-048-4342222

Email : BACpuertoprincesa@yahoo.com

Country : Philippines

Location : Philippines

Tender_No : 035-8

Value : PHP 120000

Dead line : 2018-08-21

Local International : International

Funding Agency : No

Description : Invitation to Bid (ITB): 3 Days Leadership Training of SSG Advisers and SSG Presidents

Closing Date / Time: 21/08/2018 1:00 AM

Area of Delivery: Palawan

Procurement Mode: Public Bidding

End of Document

Monica Graves

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	90/019,565	10690336
	Examiner	Art Unit
	LAURA L DAVISON	3993

CPC - Searched*		
Symbol	Date	Examiner
none		

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
Reviewed patent file wrapper for US 10,690,336 (SN 16/403,867)	07/15/2024	LLD
Searched P-TACTS for post-grant proceedings (none found)	07/15/2024	LLD
Searched Patent Data Portal (PDP) for continuity data	07/15/2024	LLD
Litigation search	07/17/2024	LLD

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner

/Laura Davison/ Reexamination Specialist, Art Unit 3993	

Thermaltake Tech. Co. v. Lian Li Ind. Co., Ex-2007
Page 578 of 1016, IPR2024-01230

Reexamination	Application/Control No.	Applicant(s)/Patent Under Reexamination
	90/019,565	10690336
	Certificate Date	Certificate Number

Requester Correspondence Address: ☐ Patent Owner ☑ Third Party
FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER, LLP 901 NEW YORK AVENUE, NW WASHINGTON, DC 20001-4413

LITIGATION REVIEW ☑	LLD (examiner initials)	17 July 2024 (date)
Case Name		Director Initials
Lian Li Industrial Co., Ltd. ET AL v. Thermaltake Technology Co., Ltd. ET AL, 2:23cv7470, US District Court for the Central District of California		/rds/ for DPR
Lian Li Industrial Co., Ltd. ET AL v. Phanteks Europe ET AL, 2:23cv7471, US District Court for the Central District of California		

COPENDING OFFICE PROCEEDINGS	
TYPE OF PROCEEDING	NUMBER

/Laura Davison/ Reexamination Specialist, Art Unit 3993	

Doc Code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (01-22)
Approved for use through 05/31/2024. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Patent Number	10,690,336
Issue Date	June 23, 2020
First Named Inventor	Chien-Hao CHEN
Art Unit	To Be Assigned
Examiner Name	To Be Assigned
Attorney Docket Number	16445.0001-00000

U.S. PATENTS

Examiner Initials*	Cite No.	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, where Relevant Passages or Relevant Figures Appear
	1	US-10,690,336		06-23-2020	Chien-Hao Chen	

U.S. PATENT APPLICATION PUBLICATIONS

Examiner Initials*	Cite No.	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, where Relevant Passages or Relevant Figures Appear
	1	US-2006/0012973		01-19-2006	Jen-Cheng Lin	
	2	US-2008/0279694		11-13-2008	Yi-Fang Chou et al.	
	3	US-2009/0246015		10-01-2009	Chia-Hao Hsu	
	4	US-2017/0314777		11-02-2017	Wen-Hsien Lai	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[5]
	1	JP 2018041147A			03-15-2018	Fujitsu		Y
	2	CN 207064277U			03-02-2018	Super Flower Computer Inc.		Y
	3	TW 282827U			08-01-1996	Wu Goming		Abstract
	4	KR 200494193 Y1			08-18-2021	Chien-Hao Chen		Claims
	5	WO 2008/061519			05-29-2008	Konvekta AG		Y
	6	CN 2419399Y			02-14-2001	Delta Electronics Inc.		Y
	7	CN 2861563Y			01-24-2007	Yen Sun Technology Corp		Y
	8	CN 2861564Y			01-24-2007	Yen Sun Technology Corp		Y
	9	CN 101725571A			06-09-2010	Inventec Corp		Y

EXAMINER SIGNATURE

Examiner Signature	/Laura Davison/	Date Considered	07/15/2024

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1]See Kind Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [2]Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3]For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4]Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5]Applicant is to place a check mark here if English language translation is attached.

EFS Web 2.1.18

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /LD/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	10,690,336
	Filing Date	June 23, 2020
	First Named Inventor	Chien-Hao CHEN
	Art Unit	To Be Assigned
	Examiner Name	To Be Assigned
	Attorney Docket Number	16445.0001-00000

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached certification statement.

☐ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

XX A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Kai Rajan/	Date (YYYY-MM-DD)	2024-07-02
Name/Print	Kai Rajan	Registration Number	70,110

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /LD/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	10,690,336
	Filing Date	June 23, 2020
	First Named Inventor	Chien-Hao CHEN
	Art Unit	To Be Assigned
	Examiner Name	To Be Assigned
	Attorney Docket Number	16445.0001-00000

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/019,565	07/02/2024	10690336	16445.0001-00000	5828

60601 7590 07/18/2024
Muncy, Geissler, Olds & Lowe, P.C.
125 S. Royal St.
Alexandria, VA 22314

EXAMINER	
DAVISON, LAURA L	

ART UNIT	PAPER NUMBER
3993	

MAIL DATE	DELIVERY MODE
07/18/2024	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

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United States Patent and Trademark Office
P.O. Box 1450
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(THIRD PARTY REQUESTER'S CORRESPONDENCE ADDRESS)

FINNEGAN, HENDERSON, FARABOW, GARRETT &
DUNNER, LLP
901 NEW YORK AVENUE, NW
WASHINGTON, DC 20001-4413

EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. *90/019,565* .

PATENT UNDER REEXAMINATION *10690336* .

ART UNIT *3993* .

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified *ex parte* reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the *ex parte* reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

Order Granting Request For Ex Parte Reexamination	Control No. 90/019,565	Patent Under Reexamination 10690336	
	Examiner LAURA L DAVISON	Art Unit 3993	AIA (FITF) Status Yes

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

The request for *ex parte* reexamination filed 07/02/2024 has been considered and a determination has been made. An identification of the claims, the references relied upon, and the rationale supporting the determination are attached.

Attachments: a)☐ PTO-892, b)☑ PTO/SB/08, c)☐ Other: ____

1. ☑ The request for *ex parte* reexamination is GRANTED.

RESPONSE TIMES ARE SET AS FOLLOWS:

For Patent Owner's Statement (Optional): TWO MONTHS from the mailing date of this communication (37 CFR 1.530 (b)). **EXTENSIONS OF TIME ARE GOVERNED BY 37 CFR 1.550(c).**

For Requester's Reply (optional): TWO MONTHS from the **date of service** of any timely filed Patent Owner's Statement (37 CFR 1.535). **NO EXTENSION OF THIS TIME PERIOD IS PERMITTED.** If Patent Owner does not file a timely statement under 37 CFR 1.530(b), then no reply by requester is permitted.

/Laura Davison/ Reexamination Specialist, Art Unit 399		

cc:Requester (if third party requester)

DECISION ON REQUEST

A substantial new question of patentability (SNQ) affecting **claims 1-5 of United States Patent Number 10,690,336** (the '336 patent) is raised by the request for *ex parte* reexamination.

Notice of Pre-AIA or AIA Status

This reexamination proceeding, concerning US Patent No. 10,690,336 issuing from US Application SN 16/403,867 filed May 6, 2019, is being examined under the first inventor to file provisions of the AIA.

Extensions of Time

Extensions of time under 37 C.F.R. 1.136(a) will not be permitted in these proceedings because the provisions of 37 C.F.R. 1.136 apply only to "an applicant" and not to parties in a reexamination proceeding. Additionally, 35 U.S.C. 305 requires that *ex parte* reexamination proceedings "will be conducted with special dispatch" (37 C.F.R. 1.550(a)). Extensions of time in *ex parte* reexamination proceedings are provided for in 37 C.F.R. 1.550(c).

Service of Papers

After the filing of a request for reexamination by a third party requester, any document filed by either the patent owner or the third party requester must be served on the other party (or parties where two or more third party requester proceedings are merged) in the reexamination proceeding in the manner provided in 37 C.F.R. 1.248. See 37 C.F.R. 1.550(c).

Waiver of Right to File Patent Owner Statement

In a reexamination proceeding, Patent Owner may waive the right under 37 C.F.R. 1.530 to file a Patent Owner Statement. The document needs to contain a statement that Patent Owner waives the right under 37 C.F.R. 1.530 to file a Patent Owner Statement and proof of service in the manner provided by 37 C.F.R. 1.248, if the request for reexamination was made by a third party requester, see 37 C.F.R. 1.550(f). The Patent Owner may consider using the following statement in a document waiving the right to file a Patent Owner Statement:

WAIVER OF RIGHT TO FILE PATENT OWNER STATEMENT
Patent Owner waives the right under 37 C.F.R. § 1.530 to file a Patent Owner Statement.

Patent Owner has **not** agreed to waive the right to file a Patent Owner Statement under 37 C.F.R. 1.50. USPTO personnel have not reached Patent Owner.

Amendment in Reexamination Proceedings

Patent owner is notified that any proposed amendment to the specification and/or claims in this reexamination proceeding must comply with 37 C.F.R. 1.530(d)-(j), must be formally presented pursuant to 37 C.F.R. 1.52(a) and (b), and must contain any fees required by 37 C.F.R. 1.20(c). See MPEP § 2250(IV) for examples to assist in the preparation of proper proposed amendments in reexamination proceedings.

Submissions

In order to ensure full consideration of any affidavits or declarations or other documents as evidence of patentability, such documents must be submitted in response to the first Office

action on the merits (which does not result in a close of prosecution). Submissions after the second Office action on the merits, which is intended to be a final action, will be governed by the requirements of 37 C.F.R. 1.116, after final rejection and by 37 C.F.R. 41.33 after appeal, which will be strictly enforced.

Notification of Concurrent Proceedings

The patent owner is reminded of the continuing responsibility under 37 C.F.R. 1.565(a) to apprise the Office of any litigation activity, or other prior or concurrent proceeding, involving the patent throughout the course of this reexamination proceeding. Likewise, the third party requester is also reminded of the ability to similarly apprise the Office of any such activity or proceeding throughout the course of this reexamination proceeding. See MPEP §§ 2207, 2282 and 2286.

Notification of Current Assignment of the Patent

The patent owner is requested to provide the current assignment information for the patent for which reexamination is requested. An assignment can be made of record in the file of a patent application, patent, or other patent proceeding (e.g., reexamination proceeding). This step is necessary to permit the assignee to "take action" in the application, patent, or other patent proceeding under the conditions set forth in 37 C.F.R. 3.73 and MPEP § 324. Recordation of an assignment in the assignment records of the Office, however, does not, by itself, permit the assignee to take action in the application, patent, or other patent proceeding.

Brief Summary of the Prior Examination Proceeding

US Patent No. 10,699,336 (the '336 Patent) was filed as SN 16/403,867 (the '867 application) on May 6, 2019. The '867 application claims priority to Taiwan Patent Application No. TW 107217659 U, which was filed on December 26, 2018.

During prosecution of the '867 application, the examiner issued a first action Notice of Allowance on April 13, 2020. The Notice of Allowance included the following 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 drive into rotation and illumination.
>
> Claims 2-5 depend on claim 1.

With the Notice of Allowance, the examiner included a Notice of References Cited (PTO-892) listing the following patent documents: US 2006/0012973 (Lin), US 7,332,841 (Hsu), US 2019/0242688 (Huang), US 2019/0301473 (Kato), US 2011/0116234 (Ye), US 2004/0115986 (Chen), and US 2017/0331346 (Lai).

Substantial New Questions of Patentability Proposed by Requester

The request indicates that the third party requester considers the following prior art references to raise substantial new questions of patentability:

Fujitsu, JP 2018041147 A

Tsai, CN 207064277 U

Chou et al., US 2008/0279694 A1

Lai, US 2017/0314777 A1

The third party requester's position is as follows:

Ground 1: Claims 1-4 are unpatentable in light of Fujitsu in combination with Tsai.

Ground 2: Claim 5 is unpatentable in light of Fujitsu in combination with Tsai and Chou.

Ground 3: Claims 1, 2, and 4 are unpatentable in light of Lai in combination with Fujitsu.

Ground 4: Claim 5 is unpatentable in light of Lai in combination with Fujitsu and Chou.

Analysis of the Substantial New Questions of Patentability in the Request

Ground 1: Fujitsu in combination with Tsai

Fujitsu (JP 2018041147 A) has a publication date of March 15, 2018. Fujitsu was not cited or considered during the prosecution of the '336 patent. Fujitsu qualifies as prior art under 35 U.S.C. § 102(a)(1) for all claims.

Tsai (CN 207064277 U) has a publication date of March 2, 2018. Tsai was not cited or considered during the prosecution of the '336 patent. Tsai qualifies as prior art under 35 U.S.C. § 102(a)(1) for all claims.

Fujitsu discloses a fan (fan unit 10, Fig. 7) connectable with at least one other fan (Figs. 5-6), the fan comprising a power socket (CNA, CNB; ¶ 39), a first connector (CNC) on one side of a body of the fan, and a second connector (CND) on another side of the body, configured such that when the first connector of the fan is connected with a second connector of the other fan, the other fan is driven into rotation (¶ 37-41).

Tsai discloses an illumination fan (Figs. 1-3) comprising a fan (fan blade 42 rotated by motor 41) and an illumination area (light guiding ring 20), wherein the fan and the illumination

area are respectively driven into rotation and illumination when power is supplied to the illumination fan (¶ 37).

Therefore, it appears that Fujitsu in combination with Tsai has at least one teaching relevant to "an illumination fan connectable with at least one illumination fan" including "a first connector on one side of the body" and "a second connector on another side of the body," such that "when the first connector of the body of the illumination fan 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," which are limitations that appear to have been missing from the prior art during the prior examination.

With the teaching of Fujitsu in combination with Tsai, there is a substantial likelihood that a reasonable examiner would consider the disclosures of Fujitsu and Tsai to be important in deciding the patentability of the '336 patent.

Accordingly, it is agreed that Fujitsu in combination with Tsai raises a SNQ with respect to the '336 patent.

Ground 3: Lai in combination with Fujitsu

Lai (US 2017/0314777 A1) has a publication date of November 2, 2017. Lai was not cited or considered during the prosecution of the '336 patent. Lai qualifies as prior art under 35 U.S.C. § 102(a)(1) and 102(a)(2) for all claims.

Lai discloses an illumination fan (10, Figs. 2-6) connectable with at least one other illumination fan (Figs. 3-6) such that when the illumination fan is connected with another illumination fan (¶ 12), a fan and an illumination area (illuminated by LEDs 16, Fig. 2) of the other illumination fan are respectively driven into rotation and illumination (¶ 16).

As noted above, Fujitsu discloses a fan (fan unit 10, Fig. 7) connectable with at least one other fan (Figs. 5-6) via a first connector (CNC) on one side of a body of the fan and a second connector (CND) on another side of the body of the other fan, such that when the first connector of the fan is connected with a second connector of the other fan, the other fan is driven into rotation (¶[37-41).

Therefore, it appears that Lai in combination with Fujitsu has at least one teaching relevant to "an illumination fan connectable with at least one illumination fan" including "a first connector on one side of the body" and "a second connector on another side of the body," such that "when the first connector of the body of the illumination fan 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 drive into rotation and illumination," which are limitations that appear to have been missing from the prior art during the prior examination.

With the teaching of Lai in combination with Fujitsu, there is a substantial likelihood that a reasonable examiner would consider the disclosures of Lai and Fujitsu to be important in deciding the patentability of the '336 patent.

Accordingly, it is agreed that Lai in combination with Fujitsu raises a SNQ with respect to the '336 patent.

Ground 2: Fujitsu in combination with Tsai and Chou

Ground 4: Lai in combination with Fujitsu and Chou

Chou (US 2008/0279694 A1) has a publication date of November 13, 2008. Chou was not cited or considered during the prosecution of the '336 patent. Chou qualifies as prior art under 35 U.S.C. § 102(a)(1) and 102(a)(2) for all claims.

Chou discloses a fan (2, Fig. 2) connectable with another fan (2, Fig. 4), the fan (2) including a groove (sliding rail 246, Fig. 2), and the two fans (2) being connected by respectively engaging an engaging block (connecting member 46, Fig. 4) within the grooves on the sides of the two fans (2).

Therefore, it appears that Chou, considered in combination with Fujitsu and Tsai or in combination with Lai and Fujitsu as discussed above, has at least one teaching relevant to "a groove" and "an engaging block" which are limitations that appear to have been missing from the prior art during the prior examination.

With the teaching of Chou, considered in combination with Fujitsu and Tsai or in combination with Lai and Fujitsu, there is a substantial likelihood that a reasonable examiner would consider the disclosure of Chou to be important in deciding the patentability of claim 5 of the '336 patent.

Accordingly, it is agreed that Fujitsu in combination with Tsai and Chou, or Lai in combination with Fujitsu and Chou, raises a SNQ with respect to the '336 patent.

35 USC 325(d)

A review of the post grant history for the instant patent indicates that there have been no other Office post grant challenges made to the patent (Reexamination Proceedings or *Inter Partes* Review, Post Grant Review, Covered Business Method trials). Accordingly, a discretionary denial of reexamination pursuant to 35 USC 325(d) is not applicable.

Conclusion

For the reasons given above, at least one of the references cited by the third party requester raises a substantial new question of patentability with respect to the subject patent. Accordingly, the '336 patent will be reexamined.

All correspondence relating to this *ex parte* reexamination proceeding should be directed as follows:

By E-filing:	Registered users may submit via the Patent Center, at: https://patentcenter.uspto.gov/
By Mail:	Mail Stop *Ex Parte* Reexam ATTN: Central Reexamination Unit Commissioner for Patents U.S. Patent & Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450
By FAX:	(571) 273-9900 Central Reexamination Unit
By hand:	Customer Service Window Randolph Building 401 Dulany St. Alexandria, VA 22314

For Patent Center transmissions, 37 CFR 1.8(a)(1) (i)(C) and (ii) states that correspondence (except for a request for reexamination and a corrected or replacement request for reexamination) will be considered timely filed if: (a) it is transmitted via the Office's electronic filing system in accordance with 37 CFR 1.6(a)(4); and, (b) includes a certificate of transmission for each piece of correspondence stating the date of transmission, which is prior to the expiration of the set period of time in the Office action.

Any inquiry concerning the status of this proceeding, should be directed to the Central Reexamination Unit (CRU) at telephone number: (571) 272-7705. The CRU's fax number is: (571) 273-9900. Any inquiry concerning this communication or earlier communications from the examiner should

be directed to LAURA L DAVISON whose telephone number is (571) 270-0189. The examiner can normally be reached Monday - Friday, 8:00 a.m. - 4:00 p.m. ET.

/Laura Davison/
Reexamination Specialist, Art Unit 3993

Conferees:
/Patricia L Engle/
Reexamination Specialist, Art Unit 3993

/RUSSELL D STORMER/
Acting SPRS, Art Unit 3993

PTO/AIA/818 (07-13)
Approved for use through 09/30/2025. OMB 0651-0035
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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REEXAMINATION OR SUPPLEMENTAL EXAMINATION – PATENT OWNER POWER OF ATTORNEY OR REVOCATION OF POWER OF ATTORNEY WITH A NEW POWER OF ATTORNEY AND CHANGE OF CORRESPONDENCE ADDRESS FOR REEXAMINATION OR SUPPLEMENTAL EXAMINATION AND PATENT

Control Number(s)	90/019,565
Filing Date(s)	July 2, 2024
First Named Inventor	Chien-Hao Chen
Title	ILLUMINATION FAN CONNECTABLE WITH AT LEAST ONE ILLUMINA
Patent Number	10,690,336
Examiner Name	Laura L. Davison
Attorney Docket No(s)	219491-010000

I. Power of Attorney. This form may be used to change the Power of Attorney in a reexamination or supplemental examination proceeding (or multiple proceedings where merged). This form may also be used to change the Power of Attorney in the patent file; in such a case, a copy of this form will be placed in both the patent file and the reexamination or supplemental examination proceeding.

A. Revocation of Previous Power of Attorney. I hereby revoke all previous patent owner powers of attorney, if any, given:

☒ in the above-identified reexamination or supplemental examination proceeding control number(s) (more than one may be changed only if the proceedings are merged).

☐ in the file of the above-identified patent.

(check BOTH boxes if change in BOTH the patent file and the reexamination or supplemental examination proceeding is requested).

B. Designation of Power of Attorney.

☐ A Power of Attorney is submitted herewith.

OR

☒ I hereby appoint Practitioner(s) associated with the Customer Number identified in the box at right as my/our attorney(s) or agent(s) to prosecute the proceeding(s)/patent identified above and selected in section I(A), and to transact all business in the United States Patent and Trademark Office connected therewith: 37705

OR

☐ I hereby appoint Practitioner(s) named below as my/our attorney(s) or agent(s) to prosecute the proceeding(s) identified above, and to transact all business in the United States Patent and Trademark Office connected therewith:

Practitioner(s) Name	Registration Number

Authorization for the Power of Attorney is provided by the signature on page 2 of this form.

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PTO/AIA/81B (07-13)
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II. Change of Correspondence Address

Please recognize or change the correspondence address for the above-identified reexamination or supplemental examination proceeding control number(s) (more than one may be changed **only** if they are merged proceedings) **and for the file of the above-identified patent** to be:

☒ The address associated with the above-identified Customer Number.
OR
☐ The address associated with the Customer Number identified in the box at right:
OR

☐ Firm or Individual Name					
Address					
City		State		Zip	
Country					
Telephone		Email			

NOTE: THE CORRESPONDENCE ADDRESS FOR THE REEXAMINATION OR SUPPLEMENTAL EXAMINATION PROCEEDING CONTROL NUMBER(S) MUST BE THE SAME AS THAT FOR THE PATENT. SEE 37 CFR 1.33.

III. Authorization for Power of Attorney and (if selected) Change of Correspondence Address

I am the:
☒ Inventor, having ownership of the patent being reexamined.
OR
☐ Patent owner.
Statement under 37 CFR 3.73(c) (Form PTO/AIA/96) submitted herewith or filed on _____.

Signature of Inventor or Patent Owner	Chien-Hao Chen	Date	07/26/24
Name	Chien-Hao Chen	Telephone	
Title and Company			

NOTE: Signatures of all the inventors or patent owners of the entire interest or their representative(s) are required. If more than one signature is required, submit multiple forms, check the box below, and identify the total number of forms submitted in the blank below.

☐ A total of _____ forms are submitted. *If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.*

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. The United States Patent and Trademark Office (USPTO) collects the information in this record under authority of 35 U.S.C. 2. The USPTO's system of records is used to manage all applicant and owner information including name, citizenship, residence, post office address, and other information with respect to inventors and their legal representatives pertaining to the applicant's/owner's activities in connection with the invention for which a patent is sought or has been granted. The applicable Privacy Act System of Records Notice for the information collected in this form is COMMERCE/PAT-TM-7 Patent Application Files, available in the Federal Register at 78 FR 19243 (March 29, 2013), https://www.govinfo.gov/content/pkg/FR-2013-03-29/pdf/2013-07341.pdf

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If you do not furnish the information requested on this form, the USPTO may not be able to process and/or examine your submission, which may result in termination of proceedings, abandonment of the application, and/or expiration of the patent.

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Additional USPTO uses of the information in this record may include disclosure to: 1) the International Bureau of the World Intellectual Property Organization, if the record is related to an international application filed under the Patent Cooperation Treaty; 2) the public i) after publication of the application pursuant to 35 U.S.C. 122(b), ii) after issuance of a patent pursuant to 35 U.S.C. 151, iii) if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections, or an issued patent, or iv) without publication of the application or patent under the specific circumstances provided for by 37 CFR 1.14(a)(1)(v)-(vii); and/or 3) the National Archives and Records Administration, for inspection of records.

CERTIFICATE OF SERVICE UNDER §§ 1.248 AND 1.550

In compliance with 37 C.F.R. §§ 1.248 and 1.550, the undersigned hereby certifies that copies of the following documents are being served on the Third Party Requestor, at the below service address, by first class mail on July 29, 2024:

1) Executed Power of Attorney; and

2) Waiver of Right to File Patent Owner Statement.

Service Address:

Kai Rajan
Finnegan, Hnderson, Farabow, Garrett & Dunner, LLP
901 New York Avenue, NW
Washington, DC 20001-4413

Thermaltake Tech. Co. v. Lian Li Ind. Co., Ex-2007
Page 599 of 1016, IPR2024-01230

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ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
90/019,565	**07/29/2024 03:33:27 PM Z ET**	**16445.0001-00000**

Title of Invention

ILLUMINATION FAN CONNECTABLE WITH AT LEAST ONE ILLUMINATION FAN FOR A COMPUTER

Application Information

APPLICATION TYPE	Utility / ex parte reexam	PATENT #	10690336
CONFIRMATION #	5828	FILED BY	Denise Kinsman
PATENT CENTER #	66562612	FILING DATE	07/02/2024
CUSTOMER #	60601	FIRST NAMED INVENTOR	- 10690336
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Heath Briggs

Documents

TOTAL DOCUMENTS: 3

DOCUMENT		PAGES	DESCRIPTION	SIZE (KB)
219491-010000_AS_FILED_POA.pdf		3	Power of Attorney	1288 KB
219491-010000_AS_FILED_Waiver_of_Right_to_File_Patent_Owner_Statement_and_Certificate_of_Service.pdf		2	-	121 KB
219491-010000_AS_FILED_Waiver_of_Right_to_File_Patent_Owner_Statement_and_Certificate_of_Service-RXLET..pdf	(1-1)	1	Reexam Miscellaneous Incoming Letter	93 KB

219491-010000_AS_FILED_Waiver_of_Right_to_File_Patent_Owner_Statement_and_Certificate_of_Service-RXC/SR.pdf	(2-2)	1	Reexam Certificate of Service	117 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
219491-010000_AS_FILED_POA.pdf	76AB39ECB2E22BE39F186FE9DF3EC130459C70D6CA13D6557E3C5D9DC590D6222D408581A26D898FD98832A43134059ECBC1E463C213979FF9ED2D997E682B79
219491-010000_AS_FILED_Waiver_of_Right_to_File_Patent_Owner_Statement_and_Certificate_of_Service.pdf	C93CCABA8391EA55DC952980C701789331EA2B19C9FDFBC94830CD2D5AB268D620837D980357AD6B17D92F33B27361BE690DB14ACA3CD32AAA073EF12D558E25
219491-010000_AS_FILED_Waiver_of_Right_to_File_Patent_Owner_Statement_and_Certificate_of_Service-RXLET..pdf	4E4428011EB6C12A84DC851A610D9BEFB087E7615A17FEF89A553C1C7E6FEA26C3B42CAB7F04B577EDFC6941130C7AE6B144A7A4BDC1285CAC4C5E08855AFDF2
219491-010000_AS_FILED_Waiver_of_Right_to_File_Patent_Owner_Statement_and_Certificate_of_Service-RXC/SR.pdf	38DF1B73D9838F6398EBDF0E0AFDEA3AAE4C0531F01ABF3A8FBFEE6B81916DB9AF080B29FAC89218523C75FA2729B7EC109C8608D032FB05C675CB4E2B65CCD6

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement

Receipt will establish the filing date of the application

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

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United States Patent and Trademark Office
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
90/019,565	07/02/2024	10690336	16445.0001-00000

CONFIRMATION NO. 5828

60601
Muncy, Geissler, Olds & Lowe, P.C.
125 S. Royal St.
Alexandria, VA 22314

POWER OF ATTORNEY NOTICE

Date Mailed: 07/31/2024

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 07/29/2024.

- The Power of Attorney to you in this application has been revoked by the applicant. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/rbell/

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
90/019,565	07/02/2024	10690336	16445.0001-00000

CONFIRMATION NO. 5828

37705
GREENBERG TRAURIG (DEN)
1144 15th Street, Suite 3300
DENVER, CO 80202

POA ACCEPTANCE LETTER

OC00000075880175

Date Mailed: 07/31/2024

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 07/29/2024.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/rbell/

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BIB DATA SHEET

CONFIRMATION NO. 5828

SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
90/019,565	07/02/2024	362	3993	16445.0001-00000

APPLICANTS

Chien-Hao Chen, Residence Not Provided;
Axpertic Inc. (aka Phanteks USA), N. City of Industry, CA;

INVENTORS

10690336, Residence Not Provided;
LLP FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER, Residence Not Provided;
Chien-Hao Chen (PO), Yilan County, TAIWAN;

**** CONTINUING DATA ***************************

This application is a REX of 16/403,867 05/06/2019 PAT 10690336

**** FOREIGN APPLICATIONS ***************************

TAIWAN 107217659 U 12/26/2018

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ****

Foreign Priority claimed ❑ Yes ❑ No 35 USC 119(a-d) conditions met ❑ Yes ❑ No Verified and Acknowledged _____ Examiner's Signature	❑ Met after Allowance _____ Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
				5	1

ADDRESS

GREENBERG TRAURIG (DEN)
1144 15th Street, Suite 3300
DENVER, CO 80202
UNITED STATES

TITLE

ILLUMINATION FAN CONNECTABLE WITH AT LEAST ONE ILLUMINATION FAN FOR A COMPUTER

FILING FEE RECEIVED	FEES: Authority has been given in Paper	❑ All Fees
0.00	No._____ to charge/credit DEPOSIT ACCOUNT	❑ 1.16 Fees (Filing)
	No._____ for following:	❑ 1.17 Fees (Processing Ext. of time)
		❑ 1.18 Fees (Issue)
		❑ Other _____
		❑ Credit

Reexamination	Application/Control No.	Applicant(s)/Patent Under Reexamination
	90/019,565	10690336
	Certificate Date	Certificate Number

Requester Correspondence Address: ☐ Patent Owner ☑ Third Party
FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER, LLP 901 NEW YORK AVENUE, NW WASHINGTON, DC 20001-4413

LITIGATION REVIEW ☑	LLD (examiner initials)	17 July 2024 (date)
Case Name		Director Initials
Lian Li Industrial Co., Ltd. ET AL v. Thermaltake Technology Co., Ltd. ET AL, 2:23cv7470, US District Court for the Central District of California		/rds/ for DPR
Lian Li Industrial Co., Ltd. ET AL v. Phanteks Europe ET AL, 2:23cv7471, US District Court for the Central District of California		PLE for DPR

COPENDING OFFICE PROCEEDINGS	
TYPE OF PROCEEDING	NUMBER

/Laura Davison/ Reexamination Specialist, Art Unit 3993	

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/019,565	07/02/2024	10690336	16445.0001-00000	5828

37705 7590 10/17/2024
GREENBERG TRAURIG (DEN)
1144 15th Street, Suite 3300
DENVER, CO 80202

EXAMINER
DAVISON, LAURA L

ART UNIT	PAPER NUMBER
3993	

MAIL DATE	DELIVERY MODE
10/17/2024	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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Commissioner for Patents
United States Patent and Trademark Office
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Alexandria, VA 22313-1450
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(THIRD PARTY REQUESTER'S CORRESPONDENCE ADDRESS)

FINNEGAN, HENDERSON, FARABOW, GARRETT &
DUNNER, LLP
901 NEW YORK AVENUE, NW
WASHINGTON, DC 20001-4413

EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. *90/019,565* .

PATENT UNDER REEXAMINATION *10690336* .

ART UNIT *3993* .

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified *ex parte* reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the *ex parte* reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

Office Action in Ex Parte Reexamination	**Control No.** 90/019,565	**Patent Under Reexamination** 10690336	
	Examiner Laura L Davison	**Art Unit** 3993	**AIA (FITF) Status** Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

a. ☑ Responsive to the communication(s) filed on 02 July 2024.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

b. ☐ This action is made FINAL.

c. ☑ A statement under 37 CFR 1.530 has not been received from the patent owner.

A shortened statutory period for response to this action is set to expire 2 month(s) from the mailing date of this letter. Failure to respond within the period for response will result in termination of the proceeding and issuance of an *ex parte* reexamination certificate in accordance with this action. 37 CFR 1.550(d). **EXTENSIONS OF TIME ARE GOVERNED BY 37 CFR 1.550(c).** If the period for response specified above is less than thirty (30) days, a response within the statutory minimum of thirty (30) days will be considered timely.

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

1. ☐ Notice of References Cited by Examiner, PTO-892.
2. ☐ Information Disclosure Statement, PTO/SB/08.
3. ☐ Interview Summary, PTO-474.
4. ☐ _____.

Part II SUMMARY OF ACTION

1a. ☑ Claims 1-5 are subject to reexamination.
1b. ☐ Claims _____ are not subject to reexamination.
2. ☐ Claims _____ have been canceled in the present reexamination proceeding.
3. ☐ Claims _____ are patentable and/or confirmed.
4. ☑ Claims 1-5 are rejected.
5. ☐ Claims _____ are objected to.
6. ☐ The drawings, filed on _____ are acceptable.
7. ☐ The proposed drawing correction, filed on _____ has been (7a) ☐ approved (7b) ☐ disapproved.
8. ☐ Acknowledgment is made of the priority claim under 35 U.S.C. 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the certified copies have
   1 ☐ been received.
   2 ☐ not been received.
   3 ☐ been filed in Application No. _____.
   4 ☐ been filed in reexamination Control No. _____.
   5 ☐ been received by the International Bureau in PCT application No. _____.
   * See the attached detailed Office action for a list of the certified copies not received.
9. ☐ Since the proceeding appears to be in condition for issuance of an *ex parte* reexamination certificate except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte* Quayle, 1935 C.D. 11, 453 O.G. 213.
10. ☐ Other: _____

cc: Requester (if third party requester)

Thermaltake Tech. Co. v. Lian Li Ind. Co., Ex-2007
Page 609 of 1016, IPR2024-01230

DETAILED ACTION

Notice of Pre-AIA or AIA Status

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Service of Papers

After the filing of a request for reexamination by a third part requester, any document filed by either the patent owner or the third party requester must be served on the other party (or parties where two or more third party requester proceedings are merged) in the reexamination proceeding in the manner provided in 37 C.F.R. 1.248. *See* 37 C.F.R. 1.550(c).

Submissions

In order to ensure full consideration of any affidavits or declarations or other documents as evidence of patentability, such documents must be submitted in response to this Office action. Submissions after the next Office action, which is intended to be a final action, will be governed by the requirements of 37 C.F.R. 1.116 after final rejection and by 37 C.F.R. 41.33 after appeal, which will be strictly enforced.

Amendment in Reexamination Proceedings

Patent Owner is notified that any proposed amendment to the specification and/or claims in this reexamination proceeding must comply with 37 C.F.R. 1.52(a) and (b), and must be accompanied by any fees required by 37 C.F.R. 1.20(c). *See* MPEP § 2250, subsection IV, for

examples to assist in the preparation of proper proposed amendments in reexamination proceedings.

Notice of Concurrent Proceedings

Patent Owner is reminded of the continuing responsibility under 37 C.F.R. 1.565(a) to apprise the Office of any litigation activity, or other prior or concurrent proceeding, involving the patent throughout the course of this reexamination proceeding. Likewise, the third party requester is also reminded of the ability to similarly apprise the Office of any such activity or proceeding throughout the course of this reexamination proceeding. *See* MPEP §§ 2207, 2282, and 2286.

Extensions of Time

Extensions of time under 37 C.F.R. 1.136(a) will not be permitted in these proceedings because the provisions of 37 C.F.R. 1.136 apply only to "an applicant" and not to parties in a reexamination proceeding. Additionally, 35 U.S.C. 305 requires that *ex parte* reexamination proceedings "will be conducted with special dispatch" (37 C.F.R. 1.550(a)). Extensions of time in *ex parte* reexamination proceedings are provided for in 37 C.F.R. 1.550(c).

Brief Description of the Proceedings

The Third Party Requester (TPR) requested reexamination of claims 1-5 of U.S. Patent No. 10,690,336 (hereinafter the '336 patent) based upon the following proposed rejections:

Ground 1: Claims 1-4 are unpatentable in light of Fujitsu (JP 2018041147 A, hereinafter Fujitsu) in combination with Tsai (CN 207064277 U, hereinafter Tsai).

Ground 2: Claim 5 is unpatentable in light of Fujitsu in combination with Tsai and Chou et al. (US 2008/0279694 A1, hereinafter Chou).

Ground 3: Claims 1, 2, and 4 are unpatentable in light of Lai (US 2017/0314777 A1, hereinafter Lai) in combination with Fujitsu.

Ground 4: Claim 5 is unpatentable in light of Lai in combination with Fujitsu and Chou.

An order was mailed on July 18, 2024, finding that Grounds 1-4 above raised a substantial new question of patentability (SNQ). In a letter filed July 29, 2024, Patent Owner (PO) waived the right under 37 C.F.R. 1.530 to file a Patent Owner Statement.

Claim Rejections - 35 USC § 102/103

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a)(1) the claimed invention was patented, described in a printed publication, or in public use, on sale, or otherwise available to the public before the effective filing date of the claimed invention.
>
> (a)(2) the claimed invention was described in a patent issued under section 151, or in an application for patent published or deemed published under section 122(b), in which the patent or application, as the case may be, names another inventor and was effectively filed before the effective filing date of the claimed invention.

The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 2 are rejected under 35 U.S.C. 102(a)(1) and 102(a)(2) as anticipated by Lai or, in the alternative, under 35 U.S.C. 103 as obvious over Lai in view of Fujitsu.

Regarding **claim 1**, Lai discloses an illumination fan (LED fan 10, Fig. 3) connectible with at least one illumination fan (¶ 12)[1], comprising: a body provided with a fan in a center of the body (*see* Fig. 3), an illumination area on at least two sides of the fan at a top of the body (at LEDs 16, Figs. 2 and 4-6; ¶¶ 11 and 13-16), a power socket and a first connector (shown as input 111 in schematic view of Fig. 2, the power socket being the input power supply connection of the fan 10, and the first connector being any other of the input connections of the fan 10 for connecting the fan 10 to the controller 20 or to an adjacent fan 10, as shown in Figs. 4-6) on one side of the body (i.e., on the side closest to the controller 20, Fig. 3), and a second connector (shown as output 112 in schematic view of Fig. 2, from the fan 10 to the next fan 10 in series, connected via transmission line 12 in Fig. 3; *see also* Figs. 4-6) on another side of the body (i.e., on the side closest to the next fan 10 in the series, Fig. 3), wherein the power socket is electrically connected with the first connector, the second connector, the fan and the illumination area (*see* Figs. 2 and 4-5), 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 (¶ 16), and when the first connector of the body is connected with a second connector of a body of another illumination fan (*i.e.*, when the input connectors of one fan are connected with the output connectors of the adjacent fan in the series, *e.g.*, via a transmission line 12, Fig. 3), a fan and an illumination area of the body of the other illumination fan are respectively driven into rotation and illumination (¶ 16).

Although the schematic view of the fan shown in Fig. 2 of Lai illustrates the input (111) and the output connectors (112) on the same side of the fan body, the fan shown in Fig. 3 of Lai is understood to show the input and output connectors on opposite sides of the fan body, *e.g.*, for

[1] The preamble phrase "for a computer" describes an intended use of the claimed fan and does not further limit its structure. Therefore, the phrase "for a computer" is not a claim limitation. *See* MPEP § 2111.02, subsection II.

connection to a controller (20) on one side via a transmission line (13) and to another fan on another side via another transmission line (12), or for connection to one fan on one side via a first transmission line (12) and to another fan on the other side via a second transmission line (12). For that reason, Lai is understood to anticipate claim 1.

If there is any doubt regarding the examiner's interpretation of Lai as disclosing a power socket and a first connector on one side of the body and a second connector on another side of the body, then Fujitsu clearly discloses a fan (fan unit 10, Figs. 5-7) comprising: a body (fan unit 10) provided with a power socket (female power connector CNA and/or CNB, *see* ¶¶ 31 and 39) and a first connector (inter-fan connector CNC, ¶ 31) on one side of the body, and a second connector (inter-fan connector CND) on another side of the body. The power socket (CNA, CNB) is electrically connected with the first connector (CNC), the second connector (CND), a fan (11), and an illumination area (12; *see* Fig. 14). When the power socket (CNA, CNB) on the one side of the body is supplied with power, the fan (11) and the illumination area (12) of the body are respectively driven into rotation and illumination (*see* ¶¶ 27, 31, and 39-40). When the first connector (CNC) of the body is connected with the second connector (CND) of a body of another illumination fan, a fan (11) and an illumination area (12) of the body of the other illumination fan are respectively driven into rotation and illumination ("two adjacent fan units 10 among the plurality of 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," ¶ 31). Therefore, it would have been obvious to one of ordinary skill in the art to provide the body of Lai with a power socket and a first connector on one side of the body and a second connector on another side of the body, as taught by Fujitsu, in order to facilitate a serial arrangement of fans (as shown in Fig. 3 of Lai and Figs. 5-6 of Fujitsu).

Regarding **claim 2**, Lai or the modified Lai teaches the claimed invention substantially as claimed, as set forth above for claim 1. Lai further teaches an electrically conductive terminal (any one or more of the input nodes of fan 10 shown in Figs. 4-6) provided in the first connector, and an electrically conductive contact surface (any one or more of the output nodes of fan 10 shown in Figs. 4-6) is provided in the second connector for being electrically connected with the electrically conductive terminal (via transmission line 12, Fig. 3), 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 (via transmission line 12), the fan and the illumination area of the body of the other illumination fan are respectively driven into rotation and illumination (¶ 16, such that the controller 20 connected to the first fan "can adjust each individual LED light on multiple LED fans while simultaneously control[ing] all fan speeds too"). One of ordinary skill in the art would clearly understand from the disclosure of Lai that the input and output nodes of the fan include an electrically conductive terminal and an electrically conductive contact surface, these being necessary components for transmitting the power and control signals (i.e., conducting electricity) to the multiple fans when connected in series.

Claim Rejections - 35 USC § 103

Claim 3 is rejected under 35 U.S.C. 103 as obvious over Lai, or Lai in view of Fujitsu.

Regarding **claim 3**, Lai or the modified Lai teaches the claimed invention substantially as claimed, as set forth above for claim 1. Lai does not explicitly teach that the illumination areas of two connected fan bodies form a continuous illumination area. However, the arrangement of the illumination areas is understood to be a matter of aesthetic design choice, there being no

objective evidence of record to indicate that the continuous configuration of the illumination areas serves any mechanical function. It would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to modify or further modify the invention of Lai by arranging the illumination areas in any desired aesthetic configuration, including a continuous illumination area (e.g., by extending the illuminated area to adjacent edges of the connected fans), in order to enhance the aesthetic appearance of the fans, since the courts have held that "matters relating to ornamentation only which have no mechanical function cannot be relied upon to patentably distinguish the claimed invention over the prior art." *See* MPEP 2144.04, subsection I, citing *In re Seid*, 161 F.2d 229, 73 USPQ 431 (CCPA 1947).

Claim 4 is rejected under 35 U.S.C. 103 as obvious over Lai in view of Fujitsu.

Regarding **claim 4**, Lai or the modified Lai teaches the claimed invention substantially as claimed, as set forth above for claim 1. Lai does not teach a groove and an engaging block for connecting the fan bodies. However, Fujitsu further teaches a groove (*i.e.*, the female socket of connector CND) is provided on one side of the body of the illumination fan, while an engaging block (*i.e.*, the projection of the connector CNC) is provided on another side thereof to be engaged into the groove (¶ 38), 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 the other illumination fan (¶ 38; *see* Figs. 5-6). It would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to modify or further modify the invention of Lai by providing a groove on one side of the body and an engaging block on another side of the body, as taught by Fujitsu, in order to facilitate a secure connection between adjacent fan bodies.

Claim 5 is rejected under 35 U.S.C. 103 as obvious over Lai, or Lai in view of Fujitsu, in further view of Chou.

Regarding **claim 5**, Lai or the modified Lai teaches the claimed invention substantially as claimed, as set forth above for claim 1. Lai does not teach a groove provided on two sides of the body and an engaging block. However, in the fan art, Chou discloses a fan body (Figs. 2 and 4) with a groove (sliding rail 246, Fig. 2; ¶ 22) on two sides of the body, configured such that the fan body can be connected with another fan body by respectively engaging an engaging block (connecting member 46; ¶ 26) with one of the grooves on the side of the fan body and one of the grooves on the side of the other fan body (*see* Fig. 4, the engaging block 46 engaging the sliding rails 246 of the pair of fans 4). It would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to modify or further modify the invention of Lai by providing a groove as taught by Chou on two sides of the body and connecting the body to the body of another illumination fan by respectively engaging an engaging block as taught by Chou 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 the other illumination fan, in order to facilitate a secure connection of adjacent fans.

Claims 1-4 are rejected under 35 U.S.C. 103 as being unpatentable over Fujitsu in view of Tsai.

Regarding **claim 1**, Fujitsu discloses an illumination fan (fan unit 10, Figs. 5-7, illuminated at indicator lamp 12; *see* ¶¶ 25-26 and 40) connectable with at least one other illumination fan (*see* Figs. 5-6) for a computer (e.g., a server or other "electronic apparatus such as information processing device," ¶ 25), comprising: a body (fan unit 10) provided with a fan

(cooling fan 11) in a center of the body (*see* Fig. 7; ¶27), an illumination area (indicator lamp 12, Fig. 7, ¶ 40), a power socket (female power connector CNA and/or CNB, *see* ¶¶ 31 and 39) and a first connector (inter-fan connector CNC, ¶ 31) on one side of the body, and a second connector (inter-fan connector CND) on another side of the body. The power socket (CNA, CNB) is electrically connected with the first connector (CNC), the second connector (CND), the fan (11), and the illumination area (12; *see* Fig. 14). When the power socket (CNA, CNB) on the one side of the body is supplied with power, the fan (11) and the illumination area (12) of the body are respectively driven into rotation and illumination (*see* ¶¶ 27, 31, and 39-40). When the first connector (CNC) of the body is connected with the second connector (CND) of a body of another illumination fan, a fan (11) and an illumination area (12) of the body of the other illumination fan are respectively driven into rotation and illumination ("two adjacent fan units 10 among the plurality of 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," ¶ 31).

Fujitsu does not disclose that the illumination area is on at least two sides of the fan at the top of the body. However, in the art of illumination fans, Tsai teaches a fan body (Figs. 1-4) with a fan (motor 41 with blades 42) in a center of the body and an illumination area (translucent light-guiding ring 20, ¶ 34) on at least two sides of the fan (41, 42) at the top of the body (*see* Fig. 1, the illumination area defined by the annular light-guiding ring 20 surrounding the fan 41, 42 on all sides at the top of the body). Tsai teaches that this arrangement is advantageous for providing an attractive and colorful appearance to the fan (¶ 1-3). Therefore, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to modify the invention of Fujitsu by arranging the illumination area on at least two sides of the

fan at the top of the body, as taught by Tsai, in order to enhance the aesthetic appearance of the fan.

Regarding **claim 2**, the modified Fujitsu teaches the claimed invention substantially as claimed, as set forth above for claim 1. Fujitsu further discloses an electrically conductive terminal is provided in the first connector (CNC) and an electrically conductive contact surface is provided in the second connector (CND) for being electrically connected with the electrically conductive terminal ("a connector CNC (male) that enables power supply and live connection of the control signal/monitoring signal is provided by protruding on the right side surface … A connector CND (female) that enables power supply and live connection of the control signal/monitoring signal is provided by recessing on the left side surface … Two adjacent fan units 10 are connected so as to enable power supply and transmission of the control signal/monitoring signal by engaging the connector CNC of the fan unit 10 on one side and the connector CND of the fan unit 10 on the other end," ¶ 38). One of ordinary skill in the art would clearly understand from the disclosure of Fujitsu that the connectors CNC, CND include an electrically conductive terminal and an electrically conductive contact surface, these being necessary components for enabling the power supply and transmitting the control signal (i.e., conducting electricity) to multiple fans connected in series.

Regarding **claim 3**, the modified Fujitsu teaches the claimed invention substantially as claimed, as set forth above for claim 1. The annular illumination area taught by Tsai extends to the outer periphery of the fan (*see* light-guiding ring 20 of Tsai, Fig. 1). Thus, when the fan bodies of Fujitsu are modified to include illumination areas in the configuration taught by Tsai, the illumination areas of two connected fan bodies will form a continuous illumination area due

to the immediate proximity of the two illumination areas at the adjacent outer peripheries of the two fan bodies.

Regarding **claim 4**, the modified Fujitsu teaches the claimed invention substantially as claimed, as set forth above for claim 1. Fujitsu further teaches a groove (*i.e.*, the female socket of connector CND) is provided on one side of the body of the illumination fan, while an engaging block (*i.e.*, the projection of the connector CNC) is provided on another side thereof to be engaged into the groove (¶ 38), 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 the other illumination fan (¶ 38; *see* Figs. 5-6).

Claim 5 is rejected under 35 U.S.C. 103 as being unpatentable over Fujitsu in view of Tsai, in further view of Chou.

Regarding **claim 5**, the modified Fujitsu teaches the claimed invention substantially as claimed, as set forth above for claim 1. Fujitsu and Tsai do not teach a groove provided on two sides of the body and the body being 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 the other illumination fan. Fujitsu discloses that the two fans, connected as discussed above for claim 1, are supported in the computer casing in a sliding arrangement (*see* Figs. 5-6 and ¶ 36), but Fujitsu is silent with respect to the structure for accomplishing this function. However, in the fan art, Chou discloses a fan body (Figs. 2 and 4) with a groove (sliding rail 246, Fig. 2; ¶ 22) on two sides of the body, configured such that the fan body can be connected with another fan body by respectively engaging an engaging block (connecting member 46; ¶ 26) with one of the grooves on the side of

the fan body and one of the grooves on the side of the other fan body (*see* Fig. 4, the engaging block 46 sliding along the sliding rails 246 of the pair of fans 4). It would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to further modify the invention of Fujitsu by providing a groove as taught by Chou on two sides of the body and connecting the body to the body of another illumination fan by respectively engaging an engaging block as taught by Chou 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 the other illumination fan, in order to support the connected fans as the fans are slid into and out of the computer casing.

Conclusion

All correspondence relating to this *ex parte* reexamination proceeding should be directed as follows:

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Any inquiry concerning the status of this proceeding, should be directed to the Central Reexamination Unit (CRU) at telephone number: (571) 272-7705. The CRU's fax number is: (571) 273-9900. Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAURA L DAVISON whose telephone number is (571) 270-0189. The examiner can normally be reached Monday - Friday, 8:00 a.m. - 4:00 p.m. ET.

/Laura Davison/
Reexamination Specialist, Art Unit 3993

Conferees:

/JOSHUA KADING/
Reexamination Specialist, Art Unit 3993

/Patricia L Engle/
SPRS, Art Unit 3993

Litigation Search Report CRU 3999

Reexamination Control No. 90/019,565

To:	DAVISON, Laura	**From:**	GRAVES, Monica A.
Location:	OCRU	**Location:**	OCRU
Art Unit:	3993	**Phone:**	2-7253
Date:	01 November 2024	**E-mail:**	monica.graves@uspto.gov

Search Notes

US PATENT NO: 10,690,336 - Litigation Found

CACD - 2:23cv7470
CACD - 2:23cv7471

See Attached

1. Performed a KeyCite Search in Westlaw, which retrieves all history on the patent including any litigation.
2. Performed a search on the patent in Lexis CourtLink for any open dockets or closed cases.
3. Performed a search in Lexis in the Federal Courts and Administrative Materials databases for any cases found.
4. Performed a search in Lexis in the IP Journal and Periodicals database for any articles on the patent.
5. Performed a search in Lexis in the news databases for any articles about the patent or any articles about litigation on this patent.

Paper No. 20241101

Citing References (12)

Treatment	Title	Date	Type	Depth	Headnote(s)
—	**1. PatStat 10690336** Out Of Plan ... Patent Status File Patent Number: US 10690336 Change Code: IPR Description: AIA Trial Proceedings Filed before The Patent Trial and Appeal Board Reissue Number:OG Date: 09/17/2024 ...	Sep. 17, 2024	Patent Status Files	—	—
—	**2. PatStat 10690336** Out Of Plan ... Patent Status File Patent Number: US 10690336 Change Code: RXA Description: Request for Re-Examination Reissue Number:OG Date: 09/17/2024 ...	Sep. 17, 2024	Patent Status Files	—	—
—	**3. Lian Li Industrial Co., Ltd. ET AL v. Thermaltake Technology Co., Ltd. ET AL**	Sep. 08, 2023	Docket Summaries	—	—
—	**4. Lian Li Industrial Co., Ltd. ET AL v. Phanteks Europe ET AL**	Sep. 08, 2023	Docket Summaries	—	—
—	**5. LIGHT-EMITTING FAN CAPABLE OF BEING CONNECTED WITH MULTIPLE SETS FOR COMPUTERS** Out Of Plan US PAT 12123588 , U.S. PTO Utility A light-emitting fan contains: a frame, a motor, a fan blade, a slidably electrical connector, and a power connector. The frame includes a first electrical connection portion and a... ... English References Cited US Patents and Applications:US United States US 10184478 B2 2019/01 Lai F04D 25/0613 cited by examiner US United States US 10690336 B1 2020/06 Chen G06F 1/20 cited by examiner US United States US 11686467 B1 2023/06 Yuan 362/096 F04D 25/166 ...	Oct. 22, 2024	Patents	—	—
—	**6. SMART-FAN COMPONENTS, CONTROLS AND SYSTEMS** Out Of Plan US PAT 11962220 , U.S. PTO Utility A network-controllable cooling fan can have a recessed connector port with an internal tongue that defines an edge connector having a plurality of electrical contacts. The tongue... ... 48 H05K 7/20727 cited by examiner US United States US 9477438 B1 2016/10 Hochman H01R 13/665 cited by examiner US United States US 10690336 B1 2020/06 Chen G06F 1/20 cited by examiner US United States US 20050135060 A1 2005/06 Cote G11B 33/127 cited by ...	Apr. 16, 2024	Patents	—	—

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Treatment	Title	Date	Type	Depth	Headnote(s)
—	**7. LUMINOUS FAN CONNECTION STRUCTURE** Out Of Plan US PAT 11686467 , U.S. PTO Utility A luminous fan connection structure. The luminous fans are disposed adjacent to each other in a side-by-side manner. A blade is arranged in a frame base. A light guide ring... ... 522 F04D 29/002 F04D 29/023 F04D 29/601 Drawing Pages:9 9 Language:English References Cited US Patents and Applications:US United States US 10690336 B1 2020/06 Chen F21V 33/0096 cited by examiner US United States US 20110116234 A1 2011/05 Ye 362/096 F21V 33/0096 ...	June 27, 2023	Patents	—	—
—	**8. MAGNETICALLY ATTRACTED FAN SET** Out Of Plan US PAT APP 20230366407+ , U.S. PTO Application A magnetically attracted fan set comprises N+1 fans, the N#1, and each of the N+1 fans has a fan frame and an airflow generating component disposed on the fan frame. Any two... ... order to improve the aforementioned problems, fan manufacturers have changed to join the fans without using additional fixing members, as disclosed in patents such as U.S. Pat. No. 10,690,336B and CN 101725571B Taking U.S. Pat. No. 10,690,336B as an example, the fans are provided with slots or positioning blocks on the ...	Nov. 16, 2023	Patents	—	—
—	**9. MAGNETICALLY ATTRACTED FAN SET** Out Of Plan US PAT APP 20220381253+ , U.S. PTO Application A magnetically attracted fan set comprises N+1 fans, the N#1, and each of the N+1 fans has a fan frame and an airflow generating component disposed on the fan frame. Any two... ... order to improve the aforementioned problems, fan manufacturers have changed to join the fans without using additional fixing members, as disclosed in patents such as U.S. Pat. No. 10,690,336B and CN 101725571B Taking U.S. Pat. No. 10,690,336B as an example, the fans are provided with slots or positioning blocks on the ...	Dec. 01, 2022	Patents	—	—
—	**10. Magnetic fan group** Out Of Plan CN PAT 214837258 U A magnetic suction fan group includes N+1 fans, where N1, and each of the N+1 fans has a fan frame and an airflow generating component arranged on the fan frame. Any two adjacent... ... order to improve the aforementioned problems, fan manufacturers have changed to splicing these fans without using additional fasteners, as disclosed in US patents such as US 10,690,336B and China CN 101725571B. Taking US 10,690,336B as an example, the fans are provided with card slots or positioning blocks on the fan frame ...	Nov. 23, 2021	Patents	—	—

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Treatment	Title	Date	Type	Depth	Headnote(s)
—	**11. Magnetic fan unit** Out Of Plan CN PAT APP 115388019 A A magnetic suction fan group, the fan group includes N+1 fans, where N1, each of the N+1 fans has a fan frame and an air flow generating component arranged on the fan frame. Any... ... to improve the above-mentioned problems, the fan manufacturers have spliced these fans together without using additional fixing parts, as disclosed in patents such as US 10,690,336B and Chinese CN 101725571B. Take the United States US10,690,336B as an example, these fans are provided with slots or positioning blocks on the ...	Nov. 25, 2022	Patents	—	—
—	**12. Fan assembly with a magnetic attachment** Out Of Plan DE PAT 202021102818 U1 A fan assembly with a magnetic attachment or coupling, the fan assembly having N + 1 fans (10, 20), where N is greater than or equal to 1, and wherein each of the fans (10, 20) has... ... or utility model application. The DPMA assumes no liability for any errors or omissions.Patent literature cited[0000] TW M396884 [0002]US 2017/0331346 [0002] US 10690336 [0003]CN 101725571 B [0003 ...	Aug. 05, 2021	Patents	—	—

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Results for: 10690336 or 10,690,336 Terms and Connectors

Cases 0

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Results for: 10690336 or 10,690,336

Dockets (2) Sort by: Relevance

1.

Thermaltake Technology Co., Ltd. et al. Vs. - -

United States Patent Trial and Appeal Board | Jul 26, 2024 | IPR2024-01230 | Open
... of Attorney 24 2024-07-26 Petition for Inter Partes Review of U.S. **Patent** No. **10,690,336** 57979664 Filed By: PETITIONER Document Type: PAPER Paper/Exhibit No: 1...
... Yes File History for U.S. **Patent** No. **10,690,336** B1 to Chen 22 2024-07-26 U.S. **Patent** No. **10,690,336** B1 to Chen 57979666 Filed By: PETITIONER Document Type: EXHIBIT Paper/Exhibit ...
... Taiwanese **Patent** Application No. 107217659 U, filed on December 26, 2018 21 2024-07-26 File History for U.S. **Patent** No. **10,690,336** B1 to Chen 57979667 Filed By: PETITIONER Document Type: EXHIBIT Paper/Exhibit ...
... Case Type IPR: Inter partes review Technical Center Number 2800 **Patent** Application Number 16403867 **Patent** Number **10690336** Thermaltake Technology Co., Ltd. et al. P Petitioner THERMALTAKE TECHNOLOGY CO ...
... (Dkt. No. 22 of the California Action) 8 2024-07-26 Complaint for **Patent** Infringement, No. 2:23-cv-07470-HDV-MARx (C.D. Cal.) 57979680 Filed By: PETITIONER Document Type: ...
... Yes Declaration of Dr. Andrew Wolfe (???Wolfe Decl.???) 20 2024-07-26 Taiwanese **Patent** Application No. 107217659 U, filed on December 26, 2018 57979668 Filed ...

2.

Norandal USA, Inc.

United States Bankruptcy Court, Missouri Eastern | Feb 08, 2016 | 4:16bk40743 | MEGA, MEMBER, PlnDue, JNTADMN, DISMISSED, CLOSED, DsclsDue
... 2158 HOLLYWOOD Dr JACKSON TN 38305 0 10693684 1 WILLIAMS **PATENT** CRUSHER C *cr* WILLIAMS **PATENT** CRUSHER 2016-02-09T08:30:00 2701 TO 2723 N BRdWAY ST LOUIS MO 63102 ...
... MOBILE WATER, INC. C *cr* GE MOBILE WATER INC 2016-02-09T08:29:00 4545 **PATENT** RD NORFOLK VA 23502 0 10687361 1 GELENA TIPPY C *cr* ...
... MILTON RICARDO DONALDSON C *cr* MILTON RICARDO DONALDSON 2016-02-09T08:29:00 REDACTED 0 **10690336** 1 MILTON ROY CO. INC. C *cr* MILTON ROY CO INC ...

Content type: Dockets

Terms: 10690336 or 10,690,336

Search Type: Boolean - Fewer Results

Narrow By: Search Within Results: patent

Date and Time: Nov 01, 2024 08:12:54 a.m. EDT

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Briefs, Pleadings and Motions (17) Sort by: Relevance

1.

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

Jul 26, 2024 | 2024 PAT. APP. FILINGS LEXIS 7326 | 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. | Petitions

... 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 ...

... 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 ...

... U.S. **Patent** No. **10,690,336** (the " '336 **Patent** ") is the subject of a co-pending civil litigation, ...

... 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 copending litigation: ...

... Counsel for Petitioners . PETITION FOR INTER PARTES REVIEW OF U.S. **PATENT** NO. **10,690,336** 2024 PAT. APP. FILINGS LEXIS 7326 ...

... and CHEN, CHIEN-HAO, **Patent** Owners. THERMALTAKE TECH. CO. v. LIAN LI INDUS. CO. IPR2024-01230; U.S. **Patent** No. **10,690,336** UNITED STATES **PATENT** AND TRADEMARK OFFICE **PATENT** TRIAL AND APPEAL BOARD...

2.

Exhibit D ; Proceeding Number : 43-4

California Central District Court | Jun 20, 2024 | Lian Li Industrial Co., Ltd. Et Al V. Thermaltake Technology, Co., Ltd. Et Al | Statement | 2:23cv7470

... Statement Exhibit D Thermaltakes Intrinsic and Extrinsic Evidence Proposed Construction This term is written as 336 **Patent** , Claim 1, Claim 2, Abstract; Figs. 1-5; a means-plus-function 1:53-2:11; 2:61-3:3; 3:7-16. subject ...

... to 112(f). Lian Li fan products marked with U.S. Pat. No. Function: **10,690,336** , including but not limited to, Uni Fan illumination. SL120 V2 and Uni ...

... AL120 V2. Structure: 336 Expert report (and potential testimony) of Dr. Fred **Patent** , Fig. 1 (3); Schubert. Fig. 2 (3); Fig. 3 (3); Fig. 4 (3); ...

... No. 2:23-cv-07470-HDV-MAR Claim Construction and Prehearing Statement Exhibit D A conductive structure 336 **Patent** , Claim 1, Claim 2, Abstract; Figs. 1-5; for making physical 1:53-2:11; 2:61-3:3; ...

... Lian Li fan products marked with U.S. Pat. No. close an electrical **10,690,336** , including but not limited to, Uni Fan circuit. SL120 V2 and Uni ...

... Chen. AL120 V2 Review SL120 V2 Review An opening or hollow 336 **Patent** , Claim 1, Abstract; Figs. 1-5; 1:53- that forms a holder for 2:2; ...

... Statement Exhibit D Thermaltakes Intrinsic and Extrinsic Evidence Proposed Construction This term is written as 336 **Patent** , Claim 1, Claim 2, Abstract; Figs. 1-5; a means-plus-function 1:53-2:11; 2:61-3:3; 3:7-16. subject ...

3.

Exhibit A

California Central District Court | Sep 08, 2023 | Lian Li Industrial Co., Ltd. Et Al V. Phanteks Europe Et Al | Complaint (Attorney Civil Case Opening) | 2:23cv7471

... #:9 Exhibit A Case 2:23-cv-07471 Document 1-1 TIRRETA az United States **Patent** Chen III US010690336B1 IT US **10,690,336** B1 Jun. 23, 2020 (10) **Patent** No.: 45) Date of **Patent** : (54) ILLUMINATION FAN CONNECTABLE WITH AT LEAST ONE ILLUMINATION FAN ...
... (TW) (*) Notice: Subject to any disclaimer, the term of this **patent** is extended or adjusted under 35 U.S.C. 154(b) by 0 days. ...
... See application file for complete search history. (56) References Cited U.S. **PATENT** DOCUMENTS 7,332,841 B2* 2/2008 Hsu .....cccooviiinnns HO2K 7/14 310/261.1 2004/0115986 Al1* ...
... **PATENT** DOCUMENTS 7,332,841 B2* 2/2008 Hsu .....cccooviiinnns HO2K 7/14 310/261.1 2004/0115986 Al1* ...
... Document 1-1 Filed 09/08/23 Page 30of 9 Page ID #:11 U.S. **Patent** Jun. 23,2020 Sheet 1 of 5 US **10,690,336** B1 Case 2:23-cv-07471 Document 1-1 Filed 09/08/23 Page 4 of 9 Page ID #:12 U.S. **Patent** Jun. 23,2020 Sheet 2 of 5 US **10,690,336** B1 ...
... **Patent** Chen III US010690336B1 IT US **10,690,336** B1 Jun. 23, 2020 (10) **Patent** No.: 45) Date of **Patent** : (54) ILLUMINATION FAN CONNECTABLE WITH AT LEAST ONE ILLUMINATION FAN ...
... (TW) (*) Notice: Subject to any disclaimer, the term of this **patent** is extended or adjusted under 35 U.S.C. 154(b) by 0 days. ...
4.

Exhibit A

California Central District Court | Sep 08, 2023 | Lian Li Industrial Co., Ltd. Et Al V. Thermaltake Technology, Co., Ltd. Et Al | Complaint (Attorney Civil Case Opening) | 2:23cv7470
... #:9 Exhibit A Case 2:23-cv-07470 Document 1-1 TIRRETA az United States **Patent** Chen III US010690336B1 IT US **10,690,336** B1 Jun. 23, 2020 (10) **Patent** No.: 45) Date of **Patent** : (54) ILLUMINATION FAN CONNECTABLE WITH AT LEAST ONE ILLUMINATION FAN ...
... (TW) (*) Notice: Subject to any disclaimer, the term of this **patent** is extended or adjusted under 35 U.S.C. 154(b) by 0 days. ...
... See application file for complete search history. (56) References Cited U.S. **PATENT** DOCUMENTS 7,332,841 B2* 2/2008 Hsu .....cccooviiinnns HO2K 7/14 310/261.1 2004/0115986 Al1* ...
... **PATENT** DOCUMENTS 7,332,841 B2* 2/2008 Hsu .....cccooviiinnns HO2K 7/14 310/261.1 2004/0115986 Al1* ...
... Document 1-1 Filed 09/08/23 Page 30of 9 Page ID #:11 U.S. **Patent** Jun. 23,2020 Sheet 1 of 5 US **10,690,336** B1 Case 2:23-cv-07470 Document 1-1 Filed 09/08/23 Page 4 of 9 Page ID #:12 U.S. **Patent** Jun. 23,2020 Sheet 2 of 5 US **10,690,336** B1 ...
... **Patent** Chen III US010690336B1 IT US **10,690,336** B1 Jun. 23, 2020 (10) **Patent** No.: 45) Date of **Patent** : (54) ILLUMINATION FAN CONNECTABLE WITH AT LEAST ONE ILLUMINATION FAN ...
... (TW) (*) Notice: Subject to any disclaimer, the term of this **patent** is extended or adjusted under 35 U.S.C. 154(b) by 0 days. ...
5.

Exhibit A ; Proceeding Number : 43-1

California Central District Court | Jun 20, 2024 | Lian Li Industrial Co., Ltd. Et Al V. Thermaltake Technology, Co., Ltd. Et Al | Statement | 2:23cv7470
... **Patent** Chen (54) ILLUMINATION FAN CONNECTABLE WITH AT LEAST ONE ILLUMINATION FAN FOR A COMPUTER (71) ...
... County (TW) - (*) Notice: Subject to any disclaimer, the term of this **patent** is extended or adjusted under 35 U.S.C. 154(b) by 0 days. (21) Appl. ...
... HOSK 7/20136; HOSK 7/20; HOSK 7/202 See application file for complete search history. </left_column><right_column> USO10690336B1 US **10,690,336** BI (10) **Patent** No.: (45) Date of **Patent**: Jun. 23, 2020 (56) References Cited U.S. **PATENT** DOCUMENTS 7,332,841 B2* 2/2008 Hsu HO2K 7/14 310/261.1 2004/0115986 A1* 6/2004 Chen .... FO4D ...
... 9 Page ID #:215 </page_header><page_footer/> Exhibit A </page><page number="2"><pre_header/><header><left_column> a United States **Patent** Chen (54) ILLUMINATION FAN CONNECTABLE WITH AT LEAST ONE ILLUMINATION FAN FOR A COMPUTER (71) ...
... County (TW) - (*) Notice: Subject to any disclaimer, the term of this **patent** is extended or adjusted under 35 U.S.C. 154(b) by 0 days. (21) Appl. ...

... HOSK 7/20136; HOSK 7/20; HOSK 7/202 See application file for complete search history. </left_column><right_column> USO10690336B1 US **10,690,336** BI (10) **Patent** No.: (45) Date of **Patent**: Jun. 23, 2020 (56) References Cited ...
... HOSK 7/20136; HOSK 7/20; HOSK 7/202 See application file for complete search history. </left_column><right_column> USO10690336B1 US **10,690,336** BI (10) **Patent** No.: (45) Date of **Patent**: Jun. 23, 2020 (56) References Cited U.S. **PATENT** DOCUMENTS 7,332,841 B2* 2/2008 Hsu HO2K 7/14 310/261.1 2004/0115986 A1* 6/2004 Chen .... FO4D ...
6.

ANSWER to Complaint (Attorney Civil Case Opening), 1 filed by Defendant Thermaltake Technology, Co., Ltd..(Attorney Nicolas S Gikkas added to party Thermaltake Technology, Co., Ltd.(pty:dft))(Gikkas, Nicolas) (Entered: 12/21/2023)

California Central District Court | Dec 21, 2023 | Lian Li Industrial Co., Ltd. Et Al V. Thermaltake Technology, Co., Ltd. Et Al | Answer to Complaint (Attorney Civil Case Opening) | 2:23cv7470

... Taiwan admits that the face of United States **Patent** No. **10,690,336** identifies Jun. 23, 2020 as Date of **Patent** . The remaining allegations in Paragraph 5 call for a legal ...

... 25 26 27 28 an Inventor on the face of U.S. **Patent** No. **10,690,336** (the 336 **patent**) (Dkt. No. 1-1). The remaining allegations in Paragraph 2 call ...

...). THE **PATENT**-IN-SUIT 5. Answering Paragraph 5 of the Complaint, Thermaltake Taiwan admits United States **Patent** No. **10,690,336** is entitled ILLUMINATION FAN CONNECTABLE WITH AT LEAST ONE ILLUMINATION FAN ...

... A COMPUTER and that a document appearing to be the 336 **patent** is attached to the Complaint as Exhibit A (Dkt. No. 1-1). ...

... defenses revealed during discovery. FIRST AFFIRMATIVE DEFENSE (Non-Infringement of the 336 **Patent**) Thermaltake Taiwan has not infringed and is not infringing, literally ...

... the doctrine of equivalents, any valid and enforceable claim the 336 **patent**. SECOND AFFIRMATIVE DEFENSE (Invalidity of the 336 **Patent**) The asserted claims of the 336 **patent** are invalid under 35 U.S.C. 101 et seq., including, without limitation, ...

... that Plaintiffs do not hold all substantial rights in the 336 **patent** , Plaintiffs lack standing to ...

7.

ANSWER to Amended Complaint/Petition 23 Defendants Phanteks Taiwan Inc.'s and Phanteks Shenzhen Inc.'s Answer to First Amended Complaint for Patent Infringement filed by Defendant Phanteks China, Phanteks Taiwan Inc..(Attorney Ming-Tao Yang added to party Phanteks China(pty:dft), Attorney Ming-Tao Yang added to party Phanteks Taiwan Inc.(pty:dft))(Yang, Ming-Tao) (Entered: 02/27/2024)

California Central District Court | Feb 27, 2024 | Lian Li Industrial Co., Ltd. Et Al V. Phanteks Europe Et Al | Answer to Complaint (Attorney Civil Case Opening) | 2:23cv7471

... of equivalents, any purportedly valid and enforceable claim of the 336 **patent** . Case 2:23-cv-07471-HDV-MAR Document 34 Filed 02/27/24 Page 5 of 7 ...

... 28 SECOND DEFENSEPATENT INVALIDITY 24. Each asserted claim of the 336 **patent** is invalid for failure to comply with one or more requirements ...

... requested in this action and dismissing Plaintiffs First Amended Complaint for **patent** infringement on the merits and with prejudice; B. A judgment declaring that Plaintiffs are precluded and/or estopped from asserting the **Patent**-in-Suit against Phanteks; C. A judgment declaring that each claim of the **Patent** -in-Suit is invalid and/or unenforceable; D. A judgment declaring that Phanteks ...

... and is not infringing any valid and enforceable claim of the **Patent** -in-Suit, and that Phanteks has not contributed to or induced and ...

... or inducing infringement of any valid and enforceable claim of the **Patent** -in-Suit; E. A judgment declaring this to be an exceptional case ...

... through its attorneys, hereby responds to the First Amended Complaint for **Patent** Infringement (the First Amended Complaint) for **patent** infringement of United States **Patent** No. **10,690,336** (the 336 **patent**, or

Patent -in- Suit), which Plaintiffs Lian Li Industrial Co., Ltd. and Chien-Hao ...
... Changzhen Community, Yutang Street, Guangming District, Shenzhen, Guangdong , China. THE **PATENT** -IN-SUIT 7. Lian Li filed The First Amended Complaint without Exhibit ...
8.
ANSWER to Complaint (Attorney Civil Case Opening), 1 with JURY DEMAND filed by Defendants Axpertec Inc..(Attorney Ming-Tao Yang added to party Axpertec Inc.(pty:dft)) (Yang, Ming-Tao) (Entered: 11/02/2023)

California Central District Court | Nov 02, 2023 | Lian Li Industrial Co., Ltd. Et Al V. Phanteks Europe Et Al | Answer to Complaint (Attorney Civil Case Opening) | 2:23cv7471
... (Chen) (collectively, Plaintiffs) and submits the following Answer to Complaint for **Patent** Infringement (the Complaint) for **patent** infringement of United States **Patent** No. **10,690,336** (the 336 **patent**, or **Patent**-in-Suit). ...
... relief Plaintiffs requested in this action and dismissing Plaintiffss Complaint for **patent** infringement on the merits and with prejudice; Case 2:23-cv-07471-HDV-MAR Document 20 ...
... judgment declaring that Plaintiffs are precluded and/or estopped from asserting the **Patent**-in-Suit against Phanteks ; C. A judgment declaring that each claim of the **Patent**-in-Suit is invalid and/or unenforceable; D. A judgment declaring that ...
... USA), Defendants. CASE NO. 2:23-cv-07471-HDV-MAR DEFENDANTS ANSWER TO COMPLAINT FOR **PATENT** INFRINGEMENT Demand for Jury Trial Case 2:23-cv-07471-HDV-MAR Document 20 Filed 11/02/23 ...
... 23 24 25 26 27 28 DEFENDANTS ANSWER TO COMPLAINT FOR **PATENT** INFRINGEMENT Defendants Axpertec International B.V. and Axpertec Inc....
... of equivalents, any purportedly valid and enforceable claim of the 336 **patent**. SECOND DEFENSEPATENT INVALIDITY 22. Each asserted claim of the 336 **patent** is invalid for failure to comply with one or more requirements ...
... 19 20 21 22 23 24 25 26 27 28 ALLEGED **PATENT** INFRINGEMENT 13. Phanteks incorporates by reference its responses set forth in ...
9.
COMPLAINT Receipt No: ACACDC-36004909 - Fee: $402, filed by Plaintiffs Lian Li Industrial Co., Ltd., Chien-Hao Chen. (Attachments: # 1 Exhibit A) (Attorney Kyle Dakai Chen added to party Chien-Hao Chen(pty:pla), Attorney Kyle Dakai Chen added to party Lian Li Industrial Co., Ltd.(pty:pla))(Chen, Kyle) (Entered: 09/08/2023)

California Central District Court | Sep 08, 2023 | Lian Li Industrial Co., Ltd. Et Al V. Thermaltake Technology, Co., Ltd. Et Al | Complaint (Attorney Civil Case Opening) | 2:23cv7470
... at 20420 Business Parkway, City of Industry, CA 91789. COMPLAINT FOR **PATENT** INFRINGEMENT - 2 NO 0 9 NN nh Re WN = ...
... 1 Filed 09/08/23 Page 3 of 8 Page ID #:3 THE **PATENT**-IN-SUIT 5. The 336 **patent** , titled Illumination Fan Connectable With At Least One Illumination Fan ...
... June 23, 2020. A true and correct copy of the 336 **patent** has been attached hereto as Exhibit A. 6. The 336 **patent** describes and claims a novel illumination fan for use with a ...
... structure. In one embodiment as shown in Figure 2 below, the **patent** discloses an illumination fan connectable with at least one other illumination ...
... illumination area 3. (336, Fig. 2,2:61-22.) Claim 1 of the 336 **patent** recites: An illumination fan connectable with at least one illumination fan ...
... the body, wherein the power socket is electrically connected COMPLAINT FOR **PATENT** INFRINGEMENT - 3 NO 0 9 NN nh Re WN = ...
... and illumination. JURISDICTION AND VENUE 8. This action arises under the **patent** laws of the United States , Title 35 of the ...
10.
Exhibit A)(Chen, Kyle) ; Proceeding Number : 20-1

California Central District Court | Oct 26, 2023 | Lian Li Industrial Co., Ltd. Et Al V. Thermaltake Technology, Co., Ltd. Et Al | Declaration (Motion related) | 2:23cv7470
... Li, and is the inventor and the original owner of U.S. **Patent** No. **10,690,336** (the 336 **patent**). Plaintiff Lian Li is the exclusive licensee of the 336 **patent** . Lian Li and Chen (collectively, Plaintiffs) claim in its complaint ...
... Taiwan is liable for **Patent** Infringement under the United States **Patent** Act, 35 U.S.C. 271 for infringing the 336 **patent**. In particular, Plaintiffs allege that Thermaltake Taiwan infringes the 336 **patent** by making, using, selling, and/or offering to sell in, and/or importing ...
11.

Exhibit C ; Proceeding Number : 43-3

California Central District Court | Jun 20, 2024 | Lian Li Industrial Co., Ltd. Et Al V. Thermaltake Technology, Co., Ltd. Et Al | Statement | 2:23cv7470
... the art at the time of the invention claimed by U.S. **Patent** No. **10,690,336**, the **patent** -in-suit. and best regards, May 28, 2024 10:16 PM, Nick ...
12.

FIRST AMENDED COMPLAINT against Defendants Axpertec Inc., Phanteks Europe, Phanteks Taiwan Inc., Phanteks China amending Complaint (Attorney Civil Case Opening), 1 , filed by Plaintiffs Lian Li Industrial Co., Ltd., Chien-Hao Chen(Chen, Kyle) (Entered: 11/21/2023)

California Central District Court | Nov 21, 2023 | Lian Li Industrial Co., Ltd. Et Al V. Phanteks Europe Et Al | Amended Complaint/Petition | 2:23cv7471
... satisfy each limitation of at least claim 1 of the 336 **patent** . As a non-limiting example, Phantekss D30 Fan (D30 Fan) meets ...
... of the D30 Fan is shown below: FIRST AMENDED COMPLAINT FOR **PATENT** INFRINGEMENT - 5 NO 0 9 NN nh Re WN = ...
... (as indicated by the arrow annotations below): FIRST AMENDED COMPLAINT FOR **PATENT** INFRINGEMENT - 6 NO 0 9 NN nh Re WN = ...
... meets each limitation of at least claim 1 of the 336 **patent**. 19. Phanteks therefore has committed and continues to commit acts of infringement of the 336 **patent** under 35 U.S.C. 271, by making, using, selling, and/or offering for ...
... States products that infringe at least claim 1 of the 336 **patent**. Phanteks has also been on notice of the *336 **patent** and its infringement FIRST AMENDED COMPLAINT FOR **PATENT** INFRINGEMENT - 7 NO 0 9 NN nh Re WN = ...
... least May 2023, when Phanteks received a letter identifying the 336 **patent** and providing allegations of infringement. Phantekss infringement therefore has been, and ...
... following relief: a. A judgment that Phanteks has infringed the 336 **patent** as alleged herein; b. A permanent injunction against Phanteks and its ...
13.

JOINT REPORT Rule 26(f) Discovery Plan ; estimated length of trial 5 days, filed by Plaintiffs Chien-Hao Chen, Lian Li Industrial Co., Ltd.. (Attachments: # 1 Exhibit A (Proposed Schedule of Pretrial and Trial Dates)))(Chen, Kyle) (Entered: 02/08/2024)

California Central District Court | Feb 08, 2024 | Lian Li Industrial Co., Ltd. Et Al V. Thermaltake Technology, Co., Ltd. Et Al | Joint Report Rule 26(f) Discovery Plan | 2:23cv7470
... including without limitation connectable illumination fans. In 2019, Chen filed a **patent** application that led to U.S. **Patent** No. **10,690,336** (the 336 **patent**), which has been exclusively licensed to plaintiff Lian Li Industrial Co., Ltd. The 336 **patent**, titled Illumination Fan Connectable with at Least One Illumination Fan for a Computer, was issued by the United States **Patent** and Trademark Office (USPTO) on June 23, 2020. Lian Li contends ...
... United States connectable illumination fans for computers that practice the 336 **patent** . The exemplary accused product in this case is the Swafan ...
... including without limitation connectable illumination fans. In 2019, Chen filed a **patent** application that led to U.S. **Patent** No. **10,690,336** (the 336 **patent**), which has been exclusively licensed to plaintiff Lian Li Industrial

Co., Ltd. The 336 **patent**, titled Illumination Fan Connectable with at Least One Illumination Fan for a Computer, was issued by the United States **Patent** and Trademark Office (USPTO) on June 23, 2020. Lian Li contends ...

14.

NOTICE OF FILING DATE ACCORDED TO PETITION AND TIME FOR FILING PATENT OWNER PRELIMINARY RESPONSE

Aug 22, 2024 | 2024 PAT. APP. FILINGS LEXIS 8296 | 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. | Notices

... proceeding has been accorded the filing date of July 26, 2024. **Patent** Owner may file a preliminary response to the petition no later ...

... forth the reasons why the requested review should not be instituted. **Patent** Owner may also file an election to waive the preliminary response ...

... to expedite the proceeding. For more information, please consult the Office **Patent** Trial Practice Guide, 77 Fed. Reg. 48756 (Aug. 14, 2012), which ...

...), Petitioners, v. LIAN LI INDUSTRIAL CO., LTD., and CHEN, CHIEN-HAO, **Patent** Owners. THERMALTAKE TECH. CO. v. LIAN LI INDUS. CO. IPR2024-01230; Paper 5; **Patent 10,690,336** B1 UNITED STATES **PATENT** AND TRADEMARK OFFICE **PATENT** TRIAL AND APPEAL BOARD...

... use P-TACTS is available at the Board Web site at https://www.uspto.gov/ **patents**/ptab/**patent** -trial-and-appeal-case-tracking-system-p-tacts . The parties may request a conference call as needed. ...

... which is available on the Board Web site at http://www.uspto.gov/PTAB . **Patent** Owner is advised of the requirement to submit mandatory notice information ...

... robert.perez@pillsburylaw.com jaclyn.schade@pillsburylaw.com **PATENT** OWNERS: Heath J. Briggs James L. Ryerson...

15.

ORDER DENYING DEFENDANTS' APPLICATION TO CONTINUE INITIAL SCHEDULING CONFERENCE by Judge Hernan D. Vera. (lom) (Entered: 02/14/2024)

California Central District Court | Feb 14, 2024 | Lian Li Industrial Co., Ltd. Et Al V. Thermaltake Technology, Co., Ltd. Et Al | Continue | 2:23cv7470

... for the parties shall participate in the Markman Hearing on U.S. **Patent** No. **10,690,336** jointly with the parties in co- pending Case No. 2:23-cv-007471-HDV-MAR, the ...

16.

STATEMENT JOINT CLAIM CONSTRUCTION AND PREHEARING STATEMENT (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C, # 4 Exhibit D, # 5 Exhibit E)(Chen, Kyle) (Entered: 06/20/2024)

California Central District Court | Jun 20, 2024 | Lian Li Industrial Co., Ltd. Et Al V. Thermaltake Technology, Co., Ltd. Et Al | Statement | 2:23cv7470

... hereby submit the following Joint Markman Prehearing Statement for U.S. **Patent** No. **10,690,336** B1 (the 336 **patent**), attached as Exhibit A. A. AGREED CONSTRUCTIONS The parties ...

... Thermaltake notes that Lian Li has asserted the 336 **patent** against another defendant, Phanteks Europe, and other related entities in Lian ...

... 112(f). (Claims 1, 2) Function: illumination. Structure: 336 **Patent** , Fig. 1 (3); Fig. 2 (3); Fig. 3 (3); ...

17.

JOINT REPORT Rule 26(f) Discovery Plan ; estimated length of trial 5 days, filed by Plaintiffs Chien-Hao Chen, Lian Li Industrial Co., Ltd... (Attachments: # 1 Exhibit A)(Chen, Kyle) (Entered: 04/17/2024)

California Central District Court | Apr 17, 2024 | Lian Li Industrial Co., Ltd. Et Al V. Phanteks Europe Et Al | Joint Report Rule 26(f) Discovery Plan | 2:23cv7471

... including without limitation connectable illumination fans. In 2019, Chen filed a **patent** application that led to U.S. **Patent** No. **10,690,336** (the 336 **patent**), which has been exclusively licensed to plaintiff Lian Li Industrial Co., Ltd. The 336 **patent**, titled Illumination Fan Connectable with at Least One Illumination Fan for a Computer, was issued by the United States **Patent** and Trademark Office (USPTO) on June 23, 2020. Phanteks makes, uses, ...
... United States connectable illumination fans for computers that practice the 336 **patent** . The exemplary accused product in this case is the D30 ...
... **Patent** No. **10,690,336** (the 336 **patent**), which has been exclusively licensed to plaintiff Lian Li Industrial Co., Ltd. The 336 **patent**, titled Illumination Fan Connectable with at Least One Illumination Fan for a Computer, was issued by the United States **Patent** and Trademark Office (USPTO) on June 23, 2020. Phanteks makes, uses, ...
... United States connectable illumination fans for computers that practice the 336 **patent** . The exemplary accused product in this case is the D30 ...
... including without limitation connectable illumination fans. In 2019, Chen filed a **patent** application that led to U.S. ...

Content type: Briefs, Pleadings and Motions

Terms: 10690336 or 10,690,336

Search Type: Boolean - Fewer Results

Narrow By: Search Within Results: patent

Date and Time: Nov 01, 2024 08:39:13 a.m. EDT

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Date and Time: Friday, November 1, 2024 8:14:00 AM EDT
Job Number: 237555423

Documents (19)

1. *Exhibit A : Proceeding Number : 43-1*
   Client/Matter: -None-
   Search Terms: 10690336 or 10,690,336
   Search Type: Terms and Connectors
   Narrowed by:

Content Type	Narrowed by
	-None-

2. *Exhibit A*
   Client/Matter: -None-
   Search Terms: 10690336 or 10,690,336
   Search Type: Terms and Connectors
   Narrowed by:

Content Type	Narrowed by
	-None-

3. *ANSWER to Complaint (Attorney Civil Case Opening), 1 with JURY DEMAND filed by Defendants Axperiec Inc. (Attorney Ming-Tao Yang added to party Axperiec Inc.(pty:dft))(Yang, Ming-Tao) (Entered: 11/02/2023)*
   Client/Matter: -None-
   Search Terms: 10690336 or 10,690,336
   Search Type: Terms and Connectors
   Narrowed by:

Content Type	Narrowed by
	-None-

4. *Exhibit C : Proceeding Number : 43-3*
   Client/Matter: -None-
   Search Terms: 10690336 or 10,690,336
   Search Type: Terms and Connectors
   Narrowed by:

Content Type	Narrowed by
	-None-

5. *Exhibit A*
   Client/Matter: -None-

Search Terms: 10690336 or 10,690,336

Search Type: Terms and Connectors

Narrowed by:

Content Type	Narrowed by
	-None-

6. *ORDER DENYING DEFENDANTS' APPLICATION TO CONTINUE INITIAL SCHEDULING CONFERENCE by Judge Hernan D. Vera. (lom) (Entered: 02/14/2024)*

Client/Matter: -None-

Search Terms: 10690336 or 10,690,336

Search Type: Terms and Connectors

Narrowed by:

Content Type	Narrowed by
	-None-

7. *JOINT APPENDIX, volume 25 of 26, (pp. 6505-6741), on behalf of Appellant New York City Department of Education. FILED. Service date 12/03/2014 by CM/ECF.[1384234] [14-3078]*

Client/Matter: -None-

Search Terms: 10690336 or 10,690,336

Search Type: Terms and Connectors

Narrowed by:

Content Type	Narrowed by
	-None-

8. *Exhibit A)(Chen, Kyle) : Proceeding Number : 20-1*

Client/Matter: -None-

Search Terms: 10690336 or 10,690,336

Search Type: Terms and Connectors

Narrowed by:

Content Type	Narrowed by
	-None-

9. *ANSWER to Amended Complaint/Petition 23 Defendants Phanteks Taiwan Inc.'s and Phanteks Shenzhen Inc.'s Answer to First Amended Complaint for Patent Infringement filed by Defendant Phanteks China, Phanteks Taiwan Inc. (Attorney Ming-Tao Yang added to party Phanteks China(pty:dft), Attorney Ming-Tao Yang added to party Phanteks Taiwan Inc.(pty:dft))(Yang, Ming-Tao) (Entered: 02/27/2024)*

Client/Matter: -None-

Search Terms: 10690336 or 10,690,336

Search Type: Terms and Connectors

Narrowed by:

Content Type	Narrowed by
	-None-

10. *JOINT REPORT Rule 26(f) Discovery Plan ; estimated length of trial 5 days, filed by Plaintiffs Chien-Hao Chen, Lian Li Industrial Co., Ltd... (Attachments: # 1 Exhibit A)(Chen, Kyle) (Entered: 04/17/2024)*

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Client/Matter: -None-

Search Terms: 10690336 or 10,690,336

Search Type: Terms and Connectors

Narrowed by:

Content Type	Narrowed by
	-None-

11. *STATEMENT JOINT CLAIM CONSTRUCTION AND PREHEARING STATEMENT (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C, # 4 Exhibit D, # 5 Exhibit E)(Chen, Kyle) (Entered: 06/20/2024)*

Client/Matter: -None-

Search Terms: 10690336 or 10,690,336

Search Type: Terms and Connectors

Narrowed by:

Content Type	Narrowed by
	-None-

12. *Exhibit D : Proceeding Number : 43-4*

Client/Matter: -None-

Search Terms: 10690336 or 10,690,336

Search Type: Terms and Connectors

Narrowed by:

Content Type	Narrowed by
	-None-

13. *FIRST AMENDED COMPLAINT against Defendants Axpertec Inc., Phanteks Europe, Phanteks Taiwan Inc., Phanteks China amending Complaint (Attorney Civil Case Opening), 1, filed by Plaintiffs Lian Li Industrial Co., Ltd., Chien-Hao Chen(Chen, Kyle) (Entered: 11/21/2023)*

Client/Matter: -None-

Search Terms: 10690336 or 10,690,336

Search Type: Terms and Connectors

Narrowed by:

Content Type	Narrowed by
	-None-

14. *ANSWER to Complaint (Attorney Civil Case Opening), 1 filed by Defendant Thermaltake Technology Co., Ltd. (Attorney Nicolas S Gikkas added to party Thermaltake Technology Co., Ltd (pty dft))(Gikkas, Nicolas) (Entered: 12/21/2023)*

Client/Matter: -None-

Search Terms: 10690336 or 10,690,336

Search Type: Terms and Connectors

Narrowed by:

Content Type	Narrowed by
	-None-

15. *[10690336] Appellant brief filed by Keith Bryan Webb-EI. Original and 4 copies. Received 10th Cir. R. 28.2 Attachments Included? n. [19-1326]*

Client/Matter: -None-

Search Terms: 10690336 or 10,690,336

Search Type: Terms and Connectors

Narrowed by:

Content Type	Narrowed by
	-None-

16. *COMPLAINT Receipt No: ACACDC-36004909 - Fee: $402, filed by Plaintiffs Lian Li Industrial Co., Ltd., Chien-Hao Chen. (Attachments: # 1 Exhibit A) (Attorney Kyle Dakai Chen added to party Chien-Hao Chen(pty:pla), Attorney Kyle Dakai Chen added to party Lian Li Industrial Co., Ltd.(pty:pla))(Chen, Kyle) (Entered: 09/08/2023)*

Client/Matter: -None-

Search Terms: 10690336 or 10,690,336

Search Type: Terms and Connectors

Narrowed by:

Content Type	Narrowed by
	-None-

17. *NOTICE OF FILING DATE ACCORDED TO PETITION AND TIME FOR FILING PATENT OWNER PRELIMINARY RESPONSE*

Client/Matter: -None-

Search Terms: 10690336 or 10,690,336

Search Type: Terms and Connectors

Narrowed by:

Content Type	Narrowed by
	-None-

18. *JOINT REPORT Rule 26(f) Discovery Plan ; estimated length of trial 5 days, filed by Plaintiffs Chien-Hao Chen, Lian Li Industrial Co., Ltd.. (Attachments: # 1 Exhibit A (Proposed Schedule of Pretrial and Trial Dates))(Chen, Kyle) (Entered: 02/08/2024)*

Client/Matter: -None-

Search Terms: 10690336 or 10,690,336

Search Type: Terms and Connectors

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Content Type	Narrowed by
	-None-

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

Client/Matter: -None-

Search Terms: 10690336 or 10,690,336

Search Type: Terms and Connectors

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THERMALTAKE TECH. CO. v. LIAN LI INDUS. CO.

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

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT TRIAL AND APPEAL BOARD

July 26, 2024

Reporter
2024 PAT. APP. FILINGS LEXIS 7326 *

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.

Type: Petitions

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Title

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

Text

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Monica Graves

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37 C.F.R. § 42.108(c)

37 C.F.R. § 42.15

37 C.F.R. § 42.300

37 C.F.R. §§ 42.103-105

37 C.F.R. § 42.106

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.,* **[*7]** *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 **[*8]** 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 **[*10]** 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) ("1))

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

1

Invalidity

Claims 1-3 would have been obvious over Tsuji (Ex[1006]-[1007]) in view of Huang (Ex[1008]) under 35 U.S.C. § 103

Exhibit(s)

1006, 1007, 1008

Ground

2

Invalidity

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.

Exhibit(s)

1008, 1009

Ground

3

Invalidity

Claim 5 would have been obvious over Tsuji (Ex[1006]-[1007]) in view of Huang (Ex[1008]) and further **[*12]** in view of Chou (Ex[1010]) or Liu (Ex[1011]) under 35 U.S.C. § 103

Exhibit(s) 1006, 1007, 1008, 1010, 1011

Ground

4

Invalidity

Claims 1-2 would have been obvious over Lai (Ex[1012]) in view of Hasegawa (Ex[1013]-[1014]) under 35 U.S.C. § 103

Exhibit(s)

1012, 1013, 1014

Ground

5

Invalidity

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

Exhibit(s)

1012, 1013, 1014, 1008

Ground

6

Invalidity

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

Exhibit(s) 1012, 1013, 1014, 1009

Ground

7

Invalidity

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

Exhibit(s) 1012, 1013, 1014, 1010, 1011

IV. CLAIM CONSTRUCTION

Patent Owner has contended in the co-pending California Action that all claim **[*13]** 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), P 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 **[*14]** area on at least two sides of the fan at the top of the body, a power socket

---

[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.

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:

[SEE FIGURE IN ORIGINAL]

*'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:

[SEE FIGURE IN ORIGINAL]

*'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. **[*15]** *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.

[SEE FIGURE IN ORIGINAL]

[SEE FIGURE IN ORIGINAL]

*Figures 4 and 5 of the '336 **Patent***

The '336 ***Patent*** discloses **[*16]** 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 **[*17]** 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):

[SEE FIGURE IN ORIGINAL]

*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].

[SEE FIGURE IN ORIGINAL]

*Figure 2 of the '336 **Patent***

Accordingly, Petitioners submit that Claim 5 of the '336 ***Patent*** is only entitled **[*18]** 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 **[*19]** 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], P 0027.

[SEE FIGURE IN ORIGINAL]

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 **[*20]** 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 **[*21]** 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 **[*22]** 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 **[*23]** 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 **[*24]** line, using a single input 111 and a single output 112 in each LED fan 10. *Id.* at [0011]-[0012], FIGS. 2-3:

[SEE FIGURE IN ORIGINAL]

FIGS. 2 and 3 of Lai

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

[SEE FIGURE IN ORIGINAL]

FIGS 2 and 3 of Lai (annotated, showing RBG 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, PP 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 **[*25]** [0001], [0114]. Hasegawa further discloses each Fan Unit 601 as having Connectors 25 on opposite sides of the Fan Unit 601 body:

[SEE FIGURE IN ORIGINAL]

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], P 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.

[SEE FIGURE IN ORIGINAL]

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. **[*26]** *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].

[SEE FIGURE IN ORIGINAL]

FIG. 5 of Tsuji, annotated

[SEE FIGURE IN ORIGINAL]

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], P 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 **[*27]** 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.

[SEE FIGURE IN ORIGINAL]

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 **[*28]** include a mounting frame, rotating fan blades, and lights intended to be visible to a user. Ex[1004], P 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], P 70. A topviewable, 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], PP 64-65.

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

Tsuji discloses this limitation. Ex[1004], PP 66-67. Specifically, **[*29]** 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.

[SEE FIGURE IN ORIGINAL]

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).

[SEE FIGURE IN ORIGINAL]

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], P 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 **[*30]** indicator lights on different sides ("at least two sides") of the fan body so that they can be viewed from multiple perspectives. Ex[1004], P 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.*, P 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], PP 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], PP 73-75. For example, Tsuji teaches that "two adjacent fan units among the plurality of the fan units transmit the pulse **[*31]** 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.

[SEE FIGURE IN ORIGINAL]

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], P 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 **[*32]** this claim limitation. *Id.*, PP 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], PP 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 **[*33]** CND. *See also* Ex[1004], P 76.

[SEE FIGURE IN ORIGINAL]

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], P 77; Ex[1007], Figure 15.

[SEE FIGURE IN ORIGINAL]

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], PP 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 **[*34]** be obvious to implement it in this manner. Ex[1004], P 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.*, P 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], P 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 **[*35]** 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], P 86. CNC is a male multiconductor 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 **[*36]** 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], P 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], PP 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 **[*37]** fan, the fan and the illumination area of the body of another illumination fan are respectively driven into rotation and illumination. Ex[1004], P 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.*, P 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], P 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 **[*38]** of Claim 2, rendering Claim 2 obvious. Ex[1004], PP 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], PP 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], P 95.

[SEE FIGURE IN ORIGINAL]

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.*, PP 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.*, P97. 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], **[*39]** PP 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], P 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]. **[*40]** 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], PP 101.

[SEE FIGURE IN ORIGINAL]

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], P 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 **[*41]** 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 connecter 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], P 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], P 100.

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

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

A PHOSITA would **[*42]** 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 l, 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], PP 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 **[*43]** 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], PP 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.*, P 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.

[SEE FIGURE IN ORIGINAL]

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], P106; Ex[1010] at Fig. 4, [0025]-[0026].

[SEE FIGURE IN ORIGINAL]

FIG. 4 of Chou

A PHOSITA would have been motivated to combine Chou with Tsuji and Huang. Ex[1004], P 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 **[*44]** 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 Tsuji-Huang illumination cooling fans. *Id.* The combination would have yielded predictable results of aligning the Tsuji-Huang fans as they are slid horizontally for a serial connection, so that Tsuji connectors CNC and CND are aligned with one another for connection. *Id.* An example of the combination of Chou with Tsuji - Huang is shown below:

[SEE FIGURE IN ORIGINAL]

FIG. 6 of Tsuji (modified)

Tsuji already discloses connecting fan units by sliding them together in a computer casing, and thus only minor modifications would have been needed to add grooves to the bodies of the Tsuji-Huang fan bodies. Ex[1004], PP 104-106.

Alternatively, Tsuji and Huang in view of Liu

The combination of Tsuji, Huang, and Liu also renders 5[a] obvious. Ex[1004], PP 107-110.

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], P 108. Liu **[*45]** also discloses an assembling member 5 with multiple assembling sections 53. *Id.*, P 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], P 109.

[SEE FIGURE IN ORIGINAL]

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

A PHOSITA would have been motivated to combine Liu with Tsuji and Huang. Ex[1004], P 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:

[SEE FIGURE IN ORIGINAL]

Modifications to FIG. 6 of Tsuji

[*46] For the reasons above, the combination of Tsuji and Huang in view of either Chou or Liu renders Claim 5 obvious. Ex[1004], PP 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], P 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.

[SEE FIGURE IN ORIGINAL]

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) **[*47]** 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], P 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], P 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.

[SEE FIGURE IN ORIGINAL]

Accordingly, Lai discloses this claim limitation. *See also* Ex[1004], P 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 **[*48]** 3, below:

[SEE FIGURE IN ORIGINAL]

Ordinary RGB LEDs would be known by a PHOSITA to have a wide viewing area. Ex[1004], P 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], P 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], P 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 **[*49]** at top of the body." *See also* Ex[1004], PP 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], PP 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:

[SEE FIGURE IN ORIGINAL]

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] **[*50]** at [0011], [0013]-[0014], FIGS. 2 (annotated above), 4 and 5 (annotated below).

[SEE FIGURE IN ORIGINAL]

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], P 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:

[SEE FIGURE IN ORIGINAL]

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], P 116. Alternatively, it would be obvious to include separate **[*51]** 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], PP 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 **[*52]** 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:

[SEE FIGURE IN ORIGINAL]

To the extent it is argued or found that Lai does not to 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], P 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 **[*53]** 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], P 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).

[SEE **[*54]** FIGURE IN ORIGINAL]

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], P119.

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 daisychain connection of the fan modules. **[*55]** Ex[1004], P 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:

[SEE FIGURE IN ORIGINAL]

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

Ex[1004], P120.

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], PP 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 [*56] 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:

[SEE FIGURE IN ORIGINAL]

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], P 121.

Lai further discloses that when the power socket of single input **[*57]** 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], PP 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], PP 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 **[*58]** 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.

[SEE FIGURE IN ORIGINAL]

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.

[SEE FIGURE IN ORIGINAL]

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 **[*59]** 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], P 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 **[*60]** 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.*, P 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 P 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 **[*61]** 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], P 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], PP 129-130.

XII. GROUND 5: CLAIM 3 IS OBVIOUS UNDER 35 U.S.C. § 103 OVER LAI IN VIEW OF HASEGAWA [*62] 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], P 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 lightemitting 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], P 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], PP 136-137. As a result, the pair of fans together would form a single continuous illumination area. Ex[1004], PP 136-140.

Even if a small gap is provided between fans, it would have been obvious to extend the illumination area to

close such **[*63]** a gap or extend to an overlapping portion of the cover. *Id.*, P 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], PP 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], P 144. Specifically, Echazarreta discloses that a groove is provided on one **[*64]** 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], P 144.

[SEE FIGURE IN ORIGINAL]

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], P 143. Lai, as modified in light of Hasegawa, is a fan module with a substantially **[*65]** 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], P 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], P 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], P 143.

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

XIV. GROUND 7: CLAIM 5 IS OBVIOUS UNDER 35 U.S.C. § 103 OVER LAI IN VIEW [*66] 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 PP 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], P 148.

Chou also discloses an "engaging block" as a connecting **[*67]** member 26 that is designed to engage rails 246 on the sides of each fan frame 24. *Id.*, P133; 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.

[SEE FIGURE IN ORIGINAL]

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], P149 and Ex[1009] at Fig. 4, [0025]-[0026].

[SEE FIGURE IN ORIGINAL]

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], P 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.*, PP 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:

[SEE FIGURE IN ORIGINAL]

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 PP 150-153.

Liu teaches that each **[*68]** 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], P 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], P 152.

[SEE FIGURE IN ORIGINAL]

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

A PHOSITA would have been motivated to combine Liu with Lai and Hasegawa. Ex[1004] at P 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 PP 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:

[SEE FIGURE IN ORIGINAL]

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 PP 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* **[*69]** *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 **[*70]** 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 16587113 (C.D. Cal. Nov. 3, 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, **[*71]** 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 **[*72]** 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. **[*73]** *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 Elektromedizinischke 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 **[*74]** 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 **[*75]** is 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.

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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)(i) and typestyle requirements of 37 CFR § 42.6(a)(2)(ii). This brief has been prepared **[*77]** in a proportionally spaced typeface using Microsoft Word in Times New Roman 14-point font.

Dated: July 26, 2024

Respectfully submitted,

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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 copending litigation:

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[SEE EXHIBIT LIST IN ORIGINAL]

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End of Document

Lian Li Industrial Co., Ltd. Et Al V. Thermaltake Technology, Co., Ltd. Et Al

2:23cv7470

US District Court for the Central District of California

June 20, 2024, Filed

Reporter

State: US-CA

Type: Statement

Title

Exhibit D ; Proceeding Number : 43-4

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Lian Li Industrial Co., Ltd. Et Al V. Phanteks Europe Et Al

2:23cv7471

US District Court for the Central District of California

September 8, 2023, Filed

Reporter

State: US-CA

Type: Complaint (Attorney Civil Case Opening)

Title

Exhibit A

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2:23cv7470

US District Court for the Central District of California

September 8, 2023, Filed

Reporter

State: US-CA

Type: Complaint (Attorney Civil Case Opening)

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Exhibit A

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2:23cv7470

US District Court for the Central District of California

June 20, 2024, Filed

Reporter

State: US-CA

Type: Statement

Title

Exhibit A ; Proceeding Number : 43-1

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2:23cv7470

US District Court for the Central District of California

December 21, 2023, Filed

Reporter

State: US-CA

Type: Answer to Complaint (Attorney Civil Case Opening)

Title

ANSWER to Complaint (Attorney Civil Case Opening), 1 filed by Defendant Thermaltake Technology, Co., Ltd..(Attorney Nicolas S Gikkas added to party Thermaltake Technology, Co., Ltd.(pty:dft))(Gikkas, Nicolas) (Entered: 12/21/2023)

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Webb-El v. United States Parole

19-1326

US Court of Appeals for the Tenth Circuit

October 28, 2019, Filed

Reporter

State: US-CO

Type: Brief

Title

[***10690336***] Appellant brief filed by Keith Bryan Webb-El. Original and 4 copies. Required 10th Cir. R. 28.2 Attachments Included? n. [19-1326]

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2:23cv7471

US District Court for the Central District of California

February 27, 2024, Filed

Reporter

State: US-CA

Type: Answer to Complaint (Attorney Civil Case Opening)

Title

ANSWER to Amended Complaint/Petition 23 Defendants Phanteks Taiwan Inc.'s and Phanteks Shenzhen Inc.'s Answer to First Amended Complaint for ***Patent*** Infringement filed by Defendant Phanteks China, Phanteks Taiwan Inc..(Attorney Ming-Tao Yang added to party Phanteks China(pty:dft), Attorney Ming-Tao Yang added to party Phanteks Taiwan Inc.(pty:dft))(Yang, Ming-Tao) (Entered: 02/27/2024)

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2:23cv7471

US District Court for the Central District of California

November 2, 2023, Filed

Reporter

State: US-CA

Type: Answer to Complaint (Attorney Civil Case Opening)

Title

ANSWER to Complaint (Attorney Civil Case Opening), 1 with JURY DEMAND filed by Defendants Axpertec Inc..(Attorney Ming-Tao Yang added to party Axpertec Inc.(pty:dft))(Yang, Ming-Tao) (Entered: 11/02/2023)

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Lian Li Industrial Co., Ltd. Et Al V. Thermaltake Technology, Co., Ltd. Et Al

2:23cv7470

US District Court for the Central District of California

September 8, 2023, Filed

Reporter

State: US-CA

Type: Complaint (Attorney Civil Case Opening)

Title

COMPLAINT Receipt No: ACACDC-36004909 - Fee: $402, filed by Plaintiffs Lian Li Industrial Co., Ltd., Chien-Hao Chen. (Attachments: # 1 Exhibit A) (Attorney Kyle Dakai Chen added to party Chien-Hao Chen(pty:pla), Attorney Kyle Dakai Chen added to party Lian Li Industrial Co., Ltd.(pty:pla))(Chen, Kyle) (Entered: 09/08/2023)

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Lian Li Industrial Co., Ltd. Et Al V. Thermaltake Technology, Co., Ltd. Et Al

2:23cv7470

US District Court for the Central District of California

October 26, 2023, Filed

Reporter

State: US-CA

Type: Declaration (Motion related)

Title

Exhibit A)(Chen, Kyle) ; Proceeding Number : 20-1

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2:23cv7470

US District Court for the Central District of California

June 20, 2024, Filed

Reporter

State: US-CA

Type: Statement

Title

Exhibit C ; Proceeding Number : 43-3

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2:23cv7471

US District Court for the Central District of California

November 21, 2023, Filed

Reporter

State: US-CA

Type: Amended Complaint/Petition

Title

FIRST AMENDED COMPLAINT against Defendants Axpertec Inc., Phanteks Europe, Phanteks Taiwan Inc., Phanteks China amending Complaint (Attorney Civil Case Opening), 1 , filed by Plaintiffs Lian Li Industrial Co., Ltd., Chien-Hao Chen(Chen, Kyle) (Entered: 11/21/2023)

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Lian Li Industrial Co., Ltd. Et Al V. Thermaltake Technology Co., Ltd. Et Al

2:23cv7470

US District Court for the Central District of California

February 8, 2024, Filed

Reporter

State: US-CA

Type: Joint Report Rule 26(f) Discovery Plan

Title

JOINT REPORT Rule 26(f) Discovery Plan ; estimated length of trial 5 days, filed by Plaintiffs Chien-Hao Chen, Lian Li Industrial Co., Ltd... (Attachments: # 1 Exhibit A (Proposed Schedule of Pretrial and Trial Dates)))(Chen, Kyle) (Entered: 02/08/2024)

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THERMALTAKE TECH. CO. v. LIAN LI INDUS. CO.

IPR2024-01230; Paper 5; Patent 10,690,336 B1

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT TRIAL AND APPEAL BOARD

August 22, 2024

Reporter
2024 PAT. APP. FILINGS LEXIS 8296 *

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.

Type: Notices

Counsel

PETITIONERS: Robert C.F. Pérez, Jaclyn Schade, PILLSBURY WINTHROP SHAW PITTMAN LLP.

PATENT OWNERS: Heath J. Briggs, James L. Ryerson, GREENBERG TRAURIG, LLP.

Judges

Before Lawrence J. Banks, Trial Paralegal.

Title

NOTICE OF FILING DATE ACCORDED TO PETITION AND TIME FOR FILING *PATENT* OWNER PRELIMINARY RESPONSE

Text

The petition for *inter partes* **[*1]** review filed in the above proceeding has been accorded the filing date of July 26, 2024.

Patent Owner may file a preliminary response to the petition no later than three months from the date of this notice. The preliminary response is limited to setting forth the reasons why the requested review should not be instituted. ***Patent*** Owner may also file an election to waive the preliminary response to expedite the proceeding. For more information, please consult the Office ***Patent*** Trial Practice Guide, 77 Fed. Reg. 48756 (Aug. 14, 2012), which is available on the Board Web site at http://www.uspto.gov/PTAB.

Patent Owner is advised of the requirement to submit mandatory notice information under 37 C.F.R. § 42.8(a)(2) within 21 days of service of the petition. Mandatory notices include identifying any other judicial or administrative matter that would affect, or be affected by, a decision in the proceeding. 37 C.F.R. § 42.8(b)(2). Such administrative matters include requests for certificates of correction.

The parties are encouraged to use the heading on the first page of this Notice for all future filings in the proceeding.

The parties are advised **[*2]** that under *37 C.F.R. § 42.10(c)*, recognition of counsel *pro hac vice* requires a showing of good cause. The parties are authorized to file motions for *pro hac vice* admission under *37 C.F.R. § 42.10(c)*. Such motions shall be filed in accordance with the "Order -- Authorizing Motion *for Pro Hac Vice* Admission" in Case IPR2013-00639, Paper 7, a copy of which is available on the Board Web site under "Representative Orders, Decisions, and Notices."

The parties are reminded that unless otherwise permitted by 37 C.F.R. § 42.6(b)(2), all filings in this proceeding must be made electronically in the ***Patent*** Trial Appeal Case Tracking System (P-TACTS), accessible from the Board Web site at http://www.uspto.gov/PTAB.

To file documents, users must first obtain a user ID by registering with MyUSPTO. Information regarding how to register with MyUSPTO and use P-TACTS is available at the Board Web site at https://www.uspto.gov/patents/ptab/patent-trial-and-appeal-case-tracking-system-p-tacts.

The parties may request a conference call as needed. Any email requesting a conference call with the Board should: (a) copy all parties, (b) indicate generally the relief being requested or the subject **[*3]** matter of the conference call, (c) include multiple times when all

Monica Graves

parties are available, (d) state whether the opposing party opposes any relief requested, and (e) if opposed, either certify that the parties have met and conferred telephonically or in person in an attempt to reach agreement, or explain why such meet and confer did not occur. The email may not contain substantive argument and, unless otherwise authorized, may not include attachments. *See* Trial Practice Guide at 9-10. If practicable, in order to ensure emails are consistent with the above, the parties should send a single, joint email that includes items (a)-(e).

If there are any questions pertaining to this notice, please contact the ***Patent*** Trial and Appeal Board at *trials@uspto.gov* or 571-272-7822.

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NOTICE CONCERNING ALTERNATIVE DISPUTE RESOLUTION (ADR)

The ***Patent*** Trial and Appeal Board (PTAB) strongly encourages parties who are considering settlement to consider alternative dispute resolution as a means of settling the issues that may be raised in an AIA trial proceeding. Many AIA trials **[*4]** are settled prior to a Final Written Decision. Those considering settlement may wish to consider alternative dispute resolution techniques early in a proceeding to produce a quicker, mutually agreeable resolution of a dispute or to at least narrow the scope of matters in dispute. Alternative dispute resolution has the potential to save parties time and money.

Many non-profit organizations, both inside and outside the intellectual property field, offer alternative dispute resolution services. Listed below are the names and addresses of several such organizations. The listings are provided for the convenience of parties involved in cases before the PTAB; the PTAB does not sponsor or endorse any particular organization's alternative dispute resolution services. In addition, consideration may be given to utilizing independent alternative dispute resolution firms. Such firms may be located through a standard keyword Internet search.

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If parties to an AIA trial proceeding consider using alternative dispute resolution, the PTAB would like to know whether the parties ultimately decided to engage in alternative dispute resolution and the reasons why or why not. If the parties actually engage in alternative dispute resolution, the PTAB would be interested to learn what mechanism (e.g., arbitration, mediation, etc.) was used and the general result. Such a statement from the parties is not required but would be helpful to the PTAB in assessing the value of alternative dispute resolution to parties involved in AIA trial proceedings. To report an experience with ADR, please forward a summary of the particulars to the following email address: PTAB_ADR_Comments@uspto.gov

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Lian Li Industrial Co., Ltd. Et Al V. Thermaltake Technology, Co., Ltd. Et Al

2:23cv7470

US District Court for the Central District of California

February 14, 2024, Filed

Reporter

State: US-CA

Type: Continue

Title

ORDER DENYING DEFENDANTS' APPLICATION TO CONTINUE INITIAL SCHEDULING CONFERENCE by Judge Hernan D. Vera. (lom) (Entered: 02/14/2024)

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2:23cv7470

US District Court for the Central District of California

June 20, 2024, Filed

Reporter

State: US-CA

Type: Statement

Title

STATEMENT JOINT CLAIM CONSTRUCTION AND PREHEARING STATEMENT (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C, # 4 Exhibit D, # 5 Exhibit E)(Chen, Kyle) (Entered: 06/20/2024)

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Lian Li Industrial Co., Ltd. Et Al V. Phanteks Europe Et Al

2:23cv7471

US District Court for the Central District of California

April 17, 2024, Filed

Reporter

State: US-CA

Type: Joint Report Rule 26(f) Discovery Plan

Title

JOINT REPORT Rule 26(f) Discovery Plan ; estimated length of trial 5 days, filed by Plaintiffs Chien-Hao Chen, Lian Li Industrial Co., Ltd... (Attachments: # 1 Exhibit A)(Chen, Kyle) (Entered: 04/17/2024)

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T.K. v. New York City Department of Ed

14-3078

US Court of Appeals for the Second Circuit

December 3, 2014, Filed

Reporter
2014 U.S. 2nd Cir. Briefs LEXIS 4136

State: US-NY

Type: Unknown

Title

JOINT APPENDIX, volume 25 of 26, (pp. 6505-6741), on behalf of Appellant New York City Department of Education, FILED. Service date 12/03/2014 by CM/ECF.[1384234] [14-3078]

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Documents (2)

1. *Head Line: Chen; Chien-Hao Yilan granted US Patent for "illumination fan connectable with at least one illumination fan for a computer"*
   Client/Matter: -None-
   Search Terms: 10690336 or 10,690,336
   Search Type: Terms and Connectors
   Narrowed by:

Content Type	Narrowed by
	-None-

2. *US Patent Issued on June 23 for "illumination fan connectable with at least one illumination fan for a computer" (Taiwanese Inventor)*
   Client/Matter: -None-
   Search Terms: 10690336 or 10,690,336
   Search Type: Terms and Connectors
   Narrowed by:

Content Type	Narrowed by
	-None-

US Patent Issued on June 23 for "Illumination fan connectable with at least one illumination fan for a computer" (Taiwanese Inventor)

US Fed News

June 24, 2020 Wednesday GENERAL_EDIT_CORRECTION ERROR Document ID 927 Has error Validate old format failed - Input Date Invalid - 00:42: Unparseable date: "00:42" EST

Load-Date: June 23, 2020

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Length: 265 words

Dateline: ALEXANDRIA, Va.

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Body

ALEXANDRIA, Va., June 24 -- United States ***Patent*** no. ***10,690,336***, issued on June 23.

"Illumination fan connectable with at least one illumination fan for a computer" was invented by Chien-Hao Chen (Yilan County, Taiwan). According to the abstract* released by the U.S. ***Patent*** & Trademark Office: "An illumination fan connectable with at least one illumination fan for a computer includes a body, provided with a fan in center of the body, an illumination area on at least two sides of the fan at 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. The power socket is electrically connected with the first connector, the second connector, the fan and the illumination area. When the power socket is supplied with power, the fan and the illumination area of the body is 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 is respectively driven into rotation and illumination." The ***patent*** was filed on May 6, 2019, under Application No. 16/403,867. *For further information, including images, charts and tables, please visit:

http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&Sect2=HITOFF&p=1&u=%2Fnetahtml%2FPTO%2Fsearch-bool.html&r=1&f=G&l=50&co1=AND&d=PTXT&s1=10690336&OS=10690336&RS=10690336 For any query with respect to this article or any other content requirement, please contact Editor at *contentservices@htlive.com*

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Head Line: Chen; Chien-Hao Yilan granted US Patent for "Illumination fan connectable with at least one illumination fan for a computer"

Impact Financial News

June 24, 2020 Wednesday

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Length: 221 words

Body

ALEXANDRIA, Va: Chen; Chien-Hao Yilan has been granted a ***patent*** no. ***10,690,336*** on June 23, 2020, by United States ***Patent*** And Trademark Office.

The ***patent*** has been granted for "Illumination fan connectable with at least one illumination fan for a computer"Inventors: Chen; Chien-Hao (Yilan County, TW)Assignee: Chen; Chien-Hao Yilan County N/A TWAccording to the abstract released by the U.S ***Patent*** & Trademark Office: "An illumination fan connectable with at least one illumination fan for a computer includes a body, provided with a fan in center of the body, an illumination area on at least two sides of the fan at 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. The power socket is electrically connected with the first connector, the second connector, the fan and the illumination area. When the power socket is supplied with power, the fan and the illumination area of the body is 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 is respectively driven into rotation and illumination."The ***patent*** was filed on May 6, 2019 by Application No. 16/403,867

Load-Date: June 25, 2020

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Litigation Search Report CRU 3999

Reexamination Control No. 90/019,565

To:	Laura Davison	**From:**	Patricia Volpe
Location:	CRU	**Location:**	CRU
Art Unit:	3993	**Phone:**	(571)272-6825
Date:	04 November 2024	**E-mail:**	patricia.volpe@uspto.gov

Search Notes

US PATENT NO: 10,690,336 Litigation Found

CACD - 2:23cv7470 STAYED
CACD - 2:23cv7471 STAYED

1. Performed a KeyCite Search in Westlaw, which retrieves all history on the patent including any litigation.
2. Performed a search on the patent in Lexis CourtLink for any open dockets or closed cases.
3. Performed a search in Lexis in the Federal Courts and Administrative Materials databases for any cases found.
4. Performed a search in Lexis in the IP Journal and Periodicals database for any articles on the patent.
5. Performed a search in Lexis in the news databases for any articles about the patent or any articles about litigation on this patent.

Paper No. 20241104

2:23cv7470, Lian Li Industrial Co., Ltd. Et Al V. Thermaltake Technology, Co., Ltd. Et Al

US District Court Docket

United States District Court, California Central

(Western Division - Los Angeles)

This case was retrieved on 11/04/2024

Header

Case Number: 2:23cv7470
Date Filed: 09/08/2023
Assigned To: Judge Hernan D. Vera
Referred To: Magistrate Judge Margo A. Rocconi
Nature of Suit: Patent (830)
Cause: Patent Infringement
Lead Docket: None
Other Docket: 2:23cv07471
Jurisdiction: Federal Question

Class Code: Open
Statute: 35:271
Jury Demand: Both
Demand Amount: $0
NOS Description: Patent

Participants

Litigants	Attorneys
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Thermaltake Technology, Co., Ltd. **Defendant**	Nicolas S Gikkas LEAD ATTORNEY;ATTORNEY TO BE NOTICED The Gikkas Law Firm PC 530 Lytton Avenue 2nd Floor Palo Alto, CA 94301 USA 650-617-3419 Fax: 650-618-2600 Email:Nsg@gikkaslaw.Com Lewis E. Hudnell , III ATTORNEY TO BE NOTICED Hudnell Law Group 800 W. El Camino Real, Ste 180 Mountain View, CA 94040 USA 650-564-3698 Fax: 347-772-3034 Email:Leh@gikkaslaw.Com Stanley H. Thompson , Jr ATTORNEY TO BE NOTICED Gikkas Law Firm PC 530 Lytton Avenue 2nd Floor Palo Alto, CA 94301 USA 650-617-3419 Fax: 650-618-2600 Email:St@gikkaslaw.Com
Thermaltake Inc. also known as | Thermaltake USA | **Defendant**	Nicolas S Gikkas LEAD ATTORNEY;ATTORNEY TO BE NOTICED The Gikkas Law Firm PC 530 Lytton Avenue 2nd Floor

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▼Proceedings

Retrieve Document(s)

☐	Availability	#	Date	Proceeding Text	Source
☐	Free	1	09/08/2023	COMPLAINT Receipt No: ACACDC-36004909 - Fee: $402, filed by Plaintiffs Lian Li Industrial Co., Ltd., Chien-Hao Chen. (Attachments: # 1 Exhibit A) (Attorney Kyle Dakai Chen added to party Chien-Hao Chen(pty:pla), Attorney Kyle Dakai Chen added to party Lian Li Industrial Co., Ltd.(pty:pla)) (Chen, Kyle) (Entered: 09/08/2023)	
☐	Online	2	09/08/2023	CIVIL COVER SHEET filed by Plaintiffs Chien-Hao Chen, Lian Li Industrial Co., Ltd.. (Chen, Kyle)	

	Availability	#	Date	Proceeding Text	Source
				(Entered: 09/08/2023)	
☐	Online	3	09/08/2023	CORPORATE DISCLOSURE STATEMENT Certification and Notice of Interested Parites filed by Plaintiffs Chien-Hao Chen, Lian Li Industrial Co., Ltd. (Chen, Kyle) (Entered: 09/08/2023)	
☐	Online	4	09/08/2023	AMENDED CIVIL COVER SHEET filed by Plaintiffs Chien-Hao Chen, Lian Li Industrial Co., Ltd.. (Chen, Kyle) (Entered: 09/08/2023)	
☐	Online	5	09/08/2023	Request for Clerk to Issue Summons on Civil Cover Sheet (CV-71) 4 , Complaint (Attorney Civil Case Opening), 1 filed by Plaintiffs Chien-Hao Chen, Lian Li Industrial Co., Ltd.. (Chen, Kyle) (Entered: 09/08/2023)	
☐	Online	6	09/08/2023	REPORT ON THE FILING OF AN ACTION Regarding a Patent or a Trademark (Initial Notification) filed by Chien-Hao Chen, Lian Li Industrial Co., Ltd.. (Chen, Kyle) (Entered: 09/08/2023)	
☐	Online	7	09/12/2023	NOTICE OF ASSIGNMENT to District Judge Hernan D. Vera and Magistrate Judge Margo A. Rocconi. (sh) (Entered: 09/12/2023)	
☐	Online	8	09/12/2023	NOTICE TO PARTIES OF COURT-DIRECTED ADR PROGRAM filed. (sh) (Entered: 09/12/2023)	
☐	Online	9	09/12/2023	Notice to Counsel Re Consent to Proceed Before a United States Magistrate Judge. (sh) (Entered: 09/12/2023)	
☐	Online	10	09/12/2023	21 DAY Summons Issued re Complaint (Attorney Civil Case Opening), 1 as to Defendants Thermaltake Inc., Thermaltake Technology, Co., Ltd.. (sh) (Entered: 09/12/2023)	
☐	Online	11	09/12/2023	NOTICE of Appearance filed by attorney David Spencer Bloch on behalf of Plaintiffs Chien-Hao Chen, Lian Li Industrial Co., Ltd. (Bloch, David) (Entered: 09/12/2023)	
☐	Free	12	09/13/2023	PROOF OF SERVICE Executed by Plaintiff Lian Li Industrial Co., Ltd., Chien-Hao Chen, upon	

	Availability	#	Date	Proceeding Text	Source
				Defendant Thermaltake Inc. served on 9/12/2023, answer due 10/3/2023. Service of the Summons and Complaint were executed upon HUIPING LEE - REGISTERED AGENT in compliance with California Code of Civil Procedure by service on a domestic corporation, unincorporated association, or public entity (Chen, Kyle) (Entered: 09/13/2023)	
☐	Online	13	09/14/2023	NOTICE of Appearance filed by attorney Samuel C Means on behalf of Plaintiffs Chien-Hao Chen, Lian Li Industrial Co., Ltd. (Means, Samuel) (Entered: 09/14/2023)	
☐	Online	14	09/14/2023	NOTICE TO FILER OF DEFICIENCIES in Electronically Filed Document RE: Notice of Appearance 13 . The following error(s) was/were found: Incorrect event selected. Correct event to be used is: Notice of Appearance or Withdrawal of Counsel G123.. In response to this notice, the Court may: (1) order an amended or correct document to be filed; (2) order the document stricken; or (3) take other action as the Court deems appropriate. You need not take any action in response to this notice unless and until the Court directs you to do so. (ak) . (Entered: 09/14/2023)	
☐	Free	15	09/20/2023	CIVIL STANDING ORDER by Judge Hernan D. Vera. (lom) (Entered: 09/20/2023)	
☐	Online	16	09/21/2023	NOTICE of Appearance filed by attorney Mark R Weinstein on behalf of Plaintiffs Chien-Hao Chen, Lian Li Industrial Co., Ltd. (Weinstein, Mark) (Entered: 09/21/2023)	
☐	Free	17	09/22/2023	Stipulation filed by Plaintiffs Chien-Hao Chen, Lian Li Industrial Co., Ltd. Stipulation to Extend Time to Respond to Initial Complaint re: Complaint (Attorney Civil Case Opening), 1 (Bloch, David) (Entered: 09/22/2023)	
☐	Online	18	09/22/2023	NOTICE TO FILER OF DEFICIENCIES in Electronically Filed Document RE: Miscellaneous Document 17 . The following error(s) was/were	

	Availability	#	Date	Proceeding Text	Source
				found: Incorrect event selected. Correct event to be used is: Stip - Extending Time to Answer (30 days or less). In response to this notice, the Court may: (1) order an amended or correct document to be filed; (2) order the document stricken; or (3) take other action as the Court deems appropriate. You need not take any action in response to this notice unless and until the Court directs you to do so. (lom) (Entered: 09/22/2023)	
☐	Online	19	10/26/2023	First REQUEST for Issuance of Letters Rogatory for Service of Summons and Complaint in Taiwan and Authorization of Foreign Service by the Clerk filed by Plaintiffs Chien-Hao Chen, Lian Li Industrial Co., Ltd.. (Attachments: # 1 Proposed Order) (Chen, Kyle) Modified on 11/16/2023 (vam). (Entered: 10/26/2023)	
☐	Free	20	10/26/2023	DECLARATION of Samuel C. Means in support of First REQUEST for Issuance of Letters Rogatory for Service of Summons and Complaint in Taiwan and Authorization of Foreign Service by the Clerk 19 filed by Plaintiffs Chien-Hao Chen, Lian Li Industrial Co., Ltd.. (Attachments: # 1 Exhibit A) (Chen, Kyle) (Entered: 10/26/2023)	
☐	Online	21	10/26/2023	NOTICE OF LODGING filed Request for International Judicial Assistance (Letter Rogatory) Concerning: Thermaltake Technology Co., Ltd. re First REQUEST for Issuance of Letters Rogatory for Service of Summons and Complaint in Taiwan and Authorization of Foreign Service by the Clerk 19 , Declaration (Motion related), 20 (Chen, Kyle) (Entered: 10/26/2023)	
☐	Free	22	10/31/2023	WAIVER OF SERVICE Returned Executed filed by Plaintiffs Lian Li Industrial Co., Ltd., Chien-Hao Chen. upon Thermaltake Technology, Co., Ltd. waiver sent by Plaintiff on 9/22/2023, answer due 12/21/2023. Waiver of Service signed by Shen,	

	Availability	#	Date	Proceeding Text	Source
				Chang-Te, Legal Manager of Thermaltake Tech. Co., Ltd.. (Chen, Kyle) (Entered: 10/31/2023)	
☐	Free	23	10/31/2023	Notice of Withdrawal of Motion for Issuance of Letters Rogatory, 19 , Declaration (Motion related), 20 , Notice of Lodging, 21 filed by Plaintiffs Chien-Hao Chen, Lian Li Industrial Co., Ltd.. (Chen, Kyle) (Entered: 10/31/2023)	
☐	Free	24	11/02/2023	ANSWER to Complaint (Attorney Civil Case Opening), 1 with JURY DEMAND filed by Defendant Thermaltake Inc..(Attorney Nicolas S Gikkas added to party Thermaltake Inc.(pty:dft)) (Gikkas, Nicolas) (Entered: 11/02/2023)	
☐	Online	25	11/06/2023	NOTICE TO FILER OF DEFICIENCIES in Electronically Filed Document RE: Answer to Complaint 24 . The following error(s) was/were found: Local Rule 7-1.1 no notice of interested parties. In response to this notice, the Court may: (1) order an amended or correct document to be filed; (2) order the document stricken; or (3) take other action as the Court deems appropriate. You need not take any action in response to this notice unless and until the Court directs you to do so. (lom) (Entered: 11/06/2023)	
☐	Free	26	11/07/2023	Notice of Interested Parties filed by Defendant Thermaltake Inc.. (Gikkas, Nicolas) (Entered: 11/07/2023)	
☐	Free	27	11/13/2023	NOTICE TO FILER OF DEFICIENCIES in Electronically Filed Document RE: Notice (Other) 26 . The following error(s) was/were found: Incorrect event selected. Correct event to be used is: Certificate/Notice of Interested Parties. In response to this notice, the Court may: (1) order an amended or correct document to be filed; (2) order the document stricken; or (3) take other action as the Court deems appropriate. You need not take any action in response to this notice unless and	

	Availability	#	Date	Proceeding Text	Source
				until the Court directs you to do so. (lom) (Entered: 11/13/2023)	
☐	Free	28	11/13/2023	CERTIFICATE of Interested Parties filed by Defendant Thermaltake Inc., identifying Thermaltake Technology Co., Ltd.. (Gikkas, Nicolas) (Entered: 11/13/2023)	
☐	Online	29	12/14/2023	NOTICE of Appearance filed by attorney Lewis E. Hudnell, III on behalf of Defendants Thermaltake Inc., Thermaltake Technology, Co., Ltd. (Attorney Lewis E. Hudnell, III added to party Thermaltake Inc.(pty:dft), Attorney Lewis E. Hudnell, III added to party Thermaltake Technology, Co., Ltd.(pty:dft)) (Hudnell, Lewis) (Entered: 12/14/2023)	
☐	Free	30	12/21/2023	ANSWER to Complaint (Attorney Civil Case Opening), 1 filed by Defendant Thermaltake Technology, Co., Ltd..(Attorney Nicolas S Gikkas added to party Thermaltake Technology, Co., Ltd. (pty:dft))(Gikkas, Nicolas) (Entered: 12/21/2023)	
☐	Online	31	01/08/2024	ORDER SETTING SCHEDULING CONFERENCE by Judge Hernan D. Vera. Scheduling Conference set for 2/21/2024 at 10:00 AM before Judge Hernan D. Vera. READ THIS ORDER CAREFULLY. IT CONTROLS THIS CASE AND DIFFERS FROM THE LOCAL RULES. This case has been assigned to United States District Judge Hernn D. Vera. This matter is set for a Scheduling Conference on the above date in Courtroom 5B of the First Street Courthouse, 350 West 1st Street, Los Angeles, California 90012. (SEE DOCUMENT FOR FURTHER DETAILS.) (rolm) (Entered: 01/08/2024)	
☐	Online	32	02/02/2024	NOTICE of Related Case(s) filed by DEFENDANTS Thermaltake Inc., Thermaltake Technology, Co., Ltd.. Related Case(s): 2:23-cv-7471 (Gikkas, Nicolas) (Entered: 02/02/2024)	
☐	Online	33	02/06/2024	NOTICE of Interested Parties filed by Defendant Thermaltake Technology, Co., Ltd., (Gikkas, Nicolas) (Entered: 02/06/2024)	

	Availability	#	Date	Proceeding Text	Source
☐	Free	34	02/08/2024	JOINT REPORT Rule 26(f) Discovery Plan ; estimated length of trial 5 days, filed by Plaintiffs Chien-Hao Chen, Lian Li Industrial Co., Ltd... (Attachments: # 1 Exhibit A (Proposed Schedule of Pretrial and Trial Dates))(Chen, Kyle) (Entered: 02/08/2024)	
☐	Online	35	02/13/2024	APPLICATION to Continue Scheduling Conference from February 21, 2024 to April 3, 2024 Re: Initial Order Setting R26 Scheduling Conference - form only,, 31 filed by DEFENDANTS Thermaltake Inc., Thermaltake Technology, Co., Ltd.. Application set for hearing on 2/21/2024 at 10:00 AM before Judge Hernan D. Vera. (Attachments: # 1 Proposed Order) (Gikkas, Nicolas) (Entered: 02/13/2024)	
☐	Free	36	02/14/2024	ORDER DENYING DEFENDANTS' APPLICATION TO CONTINUE INITIAL SCHEDULING CONFERENCE by Judge Hernan D. Vera. (lom) (Entered: 02/14/2024)	
☐	Free	37	02/21/2024	MINUTES OF SCHEDULING CONFERENCE AND ORDER SETTING PRETRIAL AND TRIAL SCHEDULE held before Judge Hernan D. Vera. The Court held a Scheduling Conference with the parties on February 21, 2024. Having considered the parties' proposed pre-trial and trial dates, the Court hereby sets the following schedule governing this case: Final Pretrial Conference set for 3/25/2025 10:00 AM; Jury Trial set for 4/15/2025 09:00 AM; Hearing on Motions in Limine 3/18/2025; Claim Construction Hearing 10/17/2024. For specific instructions on mandatory trial procedures, the Court refers counsel to the Court's Civil Trial Order. Please read that Order carefully as the procedures may differ in some respects from the Local Rules. See minutes for other deadlines and information. Court Recorder: CourtSmart. (lom) (Entered: 02/28/2024)	

	Availability	#	Date	Proceeding Text	Source
☐	Free	38	02/28/2024	CIVIL TRIAL ORDER by Judge Hernan D. Vera. (lom) (Entered: 02/28/2024)	
☐	Online	39	05/25/2024	Notice of Compliance for Disclosure of Invalidity Contentions filed by Defendants Thermaltake Inc., Thermaltake Technology, Co., Ltd.. (Gikkas, Nicolas) (Entered: 05/25/2024)	
☐	Online	40	05/25/2024	Notice of Compliance for Exchange of Proposed Terms for Construction filed by Defendants Thermaltake Inc., Thermaltake Technology, Co., Ltd.. (Gikkas, Nicolas) (Entered: 05/25/2024)	
☐	Online	41	05/29/2024	Notice of Compliance for Exchange of Preliminary Claim Constructions and Extrinsic Evidence filed by Defendants Thermaltake Inc., Thermaltake Technology, Co., Ltd.. (Gikkas, Nicolas) (Entered: 05/29/2024)	
☐	Online	42	06/07/2024	Notice of Appearance or Withdrawal of Counsel: for attorney Yang Liu counsel for Plaintiffs Chien-Hao Chen, Lian Li Industrial Co., Ltd.. Adding Yang Liu as counsel of record for LIAN LI INDUSTRIAL CO., LTD. and CHEN, CHIEN-HAO for the reason indicated in the G-123 Notice. Filed by Plaintiff Yang Liu. (Attorney Yang Liu added to party Chien-Hao Chen(pty:pla), Attorney Yang Liu added to party Lian Li Industrial Co., Ltd.(pty:pla))(Liu, Yang) (Entered: 06/07/2024)	
☐	Free	43	06/20/2024	STATEMENT JOINT CLAIM CONSTRUCTION AND PREHEARING STATEMENT (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C, # 4 Exhibit D, # 5 Exhibit E)(Chen, Kyle) (Entered: 06/20/2024)	
☐	Online	44	07/05/2024	APPLICATION to Continue the Close of Claim Construction Discovery from 8/2/2024 to 8/23/2024 Re: Scheduling Conference - optional html form,,,, Set/Reset Deadlines/Hearings,,,, Terminate Hearings,,, 37 filed by Plaintiffs Chien-Hao Chen, Lian Li Industrial Co., Ltd.. (Attachments: # 1 Exhibit A (Declaration of Kyle D. Chen iso	

	Availability	#	Date	Proceeding Text	Source
				Application), # 2 Proposed Order for Continuance) (Chen, Kyle) (Entered: 07/05/2024)	
☐	Runner	45	07/09/2024	TEXT ONLY ENTRY (IN CHAMBERS) ORDER by Judge Hernan D. Vera: Plaintiff's Application to Continue the Close of Claim Construction 44 is denied, without prejudice, as procedurally improper. Such relief must be requested either by ex parte application in conformity with the Court's local rules, and/or through noticed motion. THERE IS NO PDF DOCUMENT ASSOCIATED WITH THIS ENTRY. (wm) TEXT ONLY ENTRY (Entered: 07/09/2024)	
☐	Online	46	08/13/2024	NOTICE OF MOTION AND MOTION to Stay Case pending INTER PARTES REVIEW filed by Defendants Thermaltake Inc., Thermaltake Technology, Co., Ltd.. Motion set for hearing on 9/5/2024 at 10:00 AM before Judge Hernan D. Vera. (Attachments: # 1 Memorandum, # 2 Proposed Order, # 3 Declaration, # 4 Exhibit 1, # 5 Exhibit 2, # 6 Exhibit 3, # 7 Exhibit 4, # 8 Exhibit 5) (Gikkas, Nicolas) (Entered: 08/13/2024)	
☐	Runner	47	08/16/2024	TEXT ONLY ENTRY (IN CHAMBERS) ORDER by Judge Hernan D. Vera: The Court continues the Motion to Stay 46 to 09/19/24 at 10am. THERE IS NO PDF DOCUMENT ASSOCIATED WITH THIS ENTRY. (wm) TEXT ONLY ENTRY (Entered: 08/16/2024)	
☐	Online	48	08/29/2024	Plaintiff's Opposition to Defendant's Motion to Stay Pending Inter Partes Review Opposition re: NOTICE OF MOTION AND MOTION to Stay Case pending INTER PARTES REVIEW 46 filed by Plaintiffs Chien-Hao Chen, Lian Li Industrial Co., Ltd.. (Attachments: # 1 Exhibit 1- Email w JP2018041147A)(Chen, Kyle) (Entered: 08/29/2024)	
☐	Online	49	09/05/2024	REPLY In Support Of NOTICE OF MOTION AND MOTION to Stay Case pending INTER PARTES	

	Availability	#	Date	Proceeding Text	Source
				REVIEW 46 filed by Defendants Thermaltake Inc., Thermaltake Technology, Co., Ltd.. (Attachments: # 1 Declaration)(Gikkas, Nicolas) (Entered: 09/05/2024)	
☐	Online	50	09/09/2024	STATEMENT Plaintiffs' Opening Claim Construction Brief (Attachments: # 1 Declaration Ex. A - Chen Decl. ISO CC Opening Brief, # 2 Exhibit 1 - 2024 06 21 Tuckerman Expert Report, # 3 Exhibit 2 - LL-Thermaltake-0003663 to -0003664, # 4 Exhibit 3 - IPR2024-01230 Petition, # 5 Exhibit 4 - 240621 Schubert Claim Construction Expert Report, # 6 Exhibit 5 - Excerpts of Dr. Schubert Dep. Transcript)(Chen, Kyle) (Entered: 09/09/2024)	
☐	Online	51	09/10/2024	NOTICE TO FILER OF DEFICIENCIES in Electronic Filed Document RE: Plaintiffs' Opening Claim Construction Brief 50 . The following error(s) was/were found: Incorrect event selected. Correct event to be used is: Miscellaneous Filings-Brief (non-motion non-appeal). In response to this notice, the Court may: (1) order an amended or correct document to be filed; (2) order the document stricken; or (3) take other action as the Court deems appropriate. You need not take any action in response to this notice unless and until the Court directs you to do so. (bm) (Entered: 09/10/2024)	
☐	Online	52	09/17/2024	Notice of Appearance filed by attorney Stanley H. Thompson, Jr. on behalf of Thermaltake Inc., Thermaltake Technology, Co., Ltd.. (Thompson, Stanley) (Entered: 09/17/2024)	
☐	Runner	53	09/19/2024	MINUTES of Motion to Stay Pending Inter Partes Review (ECF No. 46) hearing held before Judge Hernan D. Vera. The Court states its tentative views that it is inclined to GRANT the Motion to Stay Pending Inter Partes Review (ECF No. 46) (the "Motion"). Counsel address the Court. The Court takes the Motion UNDER SUBMISSION and	

	Availability	#	Date	Proceeding Text	Source
				a ruling will be issued. Attorney for Plaintiff(s): David Bloch and Kyle D. Chen. Attorney for Defendant(s): Stanley H. Thompson. Courtroom Deputy: Stephen Montes Kerr. Time in Court: 13 mins. THERE IS NO PDF DOCUMENT ASSOCIATED WITH THIS ENTRY. Court Reporter: CourtSmart. (smo) (Entered: 09/19/2024)	
☐	Online	54	09/23/2024	BRIEF filed by Defendants Thermaltake Technology, Co., Ltd., Thermaltake Inc.. Responsive Claim Construction Brief (Attachments: # 1 Declaration, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4, # 6 Exhibit 5, # 7 Exhibit 6, # 8 Exhibit 7, # 9 Exhibit 8, # 10 Exhibit 9)(Gikkas, Nicolas) (Entered: 09/24/2024)	
☐	Online	55	09/24/2024	Notice of Errata filed by Defendants Thermaltake Technology, Co., Ltd., Thermaltake Inc.. re Responsive Claim Construction Brief (Dkt. No. 54) (Attachments: # 1 Exhibit 1)(Gikkas, Nicolas) (Entered: 09/24/2024)	
☐	Online	56	09/30/2024	[PLAINTIFFS' REPLY CLAIM CONSTRUCTION BRIEF filed as] BRIEF filed by Plaintiffs Lian Li Industrial Co., Ltd., Chien-Hao Chen. regarding Brief (non-motion non-appeal), 54 , Statement, 50 . (Attachments: # 1 Declaration DECLARATION OF KYLE D. CHEN IN SUPPORT OF PLAINTIFFS REPLY CLAIM CONSTRUCTION BRIEF, # 2 Exhibit 1, # 3 Exhibit 2)(Chen, Kyle) Modified on 10/1/2024 (lom). (Entered: 09/30/2024)	
☐	Online	57	10/04/2024	MINUTES IN CHAMBERS - GRANTING MOTION TO STAY PENDING INTER PARTES REVIEW [DKT NO. 46] by Judge Hernan D. Vera. For the foregoing reasons, the Court grants Defendant's Motion to Stay Pending Inter Partes Review. This Action is hereby stayed pending the PTAB's institution decision on the '336 Patent, projected to be completed by February 2025. The Parties shall file a joint status report within fourteen (14) days of	

	Availability	#	Date	Proceeding Text	Source
				the PTAB's initial decision to accept or deny. The Court will schedule a status conference at that time to determine whether lifting the stay is warranted. The Court also notes that the outcome of the IPR, including the potential cancellation of claims containing disputed terms, may affect the scope of the claim construction disputes. Moreover, the record created during any IPR proceedings may affect the claim construction analysis which may require new briefing. To that end, the Court therefore continues the claim construction hearing and will allow the parties to amend and supplement their claim construction briefing once the stay is lifted. The Court will reschedule the new claim construction hearing date as appropriate. See order for details. (lom) (Entered: 10/04/2024)	
☐	Online	58	10/24/2024	NOTICE TO FILER OF DEFICIENCIES in Electronic Filed Document RE: Notice (Other) 52 . The following error(s) was/were found: Incorrect event selected. Correct event to be used is: Notice of Appearance.. In response to this notice, the Court may: (1) order an amended or correct document to be filed; (2) order the document stricken; or (3) take other action as the Court deems appropriate. You need not take any action in response to this notice unless and until the Court directs you to do so. (ak) (Entered: 10/24/2024)	

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Content Type: Dockets

Terms: number(2:23cv7470)

Narrow By: Case Status: Open or Unknown or Closed

Date and Time: Nov 04, 2024 07:34:42 a.m. EST



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2:23cv7471, Lian Li Industrial Co., Ltd. Et Al V. Phanteks Europe Et Al

US District Court Docket

United States District Court, California Central

(Western Division - Los Angeles)

This case was retrieved on 11/04/2024

Header

Case Number: 2:23cv7471
Date Filed: 09/08/2023
Assigned To: Judge Hernan D. Vera
Referred To: Magistrate Judge Margo A. Rocconi
Nature of Suit: Patent (830)
Cause: Patent Infringement
Lead Docket: None
Other Docket: 2:23cv07470
Jurisdiction: Federal Question

Class Code: Open
Statute: 35:271
Jury Demand: Both
Demand Amount: $0
NOS Description: Patent

Participants

Litigants	Attorneys
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Litigants	Attorneys
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Phanteks Europe doing business as | Axpertec International B.V. | **Defendant**	Ming-Tao Yang LEAD ATTORNEY;ATTORNEY TO BE NOTICED Finnegan Henderson Farabow Garrett and Dunner LLP 3300 Hillview Avenue Palo Alto, CA 94304 USA 650-849-6600 Fax: 650-849-6666 Email:Ming.Yang@finnegan.Com Jeffrey Daniel Smyth ATTORNEY TO BE NOTICED Finnegan Henderson Farabow Garrett and Dunner LLP 3300 Hillview Avenue Palo Alto, CA 94304 USA 650-849-6600 Fax: 650-849-6666 Email:Jeffrey.Smyth@finnegan.Com
Axpertec Inc. also known as | Phanteks USA | **Defendant**	Ming-Tao Yang LEAD ATTORNEY;ATTORNEY TO BE NOTICED Finnegan Henderson Farabow Garrett and Dunner LLP 3300 Hillview Avenue Palo Alto, CA 94304 USA 650-849-6600 Fax: 650-849-6666 Email:Ming.Yang@finnegan.Com Jeffrey Daniel Smyth ATTORNEY TO BE NOTICED

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Phanteks Taiwan Inc. **Defendant**	Jeffrey Daniel Smyth ATTORNEY TO BE NOTICED Finnegan Henderson Farabow Garrett and Dunner LLP 3300 Hillview Avenue Palo Alto, CA 94304 USA 650-849-6600 Fax: 650-849-6666 Email:Jeffrey.Smyth@finnegan.Com Ming-Tao Yang ATTORNEY TO BE NOTICED Finnegan Henderson Farabow Garrett and Dunner LLP 3300 Hillview Avenue Palo Alto, CA 94304 USA 650-849-6600 Fax: 650-849-6666 Email:Ming.Yang@finnegan.Com
Phanteks China **Defendant**	Jeffrey Daniel Smyth ATTORNEY TO BE NOTICED Finnegan Henderson Farabow Garrett and Dunner LLP 3300 Hillview Avenue Palo Alto, CA 94304 USA 650-849-6600 Fax: 650-849-6666 Email:Jeffrey.Smyth@finnegan.Com Ming-Tao Yang ATTORNEY TO BE NOTICED

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☐	Availability	#	Date	Proceeding Text	Source
☐	Free	1	09/08/2023	COMPLAINT Receipt No: ACACDC-36007786 - Fee: $402, filed by Plaintiffs Lian Li Industrial Co., Ltd., Chien-Hao Chen. (Attachments: # 1 Exhibit A) (Attorney Kyle Dakai Chen added to party Chien-Hao Chen(pty:pla), Attorney Kyle Dakai Chen added to party Lian Li Industrial Co., Ltd.(pty:pla)) (Chen, Kyle) (Entered: 09/08/2023)	
☐	Free	2	09/08/2023	CIVIL COVER SHEET filed by Plaintiffs Chien-Hao Chen, Lian Li Industrial Co., Ltd.. (Chen, Kyle) (Entered: 09/08/2023)	
☐	Free	3	09/08/2023	CORPORATE DISCLOSURE STATEMENT Certification and Notice of Interested Parties filed by Plaintiffs Chien-Hao Chen, Lian Li Industrial Co., Ltd. (Chen, Kyle) (Entered: 09/08/2023)	
☐	Free	4	09/08/2023	Request for Clerk to Issue Summons on Complaint (Attorney Civil Case Opening), 1 , Civil Cover Sheet (CV-71) 2 filed by Plaintiffs Chien-Hao Chen, Lian Li Industrial Co., Ltd.. (Chen, Kyle) (Entered: 09/08/2023)	
☐	Free	5	09/08/2023	REPORT ON THE FILING OF AN ACTION Regarding a Patent or a Trademark (Initial Notification) filed by Chien-Hao Chen, Lian Li Industrial Co., Ltd.. (Chen, Kyle) (Entered: 09/08/2023)	

	Availability	#	Date	Proceeding Text	Source
☐	Free	6	09/12/2023	NOTICE OF ASSIGNMENT to District Judge Consuelo B. Marshall and Magistrate Judge Patricia Donahue. (ghap) (Entered: 09/12/2023)	
☐	Free	7	09/12/2023	NOTICE TO PARTIES OF COURT-DIRECTED ADR PROGRAM filed. (ghap) (Entered: 09/12/2023)	
☐	Free	8	09/12/2023	Notice to Counsel Re Consent to Proceed Before a United States Magistrate Judge. (ghap) (Entered: 09/12/2023)	
☐	Free	9	09/12/2023	21 DAY Summons Issued re Complaint (Attorney Civil Case Opening), 1 as to Defendants Axpertec Inc., Phanteks Europe. (ghap) (Entered: 09/12/2023)	
☐	Free	10	09/12/2023	NOTICE of Appearance filed by attorney David Spencer Bloch on behalf of Plaintiffs Chien-Hao Chen, Lian Li Industrial Co., Ltd. (Bloch, David) (Entered: 09/12/2023)	
☐	Free	11	09/13/2023	PROOF OF SERVICE Executed by Plaintiff Lian Li Industrial Co., Ltd., Chien-Hao Chen, upon Defendant Axpertec Inc. served on 9/12/2023, answer due 10/3/2023. Service of the Summons and Complaint were executed upon CHE SHENG TANG - REGISTERED AGENT in compliance with Federal Rules of Civil Procedure by service on a domestic corporation, unincorporated association, or public entity (Chen, Kyle) (Entered: 09/13/2023)	
☐	Free	12	09/14/2023	NOTICE of Appearance filed by attorney Samuel C Means on behalf of Plaintiffs Chien-Hao Chen, Lian Li Industrial Co., Ltd. (Means, Samuel) (Entered: 09/14/2023)	
☐	Free	13	09/14/2023	NOTICE TO FILER OF DEFICIENCIES in Electronically Filed Document RE: Notice of Appearance 12 . The following error(s) was/were found: Incorrect event selected. Correct event to be used is: Notice of Appearance or Withdrawal of Counsel G123.. In response to this notice, the Court may: (1) order an amended or correct	

	Availability	#	Date	Proceeding Text	Source
				document to be filed; (2) order the document stricken; or (3) take other action as the Court deems appropriate. You need not take any action in response to this notice unless and until the Court directs you to do so. (ak) (Entered: 09/14/2023)	
☐	Free	14	09/21/2023	NOTICE of Appearance filed by attorney Mark R Weinstein on behalf of Plaintiffs Chien-Hao Chen, Lian Li Industrial Co., Ltd. (Weinstein, Mark) (Entered: 09/21/2023)	
☐	Free	15	10/03/2023	First STIPULATION Extending Time to Answer the complaint as to Axpertec Inc. answer now due 11/2/2023, re Complaint (Attorney Civil Case Opening), 1 filed by Plaintiff Lian Li Industrial Co., Ltd.; Chien-Hao Chen.(Means, Samuel) (Entered: 10/03/2023)	
☐	Free	16	10/04/2023	PROOF OF SERVICE Executed by Plaintiff Lian Li Industrial Co., Ltd., Chien-Hao Chen, upon Defendant Phanteks Europe served on 9/29/2023, answer due 10/20/2023. Service of the Summons and Complaint were executed upon Axpertec International B.V. in compliance with Federal Rules of Civil Procedure by method of service not specified (Chen, Kyle) (Entered: 10/04/2023)	
☐	Free	17	10/18/2023	First STIPULATION Extending Time to Answer the complaint as to Phanteks Europe answer now due 11/20/2023, re Complaint (Attorney Civil Case Opening), 1 , Summons Issued (Attorney Civil Case Opening) 9 filed by Plaintiffs Lian Li Industrial Co., Ltd.; Chien-Hao Chen.(Chen, Kyle) (Entered: 10/18/2023)	
☐	Free	18	10/19/2023	ORDER RE TRANSFER PURSUANT to this Court's General Order in the Matter of Assignment of Cases and Duties to the District Judges. Related Case- filed. Related Case No: 2:23-cv-07470HDV(MARx). Case transferred from Magistrate Judge Patricia Donahue and Judge Consuelo B. Marshall to Judge Hernan D. Vera and	

	Availability	#	Date	Proceeding Text	Source
				Magistrate Judge Margo A. Rocconi for all further proceedings. The case number will now reflect the initials of the transferee Judge 2:23-cv-07471 HDV(MARx). Signed by Judge Hernan D. Vera (rn) (Entered: 10/19/2023)	
☐	Free	19	10/25/2023	CIVIL STANDING ORDER by Judge Hernan D. Vera. (lom) (Entered: 10/26/2023)	
☐	Free	20	11/02/2023	ANSWER to Complaint (Attorney Civil Case Opening), 1 with JURY DEMAND filed by Defendants Axpertec Inc..(Attorney Ming-Tao Yang added to party Axpertec Inc.(pty:dft))(Yang, Ming-Tao) (Entered: 11/02/2023)	
☐	Free	21	11/06/2023	NOTICE TO FILER OF DEFICIENCIES in Electronically Filed Document RE: Answer to Complaint 20 . The following error(s) was/were found: Local Rule 7-1.1 no notice of interested parties. In response to this notice, the Court may: (1) order an amended or correct document to be filed; (2) order the document stricken; or (3) take other action as the Court deems appropriate. You need not take any action in response to this notice unless and until the Court directs you to do so. (lom) (Entered: 11/06/2023)	
☐	Free	22	11/06/2023	NOTICE of Interested Parties filed by Defendant Axpertec Inc., Phanteks Europe, identifying Che-Sheng Tang. (Attorney Ming-Tao Yang added to party Phanteks Europe(pty:dft))(Yang, Ming-Tao) (Entered: 11/06/2023)	
☐	Free	23	11/21/2023	FIRST AMENDED COMPLAINT against Defendants Axpertec Inc., Phanteks Europe, Phanteks Taiwan Inc., Phanteks China amending Complaint (Attorney Civil Case Opening), 1 , filed by Plaintiffs Lian Li Industrial Co., Ltd., Chien-Hao Chen(Chen, Kyle) (Entered: 11/21/2023)	
☐	Free	24	11/22/2023	Request for Clerk to Issue Summons on Amended Complaint/Petition 23 filed by Plaintiffs Chien-Hao	

	Availability	#	Date	Proceeding Text	Source
				Chen, Lian Li Industrial Co., Ltd.. (Chen, Kyle) (Entered: 11/22/2023)	
☐	Free	25	11/22/2023	Request for Clerk to Issue Summons on Amended Complaint/Petition 23 filed by Plaintiffs Chien-Hao Chen, Lian Li Industrial Co., Ltd.. (Chen, Kyle) (Entered: 11/22/2023)	
☐	Free	26	11/25/2023	21 DAY Summons Issued re First Amended Complaint 23 as to Defendant Phanteks China. (lom) (Entered: 11/25/2023)	
☐	Free	27	11/25/2023	21 DAY Summons Issued re First Amended Complaint 23 as to Defendant Phanteks Taiwan Inc. (lom) (Entered: 11/25/2023)	
☐	Free	28	11/30/2023	[WITHDRAWN ON 12/08/23] REQUEST for Order for SERVICE OF PROCESS BY CLERK OF COURT PURSUANT TO L.R. 4-5, FED. R. CIV. P. 4(f) AND 4(h) filed by Plaintiffs Chien-Hao Chen, Lian Li Industrial Co., Ltd.. (Attachments: # 1 Proposed Order) (Chen, Kyle) Modified on 12/9/2023 (wm). (Entered: 11/30/2023)	
☐	Free	29	11/30/2023	DECLARATION of SAMUEL C. MEANS in support of REQUEST for Order for SERVICE OF PROCESS BY CLERK OF COURT PURSUANT TO L.R. 4-5, FED. R. CIV. P. 4(f) AND 4(h) 28 filed by Plaintiffs Chien-Hao Chen, Lian Li Industrial Co., Ltd.. (Attachments: # 1 Exhibit A - Business Register Extract from the Netherlands Chamber of Commerce for Defendant Phanteks Europe (d.b.a. Axpertec International B.V.))(Chen, Kyle) (Entered: 11/30/2023)	
☐	Free	30	12/05/2023	ANSWER to Amended Complaint/Petition 23 Defendants Axpertec International B.V.'s and Axpertec Inc.'s Answer to First Amended Complaint for Patent Infringement filed by Defendants Axpertec Inc., Phanteks Europe.(Yang, Ming-Tao) (Entered: 12/05/2023)	
☐	Online	31	12/08/2023	WAIVER OF SERVICE Returned Executed filed by Plaintiffs Lian Li Industrial Co., Ltd., Chien-Hao	

	Availability	#	Date	Proceeding Text	Source
				Chen. upon Phanteks China waiver sent by Plaintiff on 11/29/2023, answer due 2/27/2024. Waiver of Service signed by Tang, Che-Sheng. (Chen, Kyle) (Entered: 12/08/2023)	
☐	Online	32	12/08/2023	WAIVER OF SERVICE Returned Executed filed by Plaintiffs Lian Li Industrial Co., Ltd., Chien-Hao Chen. upon Phanteks Taiwan Inc. waiver sent by Plaintiff on 12/7/2023, answer due 3/6/2024. Waiver of Service signed by Tang, Che-Sheng. (Chen, Kyle) (Entered: 12/08/2023)	
☐	Online	33	12/08/2023	Notice of Withdrawal of Motion for Order 28 , Declaration (Motion related), 29 filed by Plaintiffs Chien-Hao Chen, Lian Li Industrial Co., Ltd.. (Chen, Kyle) (Entered: 12/08/2023)	
☐	Free	34	02/27/2024	ANSWER to Amended Complaint/Petition 23 Defendants Phanteks Taiwan Inc.'s and Phanteks Shenzhen Inc.'s Answer to First Amended Complaint for Patent Infringement filed by Defendant Phanteks China, Phanteks Taiwan Inc.. (Attorney Ming-Tao Yang added to party Phanteks China(pty:dft), Attorney Ming-Tao Yang added to party Phanteks Taiwan Inc.(pty:dft))(Yang, Ming-Tao) (Entered: 02/27/2024)	
☐	Free	35	02/27/2024	NOTICE of Interested Parties filed by Defendant Phanteks China, Phanteks Taiwan Inc., identifying Che-Sheng Tang. (Yang, Ming-Tao) (Entered: 02/27/2024)	
☐	Free	36	03/06/2024	ORDER SETTING SCHEDULING CONFERENCE by Judge Hernan D. Vera. Scheduling Conference set for 5/1/2024 at 10:00 AM. READ THIS ORDER CAREFULLY. IT CONTROLS THIS CASE AND DIFFERS FROM THE LOCAL RULES. (lom) (Entered: 03/06/2024)	
☐	Online	37	04/17/2024	Notice of Appearance or Withdrawal of Counsel: for attorney Jeffrey Daniel Smyth counsel for Defendants Axpertec Inc., Phanteks China, Phanteks Europe, Phanteks Taiwan Inc.. Adding	

	Availability	#	Date	Proceeding Text	Source
				Jeffrey D. Smyth as counsel of record for Phanteks Europe (d.b.a. Axpertec International B.V.), Axpertec Inc. (a.k.a. Phanteks USA), Phanteks Taiwan Inc., and Phanteks Shenzhen Inc. for the reason indicated in the G-123 Notice. Filed by Defendants Phanteks Europe (d.b.a. Axpertec International B.V.), Axpertec Inc. (a.k.a. Phanteks USA), Phanteks Taiwan Inc., and Phanteks Shenzhen Inc.. (Attorney Jeffrey Daniel Smyth added to party Axpertec Inc.(pty:dft), Attorney Jeffrey Daniel Smyth added to party Phanteks China(pty:dft), Attorney Jeffrey Daniel Smyth added to party Phanteks Europe(pty:dft), Attorney Jeffrey Daniel Smyth added to party Phanteks Taiwan Inc. (pty:dft))(Smyth, Jeffrey) (Entered: 04/17/2024)	
☐	Free	38	04/17/2024	JOINT REPORT Rule 26(f) Discovery Plan ; estimated length of trial 5 days, filed by Plaintiffs Chien-Hao Chen, Lian Li Industrial Co., Ltd... (Attachments: # 1 Exhibit A)(Chen, Kyle) (Entered: 04/17/2024)	
☐	Free	39	05/01/2024	MINUTES OF SCHEDULING CONFERENCE AND ORDER SETTING PRETRIAL AND TRIAL SCHEDULE held before Judge Hernan D. Vera. The Court held a Scheduling Conference with the parties on 05/01/24. Having considered the parties proposed pre-trial and trial dates, the Court hereby sets the following schedule governing this case: Hearing on Motions In Limine 5/20/2025; Final Pretrial Conference set for 5/27/2025 10:00 AM; Jury Trial set for 6/17/2025 09:00 AM. For specific instructions on mandatory trial procedures, the Court refers counsel to the Court's Civil Trial Order. Please read that Order carefully as the procedures may differ in some respects from the Local Rules. [See minutes for additional deadlines] Court Reporter: Miriam Baird. (lom) (Entered: 05/01/2024)	

	Availability	#	Date	Proceeding Text	Source
☐	Online	40	05/01/2024	CIVIL TRIAL ORDER by Judge Hernan D. Vera. (lom) (Entered: 05/01/2024)	
☐	Online	41	05/07/2024	[JOINT STIPULATION REGARDING SCHEDULING DISCREPANCIES filed as] Joint STIPULATION to Correct Scheduling Conference - optional html form,,,, Set/Reset Deadlines/Hearings,,, 39 filed by Plaintiff Lian Li Industrial Co., Ltd..(Bloch, David) Modified on 5/7/2024 (lom). (Entered: 05/07/2024)	
☐	Online	42	05/09/2024	JOINT STIPULATION REGARDING SCHEDULING DISCREPANCIES; ORDER 41 by Judge Hernan D. Vera. The parties jointly submit this Stipulation to advise the Court of two discrepancies in the Court's Scheduling Order: Deadline for motion to amend pleadings or add parties. ECF 39 at 1 sets this deadline for June 12, 2024, but ECF 39 at 3 sets the deadline for June 13, 2024. The parties believe that the June 13 date is appropriate. Trial filings. The Court's Scheduling Order (ECF 39 at 2) states that parties' Trial Filings (first round) are scheduled for May 13, 2025, while the Trial Filings (second round) are scheduled for April 29, 2025. The parties believe that the first round filings should be set for April 29 and the second round filings should be set for May 13, 2025. IT IS SO ORDERED. (lom) (Entered: 05/09/2024)	
☐	Online	43	06/07/2024	Notice of Appearance or Withdrawal of Counsel: for attorney Yang Liu counsel for Plaintiffs Chien-Hao Chen, Lian Li Industrial Co., Ltd.. Adding Yang Liu as counsel of record for LIAN LI INDUSTRIAL CO., LTD. and CHEN, CHIEN-HAO for the reason indicated in the G-123 Notice. Filed by Plaintiff Yang Liu. (Attorney Yang Liu added to party Chien-Hao Chen(pty:pla), Attorney Yang Liu added to party Lian Li Industrial Co., Ltd.(pty:pla))(Liu, Yang) (Entered: 06/07/2024)	

	Availability	#	Date	Proceeding Text	Source
☐	Online	44	07/22/2024	STATEMENT JOINT CLAIM CONSTRUCTION AND PREHEARING STATEMENT filed by Plaintiffs Chien-Hao Chen, Lian Li Industrial Co., Ltd. (Attachments: # 1 Exhibit A, # 2 Exhibit B, # 3 Exhibit C)(Chen, Kyle) (Entered: 07/22/2024)	
☐	Online	45	08/14/2024	NOTICE OF MOTION AND MOTION to Stay Case pending Reexamination filed by Defendants Axpertec Inc., Phanteks China, Phanteks Europe, Phanteks Taiwan Inc.. Motion set for hearing on 9/19/2024 at 10:00 AM before Judge Hernan D. Vera. (Attachments: # 1 Proposed Order, # 2 Declaration of Jeffrey D. Smyth ISO Motion, # 3 Exhibit A to Smyth Declaration, # 4 Exhibit B to Smyth Declaration, # 5 Exhibit C to Smyth Declaration, # 6 Exhibit D to Smyth Declaration, # 7 Exhibit E to Smyth Declaration) (Smyth, Jeffrey) (Entered: 08/14/2024)	
☐	Online	46	08/29/2024	Plaintiff's Opposition to Defendant's Motion to Stay Pending Ex Parte Reexamination Opposition re: NOTICE OF MOTION AND MOTION to Stay Case pending Reexamination 45 filed by Plaintiffs Chien-Hao Chen, Lian Li Industrial Co., Ltd.. (Attachments: # 1 Exhibit 1- Ex Parte Reexamination Filing Data - September 30, 2023) (Chen, Kyle) (Entered: 08/29/2024)	
☐	Online	47	09/05/2024	REPLY in support NOTICE OF MOTION AND MOTION to Stay Case pending Reexamination 45 filed by Defendants Axpertec Inc., Phanteks China, Phanteks Europe, Phanteks Taiwan Inc.. (Attachments: # 1 Declaration of Jeffrey D. Smyth ISO Reply, # 2 Exhibit F to Smyth Declaration, # 3 Exhibit G to Smyth Declaration)(Smyth, Jeffrey) (Entered: 09/05/2024)	
☐	Online	48	09/09/2024	STATEMENT Plaintiffs' Opening Claim Construction Brief (Attachments: # 1 Declaration Ex. A - 2024 09 09 PHANTEKS Chen Decl iso cc opening brief (LL v. Phanteks), # 2 Exhibit 1 - 2024	

	Availability	#	Date	Proceeding Text	Source
				07 23 Tuckerman Declaration for Claim Construction, # 3 Exhibit 2 - LL-Phanteks-0003663 to LL-Phanteks-0003664, # 4 Exhibit 3 - Excerpts of Chien-HaoChen Dep. Tr, # 5 Exhibit 4 - Phanteks IPR2024-01230 Petition)(Chen, Kyle) (Entered: 09/09/2024)	
☐	Online	49	09/10/2024	NOTICE TO FILER OF DEFICIENCIES in Electronic Filed Document RE: Plaintiffs' Opening Claim Construction Brief 48 . The following error(s) was/were found: Incorrect event selected. Correct event to be used is: Other Filings-Miscellaneous Filings-Brief (non-motion non-appeal). In response to this notice, the Court may: (1) order an amended or correct document to be filed; (2) order the document stricken; or (3) take other action as the Court deems appropriate. You need not take any action in response to this notice unless and until the Court directs you to do so. (bm) (Entered: 09/10/2024)	
☐	Runner	50	09/19/2024	MINUTES of Motion to Stay Pending Reexamination (ECF No. 45 hearing held before Judge Hernan D. Vera. The Court states its tentative views that it is inclined to GRANT Defendants' Motion to Stay Pending Reexamination (ECF No. 45) (the "Motion"). Counsel address the Court. The Court takes the Motion UNDER SUBMISSION and a ruling will be issued. Attorney for Plaintiff(s): David Bloch and Kyle D. Chen. Attorney for Defendant(s): Ming-Tao Yang and Jeffrey D. Smyth. Courtroom Deputy: Stephen Montes Kerr. Time in Court: 13 mins. THERE IS NO PDF DOCUMENT ASSOCIATED WITH THIS ENTRY. Court Reporter: CourtSmart. (smo) (Entered: 09/19/2024)	
☐	Online	51	09/23/2024	RESPONSE filed by Defendants Phanteks Europe, Axpertec Inc., Phanteks Taiwan Inc., Phanteks Chinato Statement, 48 Defendants' Responsive	

	Availability	#	Date	Proceeding Text	Source
				Claim Construction Brief (Attachments: # 1 Declaration of Ming-Tao Yang, # 2 Exhibit 5 to Yang Declaration, # 3 Exhibit 6 to Yang Declaration, # 4 Exhibit 7 to Yang Declaration, # 5 Exhibit 8 to Yang Declaration, # 6 Exhibit 9 to Yang Declaration, # 7 Exhibit 10 to Yang Declaration, # 8 Exhibit 11 to Yang Declaration, # 9 Exhibit 12 to Yang Declaration, # 10 Exhibit 13 to Yang Declaration, # 11 Exhibit 14 to Yang Declaration, # 12 Exhibit 15 to Yang Declaration, # 13 Exhibit 16 to Yang Declaration, # 14 Exhibit 17 to Yang Declaration, # 15 Exhibit 18 to Yang Declaration, # 16 Exhibit 19 to Yang Declaration)(Yang, Ming-Tao) (Entered: 09/23/2024)	
☐	Online	52	09/30/2024	[PLAINTIFFS' REPLY CLAIM CONSTRUCTION BRIEF filed as] BRIEF filed by Plaintiffs Lian Li Industrial Co., Ltd., Chien-Hao Chen. PLAINTIFFS' REPLY CLAIM CONSTRUCTION BRIEF regarding Statement, 48 , Response,,, 51 . (Attachments: # 1 Declaration DECLARATION OF KYLE D. CHEN IN SUPPORT OF REPLY CLAIM CONSTRUCTION BRIEF, # 2 Exhibit 1, # 3 Exhibit 2, # 4 Exhibit 3, # 5 Exhibit 4)(Chen, Kyle) Modified on 10/1/2024 (lom). (Entered: 09/30/2024)	
☐	Online	53	10/04/2024	MINUTES IN CHAMBERSDENYING STAY PENDING EX PARTE REEXAMINATION BUT GRANTING STAY PENDING IPR REVIEW IN RELATED CASE 23-CV-07470 [DKT. NO. 45] by Judge Hernan D. Vera. In summary, the Court denies the Motion for stay based on the EPR review. However, the Court will sua sponte stay the present case pending the PTAB's institution decision on the '336 Patent, projected in February 2025. The Parties shall file a joint status report within fourteen (14) days of the PTAB's institution decision. The Court will schedule a status conference at that time to determine whether lifting	

	Availability	#	Date	Proceeding Text	Source
				the stay is warranted. The Court also notes that the outcome of the IPR, including the potential cancellation of claims containing disputed terms, may affect the scope of the claim construction disputes. Moreover, the record created during any IPR proceedings may affect the claim construction analysis which may require new briefing. To that end, the Court therefore continues the claim construction hearing and will allow the parties to amend and supplement their claim construction briefing once the stay is lifted. The Court will reschedule the new claim construction hearing date as appropriate. (lom) (Entered: 10/07/2024)	

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Content Type: Dockets

Terms: number(2:23cv7471)

Narrow By: Case Status: Open or Unknown or Closed

Date and Time: Nov 04, 2024 07:49:56 a.m. EST

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/019,565	07/02/2024	10690336	16445.0001-00000	5828

37705 7590 11/26/2024

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EXAMINER	
DAVISON, LAURA L	

ART UNIT	PAPER NUMBER
3993	

MAIL DATE	DELIVERY MODE
11/26/2024	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Ex Parte Reexamination Interview Summary	Control No.	Patent Under Reexamination	
	90/019,565	10690336	
	Examiner	Art Unit	AIA (FITF) Status
	Laura L Davison	3993	Yes

All participants (USPTO personnel, patent owner, patent owner's representative):

(1) Laura Davison	(3) Joshua Kading
(2) Patricia Engle	(4) Michael Dixon

Date of Interview: 22 November 2024

Type: a) ☐ Telephonic b) ☑ Video Conference
c) ☐ Personal (copy given to: 1) ☐ patent owner 2) ☐ patent owners representative)

Exhibit shown or demonstration conducted: d) ☑ Yes e) ☐ No.
If Yes, brief description: See Continuation Sheet

Agreement with respect to the claims f) ☐ was reached. g) ☑ was not reached. h) ☐ N/A.
Any other agreement(s) are set forth below under "Description of the general nature of what was agreed to..."

Claim(s) discussed: 1 .

Identification of prior art discussed: Fujitsu (JP 2018-41147 A) and Lai (US 2017/0314777) .

Description of the general nature of what was agreed to if an agreement was reached, or any other comments:
See Continuation Sheet .

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims patentable, if available, must be attached. Also, where no copy of the amendments that would render the claims patentable is available, a summary thereof must be attached.)

A FORMAL WRITTEN RESPONSE TO THE LAST OFFICE ACTION MUST INCLUDE PATENT OWNER'S STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. (See MPEP § 2281). IF A RESPONSE TO THE LAST OFFICE ACTION HAS ALREADY BEEN FILED, THEN PATENT OWNER IS GIVEN **ONE MONTH** FROM THIS INTERVIEW DATE TO PROVIDE THE MANDATORY STATEMENT OF THE SUBSTANCE OF THE INTERVIEW
(37 CFR 1.560(b)). THE REQUIREMENT FOR PATENT OWNERS STATEMENT CAN NOT BE WAIVED.
EXTENSIONS OF TIME ARE GOVERNED BY 37 CFR 1.550(c).

/Laura Davison/ Reexamination Specialist, Art Unit 399	/JOSHUA KADING/ Reexamination Specialist, Art Unit 399	/Patricia L Engle/ SPRS, Art Unit 3993

cc: Requester (if third party requester)

Thermaltake Tech. Co. v. Lian Li Ind. Co., Ex-2007
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Continuation of Description of Exhibit Shown or Demonstration Conducted: Patent Owner showed Fujitsu's Figs. 3, 6, and 7 and Lai's Fig. 3 for discussion as reflected in the attached interview agenda.

Continuation of Description of the general nature of what was agreed to if an agreement was reached, or any other comments: Patent Owner argued that, in Fujitsu, the power socket (CNA or CNB, Fig. 7) is not on the same side as the first connector (CNC) because the socket opens toward a different surface of the fan body, for connection to power cables in the manner illustrated in Fig. 6. Examiner Davison maintained that the claims do not require that the socket have an opening on the same side surface as the first connector, noting that the term "side" does not appear to be limited to a side surface, particularly in view of the broader usage of "side" in claim 1 to describe the illumination area on "at least two sides" of the fan.

With respect to Lai, Patent Owner argued that adjacent fans are connected by a transmission line (13, Fig. 3) rather than by first and second connectors as claimed. Examiner Davison maintained that the claim limitation "when the first connector is connected with a second connector" does not require a direct connection and would encompass connection of the first and second connectors via a transmission line as in Lai, and that the term "connector" is also a broad term that could alternatively encompass the transmission line as the connector. Examiner Davison noted that while the patent disclosure describes an electrically conductive contact face on a side surface of the fan body, the claim term "connector" is not so limited.

Davison, Laura L.

From: Michael.Dixon@gtlaw.com
Sent: Thursday, November 21, 2024 8:25 AM
To: Davison, Laura L.
Subject: RE: Submission of Agenda for Telephonic Interview in App No: 90/019,565 - In Re App of 10,690,336 - GT Ref: 219491.010000
Attachments: Agenda for Interview in App No 90019565 In Re App of 10690336.pdf

CAUTION: This email has originated from a source outside of USPTO. **PLEASE CONSIDER THE SOURCE** before responding, clicking on links, or opening attachments.

Good morning.

You're welcome.

Please use the attached Agenda. I removed the annotated figures. Thank you.

Have a great day.

-Mike

Michael K. Dixon
Shareholder
Registered US Patent Attorney
Board Certified in Intellectual Property by the Florida Bar

Greenberg Traurig, P.A.
777 S. Flagler Drive, Suite 300 East | West Palm Beach, FL 33401
T 561.650.7937
Michael.Dixon@gtlaw.com | www.gtlaw.com | View GT Biography



From: Davison, Laura L. <laura.davison@USPTO.GOV>
Sent: Thursday, November 21, 2024 8:12 AM
To: Dixon, Michael K. (Shld-WPB-IP-Tech) <Michael.Dixon@gtlaw.com>
Subject: RE: Submission of Agenda for Telephonic Interview in App No: 90/019,565 - In Re App of 10,690,336 - GT Ref: 219491.010000

EXTERNAL TO GT

Thanks for the agenda. I look forward to speaking with you tomorrow.

Laura Davison
Reexamination Specialist, AU 3993
U.S. Patent and Trademark Office
Phone: (571) 270-0189
Fax: (571) 483-7121

From: Michael.Dixon@gtlaw.com <Michael.Dixon@gtlaw.com>
Sent: Wednesday, November 20, 2024 5:24 PM
To: Davison, Laura L. <laura.davison@USPTO.GOV>
Cc: kchen@gtlaw.com; BriggsH@gtlaw.com; Tammy.Bell@gtlaw.com; Stacey.Piesco@gtlaw.com; gtipmail@gtlaw.com
Subject: Submission of Agenda for Telephonic Interview in App No: 90/019,565 - In Re App of 10,690,336 - GT Ref: 219491.010000

CAUTION: This email has originated from a source outside of USPTO. **PLEASE CONSIDER THE SOURCE** before responding, clicking on links, or opening attachments.

In Re Application of: 10,690,336
Application No.: 90/019,565
Filed: July 2, 2024
Confirmation No.: 5828
Atty. Ref: 219491.010000
For: "Illumination Fan Connectable with at least one Illumination Fan for a Computer"
Group Art Unit: 3993
Examiner: Davison, Laura L.

Examiner Davison,

Good afternoon.

Attached is the Agenda for our telephonic interview on Friday, November 22, 2024 at 10 AM.

Please confirm receipt of this email via return email.

Also, please let me know if you have any questions.

Have a great day.

-Mike

Michael K. Dixon
Shareholder
Registered US Patent Attorney
Board Certified in Intellectual Property by the Florida Bar

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of:	)	Group Art Unit: 3993
10,690,336	)	Examiner: Davison, Laura L.
Application No.: 90/019,565	)	
Filed: July 2, 2024	)	
Confirmation No.: 5828	)	
Atty. Ref: 219491.010000	)	
For: "Illumination Fan Connectable with at least one Illumination Fan for a Computer"	)	

INTERVIEW AGENDA

Dear Examiner Davison:

Thank you for scheduling a telephonic interview in this reexamination proceeding. We would like to discuss the following:

- The configuration of the fan units disclosed in JP 2018041147 to Fujitsu.

  Figure 1 and corresponding paragraph [0017] discloses multiple fan units coupled together along power rails 151 and 152, whereby "the leftside fan unit 110 is pushed out from the left side by pushing one fan unit 110 to be swapped from the right side while supplying power to each fan unit 110. By pushing out such fan units 110 one-by-one, one fan unit among the four fan units 110 can be hot-swapped." See Para. [0017]

  Figure 6 and 7 and corresponding paragraphs [0043] – [0050] discloses the process of replacing a fan unit, the power connectors CNA and CNB, and the locations of the power connectors CNA and CNB.

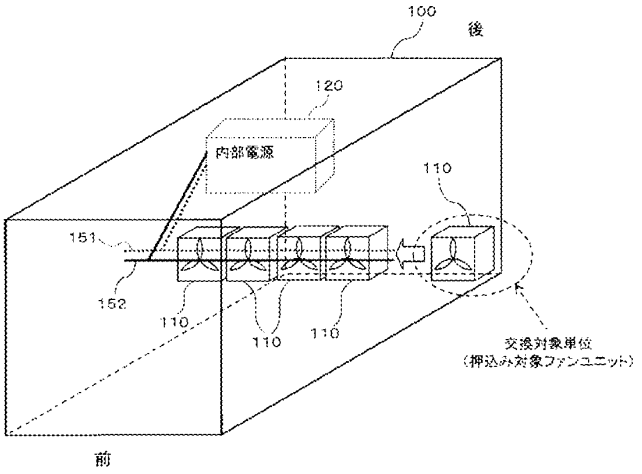


FIGURE 3

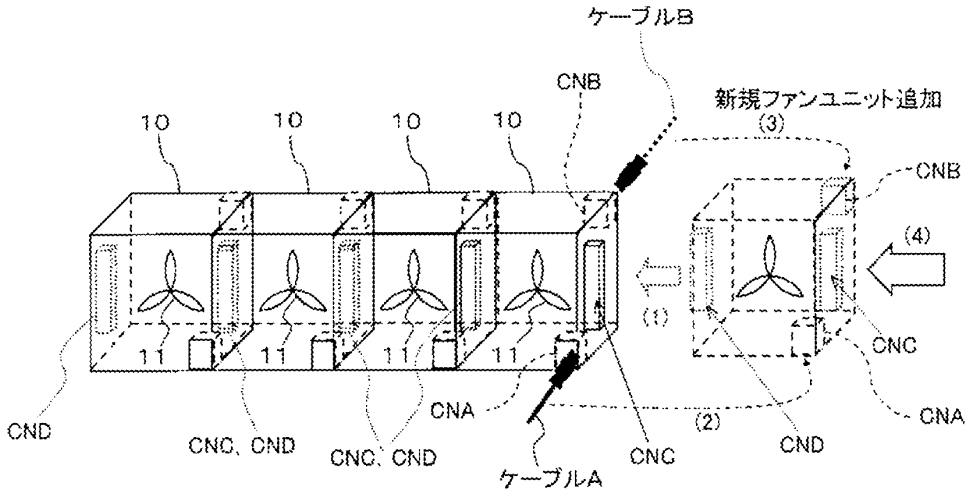


FIGURE 6

Thermaltake Tech. Co. v. Lian Li Ind. Co., Ex-2007
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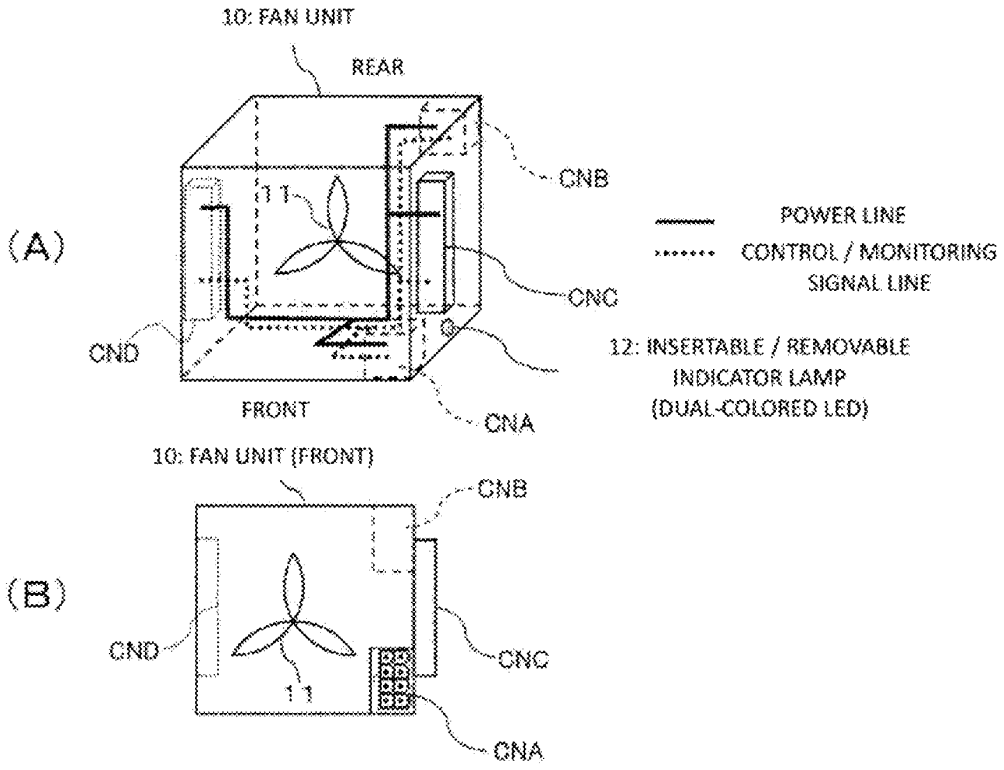


FIGURE 7

- USPAP 2017/0314777 to Lai including:

  Figure 3 disclosing multiple fans with a “transmission line 12” and “another transmission line 13.” See Para. [0012]

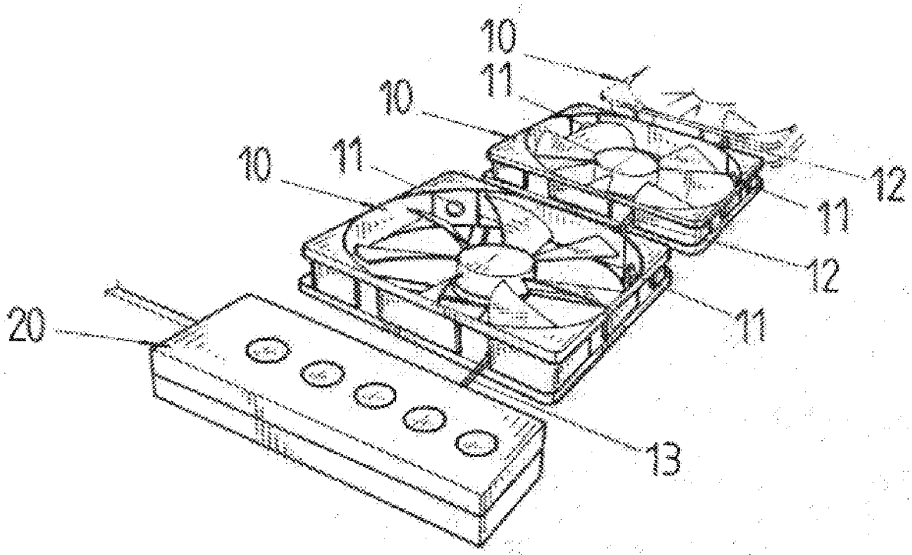


FIG.3

Thermaltake Tech. Co. v. Lian Li Ind. Co., Ex-2007
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PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 90/019,565	Filing Date 07/02/2024	☐ To be Mailed

ENTITY: ☑ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $100 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $480 =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT	12/17/2024	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 48	Minus	** 20	= 28		x $100 =	2800
	Independent (37 CFR 1.16(h))	* 3	Minus	*** 3	= 0		x $480 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	2800

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	LIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/RHONDA BELL/
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".	
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.	

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: 10,690,336 Application No.: 90/019,565 Filed: July 2, 2024 Confirmation No.: 5828 Atty. Ref: 219491.010200 For: "Illumination Fan Connectable with at least one Illumination Fan for a Computer"	Group Art Unit: 3993 Examiner: Laura L. Davison **DECLARATION OF DAVID B. TUCKERMAN PH.D.**

Dear Sirs:

With my signature above, I, David B. Tuckerman, Ph.D., declare as follows:

I. INTRODUCTION

1. I have been retained by the patent owner, Chen, Chien-Hao, and the exclusive licensee, Lian Li Industrial Co., Ltd. (collectively "Patentee"), as a technical expert to provide my opinions regarding U.S. Patent No. 10,690,336 (the "'336 patent") in this declaration in support of Patentee's response ("Declaration").

2. It is my opinion that none of the asserted prior art, alone or in combination, renders any of the challenged claims in this proceeding obvious under 35 U.S.C. § 103. My opinions and the bases and reasons for them are set forth in this Declaration.

3. I am being compensated at the rate of $550.00 per hour for my work on this matter. My compensation in no way depends on the outcome of this proceeding, the content of my testimony, or any issues involved in or related to this proceeding.

4. I reserve the right to modify or supplement my opinions, as well as the bases for my opinions, including based on any additional information provided to me or found by me in this matter, or on further instructions or orders from the USPTO.

II. BACKGROUND AND QUALIFICATIONS

5. My qualifications and experiences are set forth in Appendix A. Additionally, I provide the following overview of my background as it pertains to my qualifications for rendering expert opinions in this matter.

6. I have two B.S. degrees, one in Electrical Engineering and another in Physics, and an M.S. in Electrical Engineering and Computer Science, all from Massachusetts Institute of Technology, Cambridge, Massachusetts. I also have a Ph.D. in Electrical Engineering and an M.B.A. from Stanford University, Stanford, California. My Ph.D. thesis, titled "Heat-Transfer Microstructures for Integrated Circuits", focused on developing new, high-performance liquid-cooled heat sinks for thermal management of high-speed integrated circuits, and received the Fannie and John Hertz Foundation Hertz Thesis Prize.[1] The key results in my Ph.D. thesis were published in the peer-reviewed journal IEEE Electron Device Letters with the title "High-Performance Heat Sinking for VLSI" in 1981, and this publication has so far received over 6,600 citations in the professional literature, as reported by Google Scholar.[2] This paper was selected by the IEEE Electron Devices Society to receive the first "Paul Rappaport Award", although this new award series was not officially approved by IEEE until 1983.[3]

[1] https://www.hertzfoundation.org/hertz-fellows/awards/hertz-doctoral-thesis-prize/
[2] https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=High-Performance+Heat+Sinking+for+VLSI&btnG=
[3] https://eds.ieee.org/awards/paul-rappaport-award

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7. I am an experienced innovator and inventor with approximately 180 issued U.S. patents, additional foreign patents, and numerous pending applications, spanning the fields of thermal management systems, heat transfer, electronic packaging and interconnect technologies, and superconducting devices and circuits, etc. More than 20 of my patents specifically describe novel electronic interconnection technologies.

8. Upon completing my Ph.D. in Electrical Engineering at Stanford University, I joined Lawrence Livermore National Laboratory (LLNL) as a physicist and later a project leader, supervising and managing advanced R&D programs in various fields including electronic packaging and interconnect. At LLNL, I developed and published novel methods for electrically connecting silicon chips to multichip module substrates.

9. I founded nCHIP, Inc. in 1989, focusing on advanced multi-chip module technologies enabling ultracompact high-performance digital systems. After I served for 6 years as its Chief Technical Officer, nCHIP was acquired by Flextronics International Ltd. in 1995. nCHIP's technology employed novel methods for providing electrical connections between semiconductor chips using new interconnection methods and substrates, which I published and patented during my tenure.

10. I am an experienced entrepreneur, venture capitalist, and executive leader with over 30 years of experience in founding, growing, and/or advising technology companies. While working as senior VP and CTO of Tessera Inc., I helped Tessera grow via various acquisitions, one of which led to the development of a new technology for silent air cooling of laptop computers as a replacement for fans. I also supervised the development of novel chip packaging and interconnection methods, and was an inventor on numerous patents related to electrical interconnections.

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11. In 2001 I was elected by the Institute of Electrical and Electronic Engineers (IEEE) to the grade of Fellow, which is the highest membership grade, and for which selection is limited to less than 0.1% of the IEEE membership each year. I was specifically cited by the IEEE Components, Packaging and Manufacturing Technology (CPMT) Society (renamed in 2017 as the IEEE Electronics Packaging Society) "for contributions to high-performance electronic packaging and interconnection technologies, including the development of the microchannel heat sink". In 2023 I became a "Life Fellow" of the IEEE owing to my many years of active membership.

12. I am a licensed Professional Electrical Engineer in good standing in the State of California.

13. I am currently an independent consultant through my own company Tuckerman and Associates, Inc., working on various technical and intellectual property matters in the high-tech industries. Some of my major clients have included CMEA Capital, Tessera, Intellectual Ventures, and Microsoft. I consulted for Microsoft's Quantum Computing and "Cold Logic" programs for 9 years (2011-2020), including management of a 6-year research contract with Auburn University to develop high-density flexible thin-film cryogenic interconnect having optimal heat-transfer properties (*i.e.*, minimal heat leakage between temperature stages) while maintaining excellent electrical performance. A major portion of this research involved developing novel methods for making electrical connections in quantum computers and superconducting logic. I was also a consultant for the first phase of Microsoft's "Project Natick" (which implemented a demonstrative underwater datacenter off the southern California coast in 2015), including the design of the heat exchanger structures and the subsequent analysis of its actual undersea performance. I have published papers in professional journals and conference

Thermaltake Tech. Co. v. Lian Li Ind. Co., Ex-2007
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proceedings as recently as 2022 specifically relating to novel electrical connectors and interconnection schemes, for use with superconducting devices and flexible superconducting cables.

14. I have attached an Appendix A listing my qualifications and experience to this Declaration.

III. LEGAL PRINCIPLES

15. I am informed that the words or phrases of a claim are generally given their plain and ordinary meanings that they would have had to a Person of Ordinary Skill in the Art ("POSITA") at the time of the invention. To determine the meaning of a claim term, I am informed that the USPTO will look first to the claims and specification, then to the file history, and only if necessary, to extrinsic evidence such as dictionaries and treatises. I also understand that limitations generally may not be imported from the specification or any embodiment(s) into the claims.

16. It is my further understanding that the same words and phrases within a claim or claims are presumed to have the same meaning. It is also my understanding that different words and phrases within a claim or claims are presumed to have different meanings. Similarly, all words in a claim have meaning, and a word or phrase in a claim should not be interpreted so as to render other words or phrases in the claim superfluous.

17. It is also my understanding that the POSITA is deemed to have read a disputed claim term or phrase being construed not only in the context of the particular claim in which the disputed term or phrase appears, but in the context of the entire patent, including the other claims, the specification, and the prosecution history.

Thermaltake Tech. Co. v. Lian Li Ind. Co., Ex-2007
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IV. LEVEL OF ORDINARY SKILL IN THE ART

18. I understand that, to determine the appropriate level of skill of a POSITA, the following four factors may be considered: (a) the types of problems encountered by those working in the field and prior art solutions thereto; (b) the sophistication of the technology in question, and the speed with which innovations occur in the field; (c) the educational level of active workers in the field; and (d) the educational level of the inventor. I have been instructed that the level of ordinary skill in the art should be determined at the time of the invention. I have been asked to presume that the relevant date for my evaluation is December 26, 2018, based on Taiwan Application No. 107217659.

19. The field of the '336 patent relates to computer or electronic hardware components and, specifically, a computer illumination fan connectable with at least one other illumination fan. Based on my review and analysis of the '336 patent and applying the considerations identified above as best they are known to me today, a POSITA in the field of the '336 patent as of December 26, 2018 would have (i) earned a bachelor's degree in electrical engineering, mechanical engineering, or computer science, or a similar engineering or science degree, and (ii) attained two or more years of experience in designing and/or implementing hardware components for computers, servers, and/or other electronic devices. Alternatively, a person with a more advanced degree in the above fields might have had less practical experience and still be deemed a POSITA. Conversely, a person with a general college background not necessarily in the above fields might also have become a POSITA by acquiring more real-world experience in designing and/or implementing hardware components for computers, servers, and/or other electronic devices.

20. Under any of the definitions, I believe that I have the relevant experience and understanding of a POSITA qualified to opine on interpretation of the '336 patent.

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V. MATERIALS CONSIDERED

21. In rendering my opinions in this Declaration, I have considered the following materials:

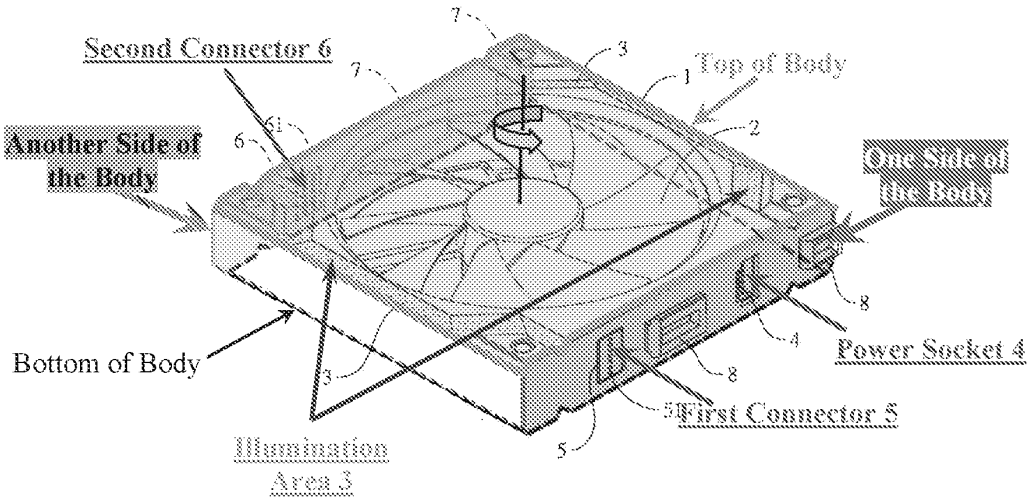
Description
Request for Ex Parte Reexamination of U.S. Patent No. 10,690,336
Ex Parte Office Action dated October 17, 2024 (hereinafter "Action")
U.S. Patent No. 10,690,336 B1 to Chen
U.S. Publication No. 2017/0314777A1 to Lai ("Lai")
Japanese Publication No. 2018041147A to Fujitsu et al. ("Fujitsu") published March 15, 2018
Translation of Fujitsu
Chinese Patent Publication No. CN 207064277 U ("Tsai") published March 2, 2018
Translation of Tsai

VI. OVERVIEW OF THE '336 PATENT

22. The '336 patent relates to an illumination fan connectable with at least one other illumination fan for a computer. Computer fans are generally used for heat dissipation inside the housings of computers. To effectively dispel heat accumulated inside a computer housing, multiple cooling fans are often needed. Traditionally, each computer fan had to be connected to a power supply through an independent power cable, which creates a lot of wiring inside the housing and makes cable routing and managing cumbersome. Additionally, because of the need to connect to power supply with independent power cables, the number of cooling fans that can be assembled is limited by the finite number of connections available on the power supply.

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23. Figure 1 of the '336 patent (reproduced and annotated below) shows an embodiment (i.e., an example) of such an illumination fan, which includes a body **1**, a fan **2** disposed in the center of the body **1**, an illumination area **3** disposed on at least two sides of the fan at the top (cyan) of the body **1**, a power socket **4** and a first connector **5** disposed on one side (red) of the body **1**, and a second connector **6** disposed on another side (green) of the body **1**:



24. In this embodiment, the illumination fan's body **1** has a "top" (cyan) facing up and a bottom (with a dashed black perimeter) facing down along the rotational axis of the fan **2**. The body **1** also has *four* sides facing lateral directions perpendicular to the rotational axis of the fan **2**. The power socket **4** and the first connector **5** are both located on one of the four sides, while the second connector **6** is located on another one of the four sides. The "top" of the body **1** in this embodiment is adjacent to the four sides, and is where the illumination area **3** (on the at least two sides of the fan **2**) is located.

25. I have been informed that, in an alternative interpretation of the claim phrase "side of the body" suggested by an Examiner panel at the Patent Office, everything to the right of a centerline of the body was considered to be on "one side of the body" and everything to the left of the centerline on "another side of the body." Below is an annotated version of Figure 1 of the '336

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patent showing the "one side of the body" and the "another side of the body" according to this alternative interpretation:

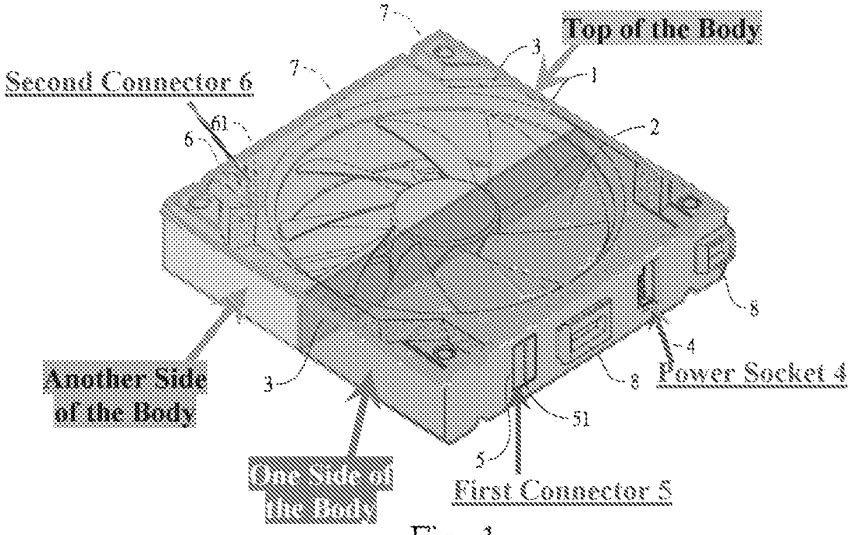


Fig. 1

26. As shown in the annotated Figure 1 immediately above, under this alternative interpretation of "one side of the body" and "another side of the body" in claim 1 of the '336 patent, each side extends outward from a centerline creating two halves. The body 1 under such interpretation would only have two sides. But this interpretation is inconsistent with a POSITA's understanding of the '336 patent since the "top of the body" will be subsumed and rendered superfluous by the "one side of the body" and the "another side of the body" because anything located at the "top of the body" (cyan) will be on *either* the "one side of the body" (red) *or* the "another side of the body" (green), or both, as shown above. If something is located right on the centerline at the "top of the body" (cyan), then it will also span over both the "one side of the body" (red) and the "another side of the body" (green), making it simultaneously on three different regions of the body. That is, the "top of the body" will be eviscerated and rendered meaningless.

27. A second problem with this alternative interpretation is that, depending on how the two halves of the "body" are divided, the locations of the power socket **4**, first connector **5**, and second connector **6** become indefinite. In the above exemplary division, the power socket **4** and the first connector **5** are on "one side of the body" (red), while the second connector **6** is on "another side of the body" (green). But in the below exemplary division, the power socket **4** is on "one side of the body" (red), while the first connector **5** and the second connector **6** are on "another side of the body" (green), even causing the preferred embodiment to be excluded from the claim scope because the power socket **4** and the first connector **5** are no longer on the same side, and the first connector **5** and second connector **6** are not on two different sides:

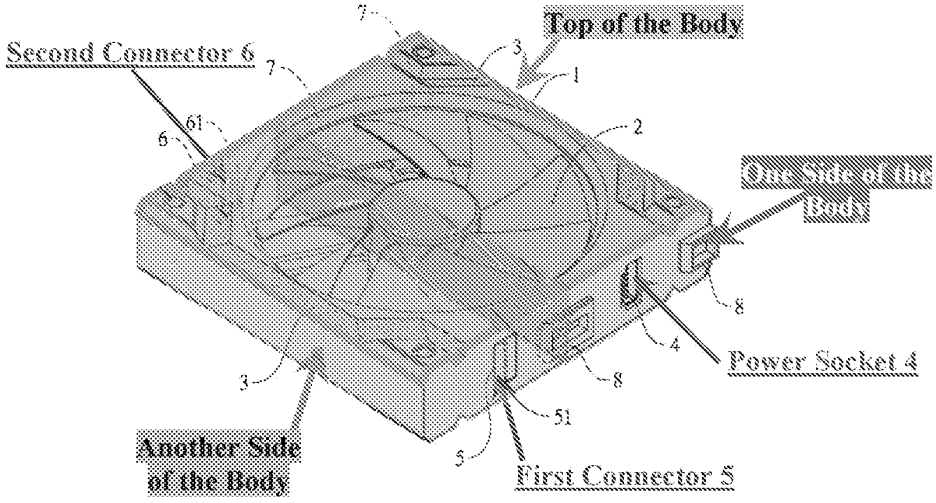


Fig. 1

28. Claim 1 of the '336 patent does not include language on how the two "side[s] of the body," if interpreted as the two halves of the "body," can be divided. Thus, in yet another exemplary division below, the two "side[s] of the body" can be the top and bottom halves of the body, respectively. This division causes all the power socket **4**, the first connector **5**, and the

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second connector **6** to be on both "side[s] of the body," **and the "top of the body" to be completely subsumed and rendered superfluous by the "one side of the body"**:

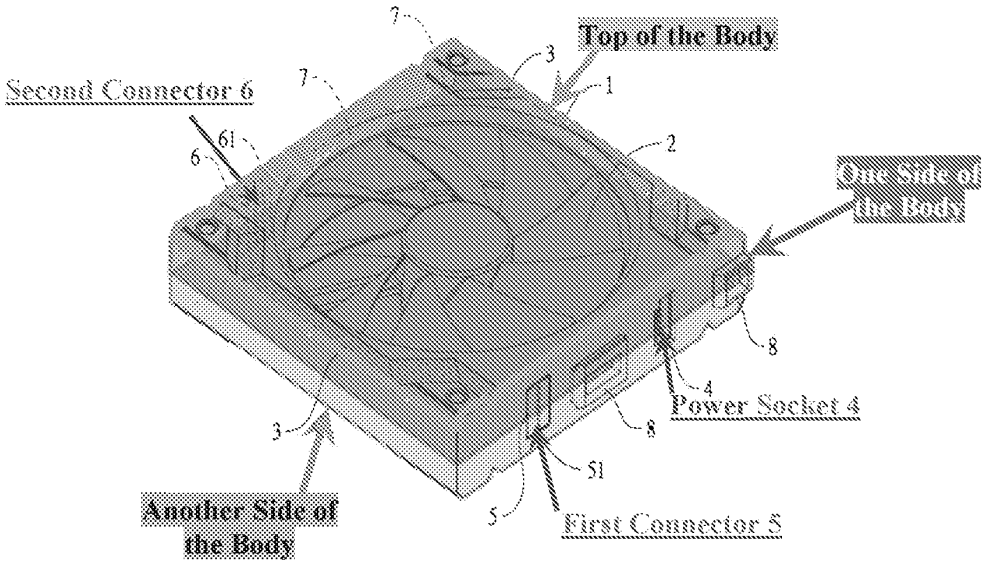


Fig. 1

29. As a result, the alternative interpretation of the "one side of the body" and the "another side of the body" as two halves of the "body" causes the locations of the power socket **4**, the first connector **5**, and the second connector **6** to become indefinite. As such, this alternative interpretation makes no sense to a POSITA.

30. A POSITA would clearly not have interpreted "one side of the body" and "another side of the body" as two halves of the "body" because such interpretation causes the previously described nonsensical results.

31. The ordinary meanings of "side of the body" and "top of the body," which are distinct from each other as would have been understood by a POSITA, are consistent with the usage of such terms in the claims of the '336 patent. The tortured explanation of the two "side[s] of the body" as the two halves creates ambiguity.

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32. A POSITA would have known that the "top of the body" means the top and that the body has a bottom opposite the "top." And a POSITA would have known that a fan body typically has four sides distinct from and adjacent to the top and the bottom.

33. Thus, a POSITA clearly would not have understood the "side[s] of the body" to mean that the claimed "body" only has two sides. Rather, a POSITA would have understood Figure 1 of the '336 patent to disclose an illumination fan including a body having *four* sides, a top, and a bottom, all distinct locations.

34. The '336 patent further discloses that the power socket **4** is electrically connected with the first connector **5**, the second connector **6**, the fan **2**, and the illumination area **3** through, for example, internal wiring:

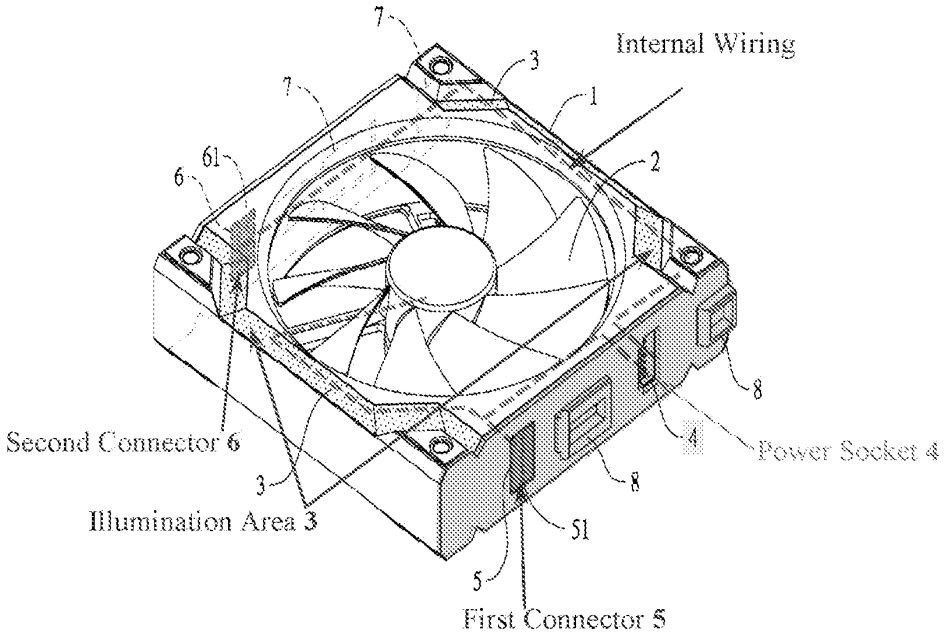


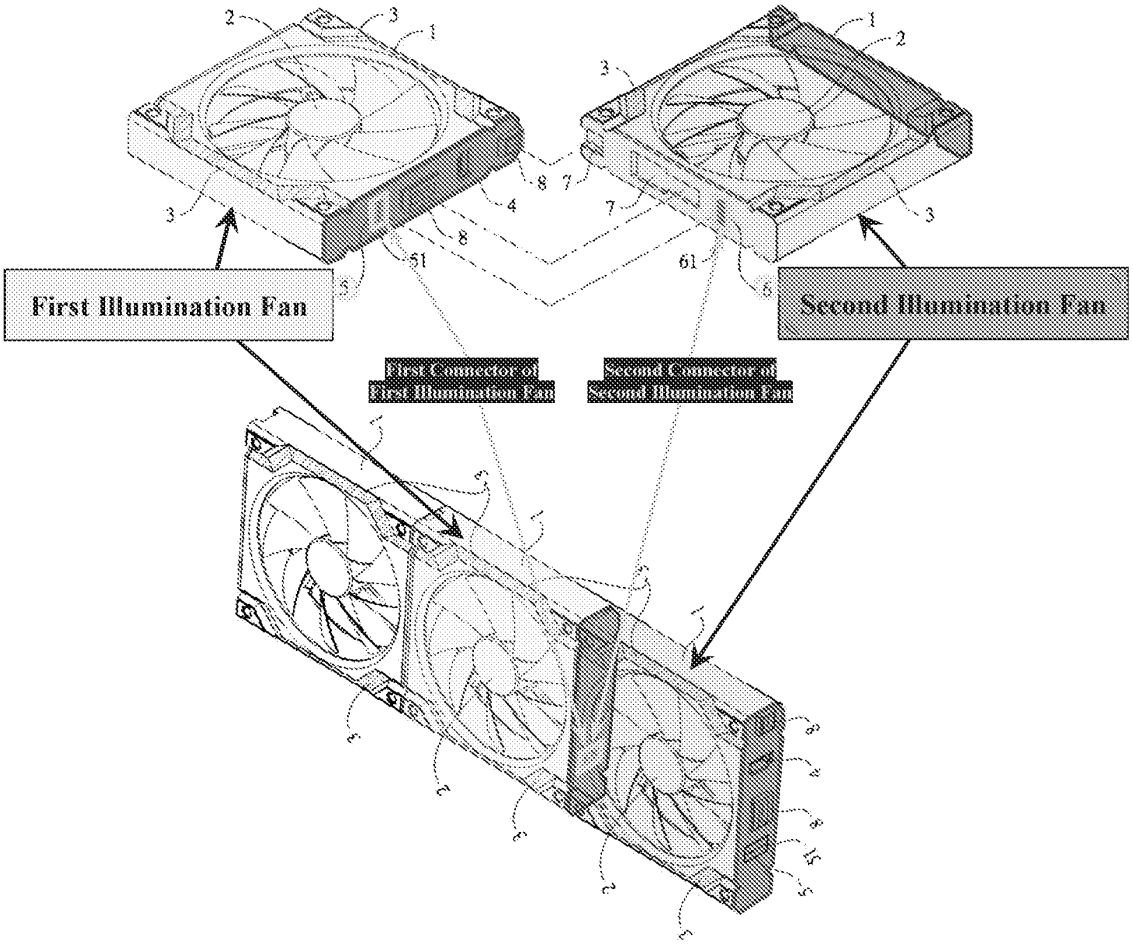
Fig. 1

'336 pat. at 2:61-3:3, Fig. 1 (exemplary annotations and highlighting added).

35. In a non-limiting configuration, the power socket **4** (highlighted in yellow above) can be supplied with power from behind by the second connector **6**, which can receive power from a prior illumination fan's first connector **5** in the manner as shown in Figure 2 (which illustrates the exemplary connections between any two adjacent illumination fans). As such, once the power socket **4** on the same side of the body **1** as the first connector **5** is supplied with power, which is electrically connected with the fan **2** and the illumination area **3**, the fan **2** of the body **1** can be driven into rotation and the illumination area **3** into illumination. '336 pat. at 3:4-6, Fig. 1.

36. Further, the power socket **4**, which is electrically connected with the first connector **5** of a first illumination fan's body **1**, can in turn supply power to the first connector **5** of the first illumination fan's body **1** "so that when the first connector **5** of [the first illumination fan's] body **1** is connected to the second connector **6** of another [or a second illumination fan's] body **1**, the fan **2** of the another [or second illumination fan's] body **1** can be driven into rotation and the illumination area **3** [of the another or second illumination fan's body **1**] can be illuminated." '336 pat. at 3:7-16. This non-limiting configuration of connecting a first illumination fan and a second illumination fan can be illustrated by Figures 2 and 3 (annotated) of the '336 patent below:

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'336 pat., Fig. 2 (annotated) and Fig. 3 (rotated and annotated); *see also id.* at 3:7-16.

37. As shown above, a first illumination fan on the left (labeled in yellow) is connectable to a second illumination fan on the right (labeled in blue). When the first illumination fan is supplied with power, its fan **2** is driven into rotation and the illumination area **3** is illuminated; when the second illumination fan is connected to the first illumination fan through joining the first connector **5** of the first illumination fan and the second connector **6** of the second

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illumination fan, the fan and illumination area of the second illumination fan are also driven into rotation and illumination, respectively.

38. Claim 1 of the '336 patent is reproduced below:

> 1. An illumination fan connectable with at least one illumination fan for a computer, comprising:
>
> a body, provided with a fan in center of the body,
>
> an illumination area on at least two sides of the fan at 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,
>
> 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.

VII. PRIORITY DATE OF THE '336 PATENT

39. I apply a priority date of December 26, 2018 for the '336 patent in rendering my opinions in this Declaration.

VIII. THE REJECTED CLAIMS OF THE '336 PATENT ARE NOT ANTICIPATED NOR OBVIOUS

40. The Third-Party Requester requested reexamination based on four grounds of rejections. However, only the ground based on Fujitsu in view of Tsai and the ground based on

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Lai in view of Fujitsu address the patentability of Claim 1. Claims 2-5 are all dependent on Claim 1, so it is only necessary to demonstrate that arguments against Claim 1 are manifestly faulty; then the arguments against the remaining dependent claims will be similarly faulty. For that reason, I will limit my comments just to the discussions of Claim 1, which are covered only in Grounds 1 and 3. I respectfully suggest that the Examiners will find my arguments wholly sufficient without the need to spend further time on reviewing any of the dependent claims. All '336 patent claim terms herein will be construed under their plain (i.e., ordinary and customary) meanings to a POSITA at the time of that patent's filing. As previously set forth herein, I qualify as a POSITA.

a. LAI AND ALTERNATIVELY LAI IN VIEW OF FUJITSU

41. The Action first rejected the claims on the ground based on Lai in view of Fujitsu and then on the ground based on Fujitsu in view of Tsai later. I've addressed the rejections in the same order presented in the Action. The Action rejected claim 1 as being anticipated by Lai and rejected claims 1-4 as being obvious over Lai in view of Fujitsu. I disagree. As discussed above, I am only going to discuss the arguments about independent claim 1 in this declaration and not the claims depending therefrom.

i. LAI - OVERVIEW OF PRIOR ART

42. Before examining the Action's arguments in detail, I will first make some general comments on the Lai disclosure that the reader should be made aware of. Lai is a brief patent application that describes a method for connecting and controlling multiple LED fans simultaneously from a single controller, by using a serial (daisy-chained) configuration and a ***one-wire*** control bus. Lai's disclosure suffers from several defects. First, it appears that Figures 4 and 5 are incorrectly labeled, i.e., the references in the specification text to Figure 4 actually describe

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the figure labeled as "FIG. 5" (depicting "addressable" RGB LEDs, labeled as 16; these contain built-in driver ICs), and the references to Figure 5 actually describe the figure labeled as "FIG. 4" (depicting RGB LEDs labeled as 11 connected to separate driver ICs labeled as 14). Second, the circuit schematic in Figure 2, which is identified as an LED fan that incorporates the addressable LEDs labeled as 16 (i.e., having built-in drivers) shows an "input" 111 and "output" 112, each having 6 input and output points, respectively, but none of these points are labeled, and none of the three system schematics (Figs. 4-6) comport with those counts of input and output points. Specifically, the figure labeled as FIG. 5 (but which appears to be described in the specification text as FIG. 4) is the only one containing addressable LEDs 16, and it shows 7 inputs and 6 outputs from each fan (not 6 inputs). Nor do any of the other figures show a configuration of 6 inputs and outputs as depicted in FIG. 2. An additional defect in Figs. 4-6 is that they do not explicitly show the motor power supply (voltage and ground) lines as connecting through from the input to the output, in contrast to the LED power supply lines which are drawn as connecting through. One has to infer that the motor supply lines do in fact connect, otherwise only the first fan in the daisy chain would rotate.

43. My point regarding the preceding critique is that one could argue that, with all its multiple defects, the Lai publication cannot reasonably be interpreted to disclose or teach anything that the Action attempts to argue. A POSITA might well disregard Lai's disclosure as too illegible, error-riddled, confusing, and with items insufficiently labeled, to take advantage of its teachings. It strikes me as an unreasonable expectation that a POSITA would have been able to resolve these issues when Lai has himself not taken the trouble to describe his ideas accurately, legibly, and with a sufficiency of annotations on the schematics that a POSITA would expect and deserve when reading it.

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44. In any event, I have numerous other reasons why a careful scrutiny of Lai's disclosure, with or without Fujitsu's disclosure, does not render Claim 1 of the '336 patent as obvious, and so will proceed now with that analysis.

ii. LIMITATIONS THAT ARE NOT MET

1. LAI DOES NOT DISCLOSE AN ILLUMINATION AREA AT TOP OF BODY AS CLAIMED

45. In my opinion, a POSITA would have concluded that Lai does ***not*** disclose or teach the limitation, "an illumination area on at least two sides of the fan at top of the body", nor does the combination of Lai and Fujitsu. Here the Action's rejection has a major problem: even if we stipulate that the four discrete LEDs depicted in Lai's Figures 2 and 3 by themselves constitute an "illumination area", there is no evidence that Lai disclosed or intended that these LEDs should be located "at top of the body", and in fact Lai teaches away from locating them at the top, as will be discussed below.

46. Lai discloses the use of multiple RGB LEDs installed in each fan. However, the LEDs of Lai are not "at top of the body", as claimed in claim 1. The only information about how these LEDs might be positioned is implied in Figure 2, and then expressly provided and confirmed in Figure 3. Figure 2 is described as a "schematic view" [Lai 0006] which a POSITA would have understood means a circuit diagram, not a physical depiction. The figure suggests that the preferred embodiment would place the four LEDs in roughly four equally spaced locations near the four corners of the fan on an inward-facing circular wall ***beneath*** the "top of the body":

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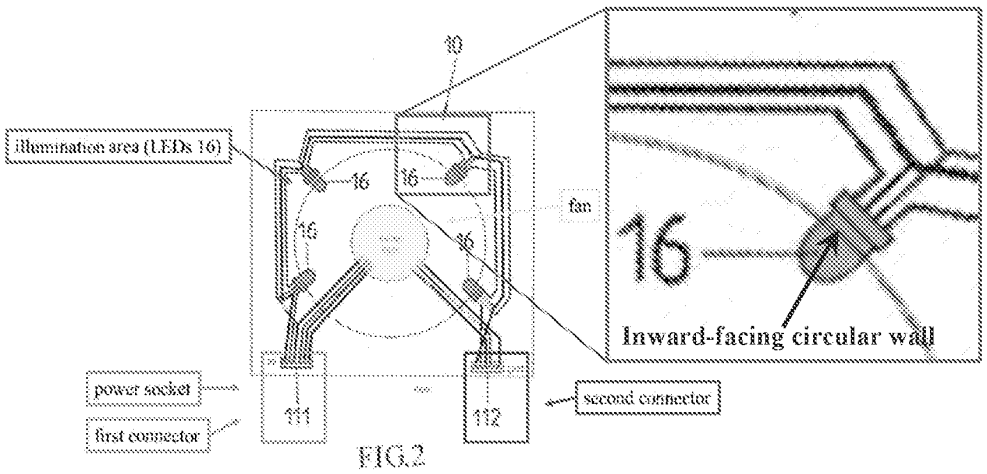


FIG.2

47. Figure 2 above shows a ***solid*** circle going *across* the LEDs 16, suggesting the LEDs 16 are located ***beneath*** the "top of the body". This is because a POSITA would have understood that, were the LEDs 16 located at the "top of the body", which they are not, the portions of the circle going through the LEDs 16 would be *blocked* by the LEDs 16, not the *other way* around. That the LEDs 16 are blocked by the *solid* circle in Figure 2 suggests that the LEDs 16 are not at and are instead ***beneath*** the "top of the body," as further confirmed by Figure 3[4] shown below:

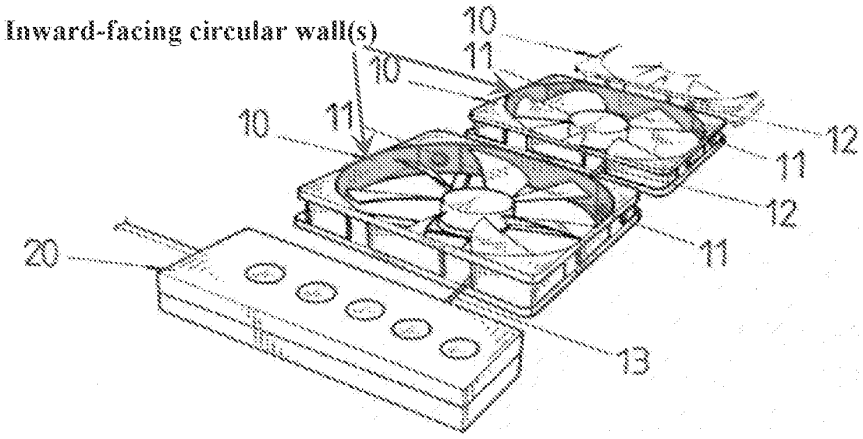


FIG.3

[4] Figure 3 is described by Lai as a "planar view of an LED fan" [Lai 0007]. This is yet another example of the sloppiness of Lai's disclosure, as it in fact depicts multiple fans and also a controller, not a single fan. Moreover, a POSITA would deem this figure as a non-planar view, not a planar view, as the terms are generally understood. (A planar view would be, for example, a top view).

48. As can be seen above, Figure 3 makes it clear that the LEDs (labeled "11" as opposed to "16" in this figure) are indeed attached near the corners of the fan body, and are fixed to the inward-facing circular wall surrounding the large circular opening within which the fan blades rotate, about mid-height (or mid-depth, if one prefers the term) (as Fig. 2 also implies).

49. In other words, the LEDs are not located at the "top of the body" (as this term would be interpreted in the '336 patent, i.e., the front face of the fan body). The LEDs are not at the bottom of the body either; they are midway in-between. So, Lai's Figure 3 teaches away from the LEDs being 'at top of the body', and there is nothing else in Lai's disclosure to contradict this impression. A POSITA would have understood Lai to disclose LEDs positioned mid-depth on the inward-facing circular wall surrounding the fan to shine light onto the surfaces of the fan blades, illuminating them as they rotate by, as the primary illumination effect, as opposed to direct viewing of the LEDs located at the "top of the body". A POSITA would have concluded that placing the LEDs at the top of the body would not have been nearly as effective in accomplishing this visual effect to illuminate the fan blades, so a POSITA would not have been motivated to do so. So again, Lai's design clearly does not disclose and, in contrast, teaches away from having an illumination area at the "top of the body."

50. A POSITA would have understood that, considering Lai's illustration of the inward-facing, mid-body LEDs, those LEDs may not even be visible at the "top of body", as claimed in claim 1 of the '336 patent, because they may be mostly, if not entirely, blocked by the "top of the body." This is because a POSITA would have understood that (1) the lenses of the LEDs are directional and normally would not permit much, if any, light going in the lateral direction, and (2) the tips of the LEDs should not extend into the circular space in which the fan blades rotate to avoid interfering with the rotation. Further, it would only be the fan blades that

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would reflect and/or diffuse the LED light and create frontal visibility of the illumination. Even so, the illuminated fan blades are not themselves at 'top of the body'. In the terminology of the '336 patent, the fan is not even part of the body; it is a separate component 'disposed in the center of the body' ['336 patent, line 63]. Note that an illuminated area being visible in a top view is not the same as an illumination area being physically located at the top of the body, as is required in the '336 patent. Thus, Lai clearly does not disclose the claimed "an illumination area on at least two sides of the fan at top of the body . . ." as claimed in claim 1 of the '336 patent.

2. LAI FAILS TO DISCLOSE "POWER SOCKET AND FIRST CONNECTOR ON ONE SIDE" AND "SECOND CONNECTOR ON ANOTHER SIDE"

51. The Action states that "Lai discloses an illumination fan (LED fan 10, Fig. 3) connectible with at least one illumination fan (¶ 12)[1], comprising: a body provided with a fan in a center of the body (*see* Fig. 3), an illumination area on at least two sides of the fan at a top of the body (at LEDs 16, Figs. 2 and 4-6; ¶¶ 11 and 13-16), a power socket and a first connector (shown as input 111 in schematic view of Fig. 2, the power socket being the input power supply connection of the fan 10, and the first connector being any other of the input connections of the fan 10 for connecting the fan 10 to the controller 20 or to an adjacent fan 10, as shown in Figs. 4-6) on one side of the body (i.e., on the side closest to the controller 20, Fig. 3) . . . ." See Action at 5 (footnote 1 omitted).

52. The Action further states that Lai discloses a second connector (shown as output 112 in schematic view of Fig. 3; s*ee also* Figs. 4-6) on another side of the body (i.e., on the side closest to the next fan 10 in the series, Fig. 3). See id. For clarity, these purported mappings with respect to Figure 2 of Lai are illustrated below:

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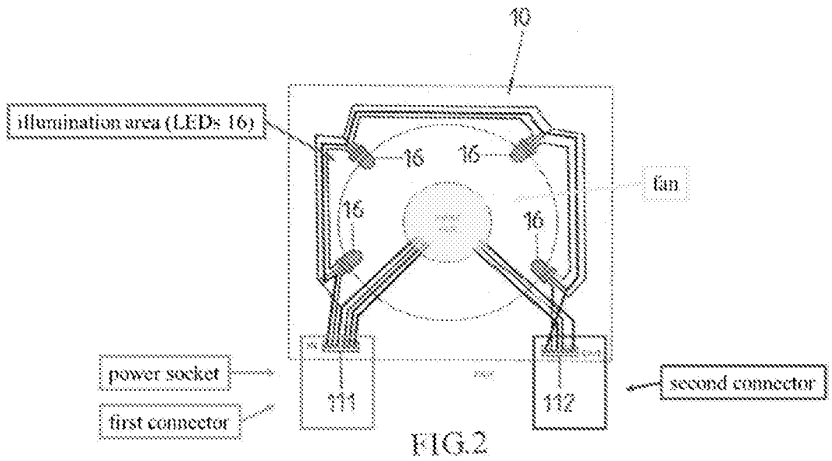


FIG.2

53. As illustrated above, the Action (at 5) maps Lai's single input 111 as the "power socket" and "first connector" and Lai's 112 as the "second connector" in Figure 2.

54. But Lai in fact does not disclose nor otherwise teach any of the "socket" and "connector" limitations in claim 1 of the '336 patent. As an initial matter, no part of Lai discloses or even suggests a "socket" or a "connector," period. The entire Lai reference mentions no structure that is even close to a socket or connector. At most, Lai refers to element 111 as a "single input," which includes neither a socket nor a connector structure. Critically, claim 1 of the '336 patent includes a conditional phrase, "***when*** the first connector of the body [of the illumination fan] is connected with a second connector of a body of another illumination fan." This phrasing implicitly requires both a connected state and a disconnected state between the connectors of the two illumination fans, respectively, as demonstrated by Figures 2 (disconnected state) and 3 (connected state) of the '336 patent:

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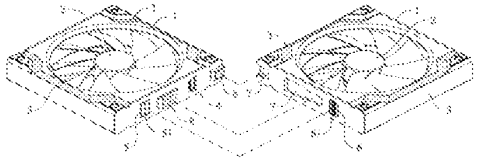


Fig. 2 (Disconnected State)

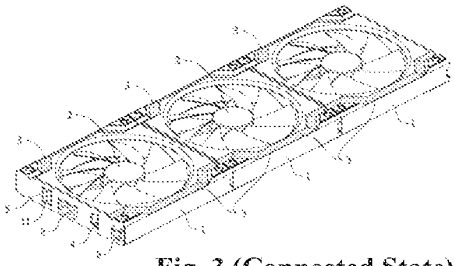
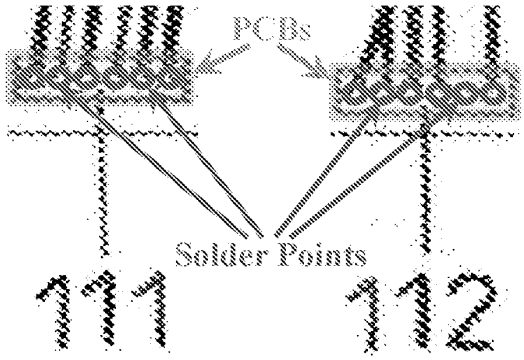


Fig. 3 (Connected State)

55. In contrast, Lai has no disclosure nor suggestion of such two states for the alleged "connectors" 111 or 112. Indeed, contrary to the Action's assertion, Lai does not characterize element 111 as, nor suggest it to be, any "socket" nor "connector" at all. *See generally* Lai. Similarly, Lai does not characterize 112 as any "connector" but simply a "single output 112". Thus, a POSITA ***would not*** have recognized Lai's "single input 111" or "single output 112" as having any "socket" nor "connector" structures. In contrast, based on Lai's disclosure, a POSITA would have understood the single input 111 and single output 112 as having nothing more than fixed solder points on printed circuit boards (or PCBs), as shown below:



56. Fixed solder points on PCBs in Lai's "single input 111" and "single output 112" are simply not a "power socket" nor a "connector," and cannot be conveniently divided into separate "socket" and "connector" components at least because of the "single" input 111's and output 112's ***singular*** structures repeatedly emphasized by Lai. Further, to connect to a separate socket and connector, the single transmission line will need to be split in two, which also violates

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Lai's preference of the transmission line being "single" as well. Thus, Lai's single input 111 and output 112 do not disclose or otherwise teach the claimed "socket" nor "connector" structures. In fact, Lai's repeatedly emphasized ***singular*** structures teach away from splitting the input 111 into a power socket and a first connector, which in Lai's configuration will require ***two*** transmission lines, not a "single" transmission line.

57. Further, Lai's 111 and 112 are ***behind*** the ***same*** side of the fan body in Figure 2 and thus fail to disclose "a power socket and a first connector ***on one side*** of the body, and a second connector ***on another side*** of the body" as required by claim 1 of the '336 patent, as shown below:

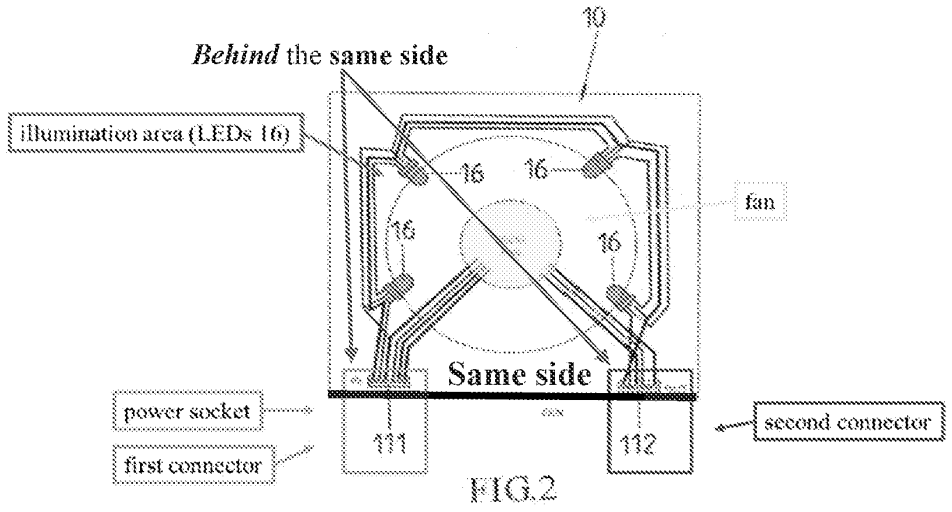


FIG.2

58. Acknowledging as much, the Action argues that, "[a]lthough the schematic view of the fan shown in Fig. 2 of Lai illustrates the input (111) and the output connectors (112) on the same side of the fan body, the fan shown in Fig. 3 of Lai is understood to show the input and output connectors on opposite sides of the fan body, e.g., for connection to a controller (20) on one side via a transmission line (13) and to another fan on another side via another transmission line (12), or for connection to one fan on one side via a first transmission line (12) and to another fan on the other side via a second transmission line (12)." Action at 5-6. But Lai has no such disclosure of "the input and output connectors on opposite sides of the fan body" in Figure 3 because the

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purported "connectors" are in fact just openings and are not connectors at all, as a POSITA would have understood. Instead, Lai refers to those openings as merely the "windows of a single input 111 and a single output 112" (*i.e.*, gold-colored openings shown below) to allow the transmission lines 12 and 13 to go through, as opposed to the input 111 and the output 112 ***themselves***. Note that claim 1 of the '336 patent requires the two connectors ***themselves*** to be located on two different sides, not their "windows". Indeed, the "same side" in the annotated Figure 3 of Lai below, corresponding to the "same side" ***behind*** which the alleged input 111 and output 112 are in the annotated Figure 2 above and below, shows no particular structures at all on that "same side". That is, as shown in Figures 2 and 3 of Lai together, the alleged input 111 and output 112 are both located ***behind*** the *same* side (and thus *hidden* and invisible in Figure 3), and are thus not *on* two ***different*** sides. Lai only discloses that the input 111 and output 112 are ***behind*** the same side and are connected to the single transmission lines 12 and 13 that go through the "windows" (gold-colored) to the outside, as shown below:

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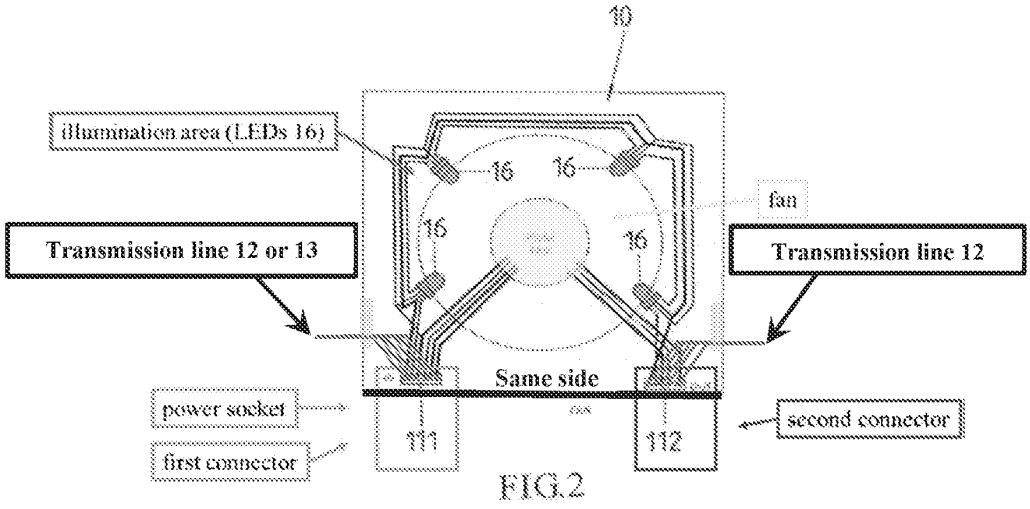


FIG.2

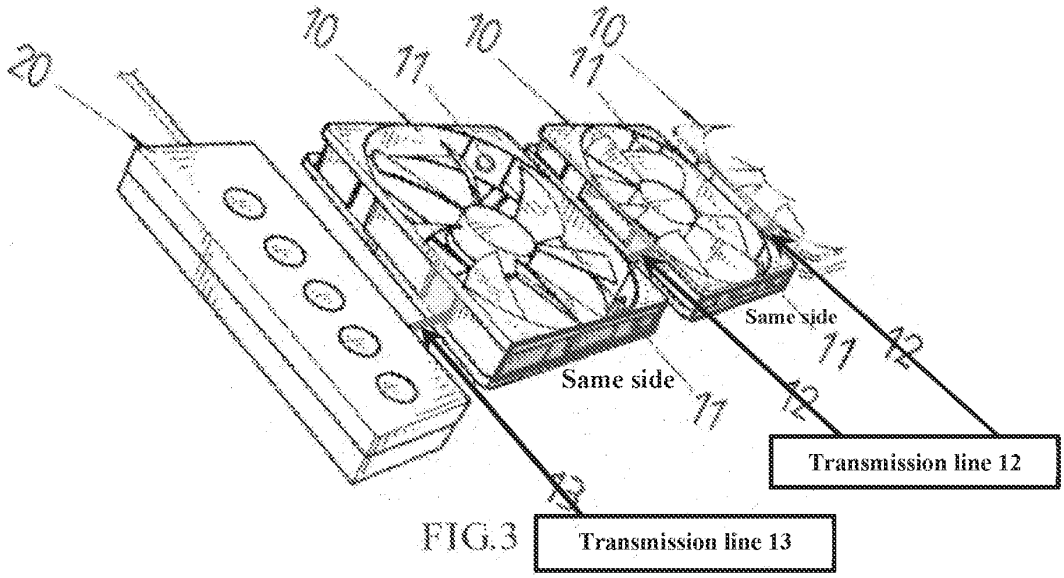


FIG.3

59. The Action also states "the power socket being the input power supply connection of the fan 10, and the first connector being any other of the input connections of the fan 10 for connecting the fan 10 to the controller 20 or to an adjacent fan 10, as shown in Figs. 4-6) …" See Action at 5. The Action further states that "the first connector being any other of the input

connections of the fan 10 for connecting the fan 10 to the controller 20 or to an adjacent fan 10, as shown in Figures 4-6) on one side of the body (i.e., on the side closest to the controller 20, Fig. 3)..." See Action at 5. But in fact, Figures 4-6 of Lai are circuit diagrams that merely show electrical pathways, and *do not even identify elements corresponding to Lai's single input 111 nor single output 112 at all.* A POSITA would have understood that the components and wiring shown in Figures 4-6 of Lai do not teach any specific physical positioning whatsoever. For instance, a POSITA would have understood that the various elements 11 (LEDs), 14 (LED Driver ICs), 15 (Motor Control), 16 (LEDs), and/or 17 (MCU) cannot be physically positioned as shown in Figures 4-6 because they will be interfering with the rotating fan blades, as shown below:

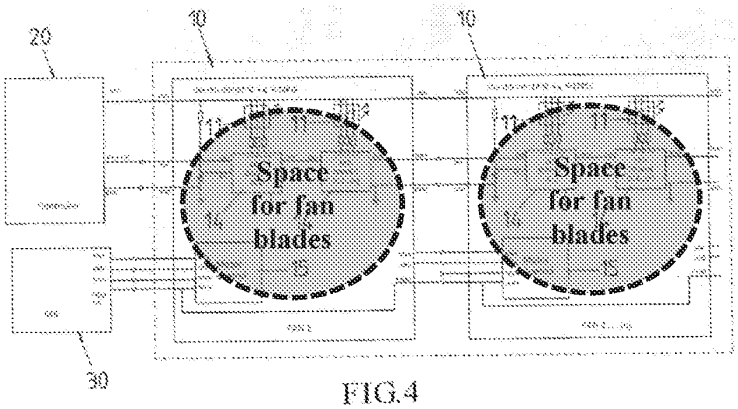


FIG.4

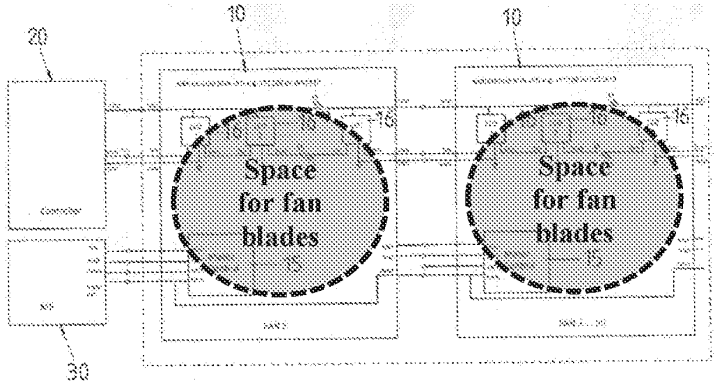


FIG.5

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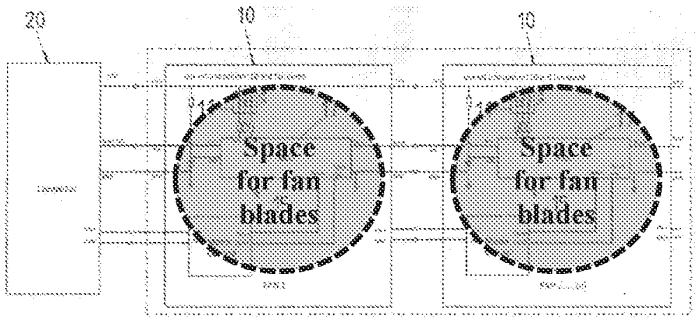


FIG.6

60. Thus, it would have been clear to a POSITA that Figures 4-6 are circuit diagrams that merely show communication and electrical current pathways, NOT spatial relationships. Critically, *neither* the single input 111 (the purported "power socket" and "first connector") *nor* the single output 112 (the purported "second connector") are even included in Figures 4-6 at all, which thus cannot possibly disclose their locations relative to the fan bodies. Thus, Figures 4-6 of Lai simply do not disclose a first connector together with a power socket on one side of the body, nor a second connector on another side of the body, as required in claim 1 of the '336 patent.

61. In sum, none of Figures 2-6 of Lai nor any other part thereof discloses or otherwise teaches "a power socket and a first connector on one side of the body, and a second connector on another side of the body" as required by claim 1 of the '336 patent.

3. LAI DOES NOT DISCLOSE THAT "THE POWER SOCKET IS ELECTRICALLY CONNECTED WITH THE FIRST CONNECTOR"

62. Under the Action's mappings, Lai fails to disclose that "the power socket is electrically connected with the first connector" as required by claim 1 of the '336 patent. This is because, according to the Action, Lai's purported "power socket" and "first connector" are separate connections in the input 111:

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> [A] power socket and a first connector (shown as input 111 in schematic view of Fig. 2, the power socket being the input power supply connection of the fan 10, and the first connector being any ***other*** of the input connections of the fan 10 for connecting the fan 10 to the controller 20 or to an adjacent fan 10, as shown in Figs. 4-6) . . . .

Action at 5 (emphasis added).

63. That is, the Action asserts that Lai's purported "first connector" is any of "the input connections of the fan 10" ***other than*** "the input power supply connection of the fan 10" that is Lai's purported "power socket." In other words, the Action asserts that Lai's "power socket being the input power supply connection of the fan 10" is ***different from*** Lai's "first connector being any ***other*** of the input connections of the fan 10 for connecting the fan 10 to the controller 20 or to an adjacent fan 10, as shown in Figs. 4-6)." Thus, a POSITA would have therefore understood Lai's purported "power socket" and "first connector" are ***separate*** connections in the input 111 that are ***not*** "electrically connected" with each other. This is because otherwise, Lai's "power socket" and "first connector" in the input 111 will be ***short-circuited out*** with each other and thus will not be different from each other, as how the Action has mapped them. Indeed, a POSITA would have understood that any of "the input connections of the fan 10" ***other than*** "the input power supply connection of the fan 10" is a ***signal line*** for changing the lighting of "the addressable RGB LEDs 16 … controlled individually by a controller 20 (as shown in FIG. 3) to result in even more complex and expressive lighting effects through the change in output signals" or for "adjust[ing] the rotational speed of the LED fan 10 using the PWM (Pulse Width Modulation) technique." Lai ¶¶ 11, 15. A POSITA would have understood that such signal line(s) in Lai cannot be cross-wired with "the input power supply connection of the fan 10" because the control signals will be overwhelmed by the power and thus lost and unusable. That is, under the Action's mappings, Lai's purported "power socket" is ***not*** "electrically connected with" Lai's "first connector" as required by claim 1 of the '336 patent.

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4. LAI DOES NOT DISCLOSE THAT, "WHEN THE FIRST CONNECTOR OF THE BODY [OF THE ILLUMINATION FAN] IS CONNECTED WITH A SECOND CONNECTOR OF A BODY OF ANOTHER ILLUMINATION FAN, A FAN AND AN ILLUMINATION AREA OF THE BODY OF THE OTHER ILLUMINATION FAN ARE RESPECTIVELY DRIVEN INTO ROTATION AND ILLUMINATION"

64. Under the Action's mappings, Lai fails to disclose that, "***when*** the first connector of the body [of the illumination fan] is connected with a second connector of a body of another illumination fan, a fan and an illumination area of the body of the other illumination fan are respectively driven into rotation and illumination." '336 pat., Cl. 1 (emphasis added). This is at least because, as explained in the previous section, Lai's purported "first connector" is a ***signal line*** not electrically connected with Lai's purported "power socket." Thus, Lai's "first connector" is ***not*** supplied with power by Lai's "power socket" even "when the power socket on the one side of the body is supplied with power," as recited by claim 1 of the '336 patent. In turn, under the Action's mappings, Lai's purported "first connector" cannot be connected to ***another illumination fan*** for its fan and illumination area to be driven into action. That is, Lai fails to disclose that, "when the first connector of the body [which is merely a signal line] 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."

65. Further, the Action's mappings do not explain how Lai's purported "*first connector on one side* ***of the body*** (i.e., on the side closest to the controller 20, Fig. 3)" of the "***illumination fan***" (located on the ***far-left***) can be conditionally connected with a "**second connector of a body of another illumination fan**" (located on the ***far-right***) "when the input connectors [in 111] of one fan are connected with the output connectors [in 112] of the adjacent fan in the series, *e.g.*, via a transmission line 12, Fig. 3)" (Action at 5):

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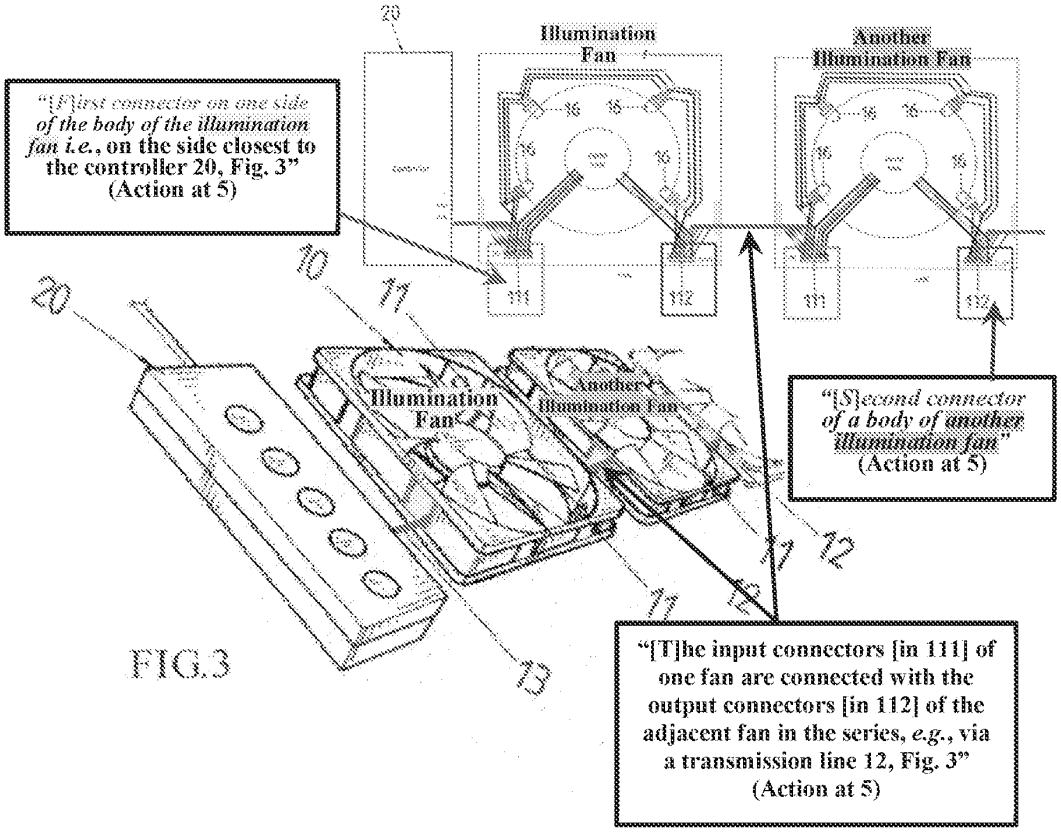


FIG.3

66. As can be seen above, Lai's purported "*first connector on one side* ***of the body*** (i.e., on the side closest to the controller 20, Fig. 3)" of the "***illumination fan***" (located on the ***far-left***) and Lai's purported "**second connector of a body of another illumination fan**" (located on the ***far-right***) are respectively located on the opposite two sides of the two adjacent illumination fans and are far apart from each other. Action at 5. The Action does not explain how the two connectors so far apart are connected "when the input connectors [in 111] of one fan are connected with the output connectors [in 112] of the adjacent fan in the series, e.g., via a transmission line 12, Fig. 3." Thus, a POSITA would not have understood that Lai discloses this limitation under the Action's mappings.

67. Furthermore, as discussed previously, claim 1's conditional phrasing, "***when*** the first connector of the body [of the illumination fan] is connected with a second connector of a body of another illumination fan," implicitly requires both a connected state and a disconnected state between the connectors of the two illumination fans, as shown in Figures 2 (disconnected state) and 3 (connected state) of the '336 patent:

68. But a POSITA would have understood that the (first) illumination fan adjacent the controller 20 and the (second or) another illumination fan adjacent the (first) illumination fan are ***permanently*** connected via the "single transmission line 12." That is, under the Action's mappings, a POSITA would have understood that the ***far-left*** first connector (which is merely a signal line) on the one side of the illumination fan's body "closest to the controller 20, Fig. 3" cannot be ***conditionally*** connected to the ***far-right*** "second connector of a body of another illumination fan" to allow the fan and illumination area of the another illumination fan to be driven into action, as implicitly required by claim 1 of the '336 patent.

69. In sum, under the Action's mappings, Lai fails to disclose that, "***when*** the first connector of the body [of the illumination fan] is connected with a second connector of a body of another illumination fan, a fan and an illumination area of the body of the other illumination fan are respectively driven into rotation and illumination."

iii. FUJITSU - OVERVIEW OF PRIOR ART

70. Before getting into the detailed arguments, I will first provide a summary of the Fujitsu patent application publication, based on its certified translation of "Fujitsu". The stated problem that Fujitsu is addressing is: "To provide an electronic device capable of assigning an address associated with a position of each fan unit to each fan unit even when the fan unit is swapped". [Fujitsu, p.2]

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71. More specifically, Fujitsu explains that: "In cooling fans conventionally used in **large-scale backbone servers**, an ability to perform **hot maintenance and swapping** while maintaining a system operational state (energized state) is desirable". [Fujitsu, ¶ 0002 ; bold-facing added]

72. Fujitsu summarizes his solution as: "An electronic device includes an electronic apparatus, and a plurality of serially-connected fan units that cools the electronic apparatus. Each fan unit includes a controlling unit that assigns to its own fan unit an address that identifies its own fan unit among the plurality of fan units by associating the same with a connection position of its own fan unit among the plurality of fan units". [Fujitsu, p.2]

73. A POSITA would have therefore understood the Fujitsu patent to address a specific market need, i.e., the ability to "hot-swap" a defective fan in a "large-scale backbone server", such as would exist as part of a server farm in a large data center. This is an ultrahigh reliability environment where downtime is viewed as intolerable. A large-scale server will be designed with multiple fans to provide cooling redundancy, and it is desirable to be able to swap out a defective fan without shutting down the server nor any of its operating fans. Fujitsu offers just such a method in his patent application.

74. A POSITA would have further understood that the essence of the Fujitsu publication is about how to incorporate a controller in each fan to essentially make it a "smart fan", so that when multiple fans are serially connected together in a row, with power connections between each fan and its neighbor, and also a serial bus connection such as I2C, it is possible for each fan to determine its location in the row and self-report its condition by signaling techniques. In Fujitsu's preferred embodiments, each fan also has a pair of redundant connectors CNA and CNB that can be connected to a pair of power supply cables (only the right-most fan is intended

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to be connected to these cables in normal operation). This feature permits a hot-swapping procedure whereby a new fan can be attached at the end of the row, powered up, slid into the server, and a fan at the opposite (left) end of the row can then be removed. The power cables A and B are transferred one at a time from the original right-most fan to the newly attached right-most fan, so that all the fans are continuously supplied with power. This procedure can be repeated until the defective fan has been removed from the row.

75. A POSITA would most definitely **not** view the Fujitsu reference as having any bearing on the subject of "illumination fans", such as are a subject of the '336 patent. A POSITA would have understood that the purpose of an illumination fan is to provide widely viewable lighting (usually with full-color RGB capability that can be dynamically varied) having some cosmetic or entertainment value to the user or his guests. Illumination fans are typically marketed to users of desktop personal computers or gamers, where the casing has been specifically designed to make the fans visible. They would not be designed into backbone servers (Fujitsu's target market), which are generally installed in rack-mounted cabinets in highly secure restricted-access facilities that are normally only viewed by maintenance engineers or technicians. To add illumination would increase fan cost, add to the power consumption and hence electricity cost, increase the heat load on the server which would reduce reliability (or require additional cooling fan capability to dispose of the heat), and increase the air conditioning load on the data center which further adds to electricity cost. All of these effects are detrimental to the goals of a data center operator, so the use of illumination fans would not be considered in that market. Fujitsu [¶ 0005] specifically states "lower power consumption is desirable in the servers in recent years". The addition of illumination to Fujitsu's fan units would be contrary to this desire to minimize

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power, would provide no benefit, and would in fact cause significant detrimental effects to the heat dissipation and the economic operation of a data center.

76. A POSITA would therefore consider that cooling fans for high-reliability high-end servers are in a different "field of endeavor" from illumination fans for personal computers, which is the subject of the '336 patent. Moreover, the inventive essence of the Fujitsu publication is to enable the ability to "hot swap" fans in a high-reliability environment. Hot-swapping is not something that would be of interest to a designer of illumination fans. Personal computer manufacturers routinely caution against opening the computer case when it is powered up, primarily because it is unsafe for users (for example, fingers might get cut by spinning fan blades, might contact the high-voltage power connection, or might get burned on a hot semiconductor chip), but also because it could damage the electronics (e.g., by inadvertently short-circuiting components with a metal tool, by damaging semiconductor components with a static electricity discharge, or by adversely affecting the flow of cooling air so that components overheat). No typical illumination fan designer would want to encourage hot-swapping of fans, as it risks putting the user's fingers in contact with sharp fan blades rotating at high speeds. Accordingly, it is my view that the Fujitsu publication, being aimed at solving the problem of hot swapping of fans, is not "reasonably pertinent" to a designer of illumination fans, and so Fujitsu would not "logically commend itself" to an inventor's attention who is focused on improving illumination fans. A POSITA would look at the Fujitsu publication and consider that its purpose is to allow hot-swapping of a defective fan in an array of fans, and would not even consider that it is pertinent to illumination fans in a PC.

77. The Action attempts to categorize Fujitsu as depicting an illumination fan merely because, in the preferred embodiments shown, the fan unit has a small "insertable / removable

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indicator lamp" on its right side to indicate the power status of the fan. The Action's position is simply incorrect. Many electrical devices have indicator lamps to show the operational status of the device, for example battery chargers, hard disk drives, and washing machines, to name a few. We do not call them "illumination battery chargers", "illumination disk drives", or "illumination washing machines", merely because they have one or more status lights on them. It would be clear to a POSITA that the sole function of the indicator lamp in Fujitsu is to assist in performing a hot-swapping procedure, by confirming the power status of a fan (i.e., whether one or two power cables are plugged in, in which case the lamp respectively indicates yellow or green). The indicator lamp does not fulfill any aesthetic function as an illumination fan would be expected to do, and indeed is not even visible except on the rightmost fan, since all the other fans in the serial connection would have the lamp covered up by their neighbors on the right. In fact, the indicator lamp is not even an essential component for practicing the Fujitsu invention. Fujitsu Figures 8-11 depict various steps in the hot-swapping procedure, none of which even show the indicator lamp. The flowchart in Fujitsu, Figure 20, makes it clear that the indicator lamp is not an essential part of the hot-swapping process; it merely provides additional assurance that power cables A/B have been correctly installed. The hot swap procedure could be successfully performed without referring at all to the indicator lamp. Fujitsu apparently felt that the role of the indicator lamp is sufficiently non-essential to the invention that none of Fujitsu's 9 claims mention it. Nor is the indicator lamp mentioned in any of Fujitsu's 20 "Supplementary Notes", which are written in a form that suggests they were intended as additional potential claims.

78. The use of the phrase "insertable / removable" modifying every use of the phrase "indicator lamp" provides still further evidence that the lamp is not viewed as an essential component of the Fujitsu invention. Fujitsu does not explain the reasons why the indicator lamp

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should be insertable / removable, but given the excellent reliability of LED lamps at the time, it would be highly unusual for a fan designer to add cost and complexity by making the lamp replaceable merely because of a concern that the lamp might burn out; in such an unlikely event, the relatively inexpensive fan unit could simply be tossed. My opinion is that Fujitsu specified "insertable / removable" because the lamp is in fact intended to be inserted and removed by maintenance personnel during the hot-swapping operation. It does not need to be present on any fan during normal operation, even on the right-most fan. When installed, the lamp probably protrudes from the right side, since a flush-mounted or recessed lamp would be very difficult to be "removable"; thus, it would preferably not be installed in any of the interior fans, unless sufficient clearance was designed between adjacent fans so that the protruding lamp does not smash against its right-hand neighboring fan unit (which doesn't appear to be the case in Fujitsu's Figure 6, as it depicts the neighboring fans as flush against each other). The lamp may or may not remain installed on the rightmost fan during normal operation (if not, the maintenance technician would bring a lamp with him when performing a hot swap). In my opinion, the insertable / removable feature further teaches away from the idea that the Fujitsu fan unit is in any sense an "illumination fan"; the indicator lamp is clearly intended to be viewed only on the right-most fan during a hot-swap operation, and it does not need to be installed at all at any other times.

iv. LIMITATIONS THAT ARE NOT MET

79. In my opinion, the preamble of claim 1, "[a]n illumination fan connectable with at least one illumination fan for a computer", to the extent it is limiting is not met by either Fujitsu nor the combination of Lai and Fujitsu. As discussed at length in the preceding paragraphs, Fujitsu is not an illumination fan by any reasonable POSITA's interpretation. So Action's analysis therefore fails immediately. As explained previously, the sole purpose of the indicator lamp on

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the right side of a fan unit of Fujitsu is to assist in the hot-swapping of a failed fan unit by verifying the powered-up status of a new fan that is being inserted. There is no advantage to the maintenance technician in making this lamp larger or with more uniform illumination than a standard LED indicator lamp normally provides. To do so would require adding extra circuitry and/or light diffusers, which increases fan unit cost, power consumption, and heat dissipation, all undesirable properties in a large-scale backbone server. The Action's rejection in this regard should fail just at this step without need for further discussion.

80. In my opinion, the limitation of "an illumination area on at least two sides of the fan at top of the body" is not met by either Fujitsu nor the combination of Lai and Fujitsu. In all of Fujitsu's preferred embodiments, the only illumination comes from a single "insertable / removable indicator lamp" on the "right side surface when viewed from the front surface" of each fan unit body [Fujitsu 0040]. To a POSITA reading the '336 patent, "top of the body" clearly means that frontal portion of the body when viewing along the fan's axis of rotation. The '336 illumination areas are clearly shown and labeled as "3" in all the preferred embodiments ('336 patent Figures 1-5), and they are located on two different sides of the fan, both at "top of the body". In stark contrast, Fujitsu teaches that the single indicator lamp is located on the "***right*** side surface when viewed from the front surface". This location is clearly not at "top of the body"; rather, using the claim language of the '336 patent, such an indicator lamp would be described as being on the right "side of the body", which is where Fujitsu requires the lamp to be located. The only figure in Fujitsu depicting the indicator lamp is Fig. 7(A), and the lamp's position is depicted as low on the right side of the fan unit between the front and rear faces, hence nowhere near the "top of the body" (i.e., nowhere near the front face), and certainly not providing illumination for the front of the body.

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81. In Fujitsu's words: "[b]ecause the right side surface is exposed to the outside when fan unit 10 is arranged on the right-most side of the plurality of fan units 10 (when fan unit 10 is added), the maintenance person can check a lighting state of the insertable / removable indicator lamp 12". [Fujitsu ¶ 0040]. Thus Fujitsu locates the indicator lamp on the "right side surface" of the fan unit, because the rest of the fan body is expected to be mostly if not entirely concealed by the server's case, as a POSITA would have understood.

82. Therefore, Fujitsu teaches away from placing any type of illumination at the "top of the body" (as this term would be construed by a POSITA in the '336 patent), and instead teaches that the sole illumination (an indicator lamp) shall be placed on a "side of the body" (as this term is understood in the '336 patent).

83. Furthermore, there would be no motivation for a POSITA to take the single indicator lamp of Fujitsu and locate it on "two sides of the fan" because to do this would increase cost and generate more heat for no benefit. That is, Fujitsu teaches away from this modification which also would not cure the fundamental defect that the proposed lamps would still be placed on the sides of the body, as taught by Fujitsu to facilitate maintenance from the side(s). Hence, neither lamp would be located at "top of the body", as required in the '336 claim language, and there would be no motivation to add illumination at top of the body.

84. For all the above reasons, the Action has failed to justify why a POSITA would consider or be motivated to modify Fujitsu to create an illumination area "on at least two sides at top of the body", something that would add cost, complexity, power consumption, and heat, for no apparent benefit. For all the same reasons, Fujitsu teaches away from a combination with Tsai to add more illumination. The Action's rejection in this regard should fail at this step (if not earlier) without need for further discussion. Nevertheless, I continue:

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85. In my opinion, the limitation 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", is not taught by Fujitsu nor the combination of Lai and Fujitsu. The Action identifies connectors CNA and CNB in each fan unit of Fujitsu as being "power sockets". See Office Action at 6. However, neither CNA nor CNB is on a "side of the body", as a POSITA would have interpreted the '336 patent. An explanation follows immediately below.

86. In the '336 patent, it is clear from the specification and associated figures that each fan body has an approximately square profile when viewed from the front (i.e., viewing along the axis of fan rotation, so that the viewer is facing the illumination areas), and so has four sides, as well as a "top of the body" (containing the illumination area) and an opposite face which we might call the rear or "bottom" of the body (the '336 patent does not name this bottom face, but its existence is apparent). In one or more of the '336 patent's embodiments, the power socket and first connector are located on one side of the body, and a second connector is located on another side of the body.

87. In contrast, applying the same interpretation of "side of the body" and "top of the body" to the Fujitsu publication, it is apparent that connector CNA is located on the ***top*** (i.e., the front) of the fan body, not on a ***side*** of the fan body as required by claim 1 of the '336 patent. This is evident from Figs. 7A and 7B in Fujitsu, and is also evident from a close reading of paragraph [0039] in Fujitsu, which states that "[t]he connector CNA on one side is arranged on a lower part of the front surface of each fan", and furthermore that "[t]he connector CNB on the other side is arranged on an upper part of the rear surface of each fan unit…". Note that Fujitsu is using the phrases "one side" and "other side" to refer to the front and rear surfaces of the fan unit. This is different from the '336 patent's use of the word "side" in each embodiment's "side of the body",

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wherein the "side of the body" in the embodiments means one of the major faces or surfaces (there are four such faces in the preferred embodiments shown) bounding the fan body that are perpendicular to the front and rear faces of the fan body. Fujitsu's "front surface" is equivalent to "top of the body" in the claim language of the '336 patent. Yet, the Action incorrectly claims that Fujitsu teaches a power socket and a first connector on one side of the body. Action at 6. This appears to incorrectly interpret the translation of Fujitsu using the word "side" as describing the location of connectors CNA and CNB, but without including Fujitsu's additional explanatory language which makes it clear that the "front side" or "front surface" in this context is referring to the front or rear surfaces, not one of the "sides of the body" in the '336 patent context, which are in fact perpendicular to the front and rear surfaces in the embodiments.

88. As discussed, a foundational purpose of Fujitsu's invention is to "enable hot swapping of one fan unit", a goal Fujitsu reiterates numerous times. *See id.* At Cl. 3 ("[T]he plurality of fan units is configured so as to enable hot swapping of one fan unit among the plurality of fan units ..."); [0002] ("[A]n ability to perform hot maintenance and swapping while maintaining a system operational state (energized state) is desirable".); [0008]-[0009] ("[Summary of the Invention] ... An object of the present invention is to provide an electronic device capable of assigning to each fan unit an address associated with a position of each fan unit even when the fan unit is swapped".); [0041] ("Therefore, fan unit 10 can be hot-swapped without having to stop the system ..."). Indeed, Fujitsu's emphasis on "hot swap"—mentioned no fewer than 55 times throughout the patent—underscores its central importance to the invention.

89. As also discussed above, for Fujitsu's hot-swapping to work, each fan unit must maintain at least two power sockets to ensure continuous power during a swap. This dual-socket configuration is crucial: when one power cable is disconnected from one power socket during

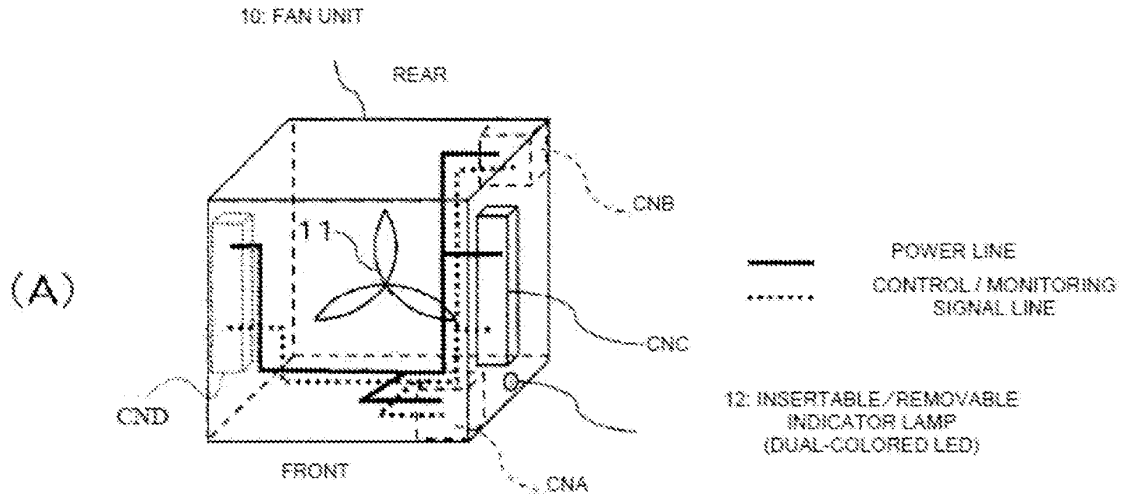
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maintenance, the second power cable connected to the second power socket maintains uninterrupted power. Thus, it would not have been obvious to a POSITA to move CNA and CNB onto the same side as CNC as a matter of design choice because to do so would be in direct contradiction of the teachings of Fujitsu. In fact, Fujitsu teaches away from such movements, as explained below. As discussed, Fujitsu discloses a system that is configured to enable hot-swapping of fans. Fujitsu's procedural description further illustrates this necessity:

> [0040] Furthermore, as shown in FIG. 7A [reproduced below], an insertable / removable indicator lamp 12 is provided on the right side surface when viewed from the front surface of each fan unit 10. Because the right side surface is exposed to the outside when fan unit 10 is arranged on the right-most side of the plurality of fan units 10 (when fan unit 10 is added), the maintenance person can check a lighting state of the insertable / removable indicator lamp 12. The insertable / removable indicator lamp 12 is, for example, a dual-colored LED. The lighting color (luminescent color) of the insertable / removable indicator lamp 12 is controlled by a later-explained LED lighting circuit 20 (refer to FIGS. 14 and 15). For example, when the cables A and B are respectively connected to the connectors CNA and CNB, that is, the cables A and B are in a insertable / removable state (a 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 a green color state (to lit up in green color). 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 a cable is removed), the insertable / removable indicator lamp 12 is controlled to be in a yellow color state (to lit up in yellow color).

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FIGURE 7

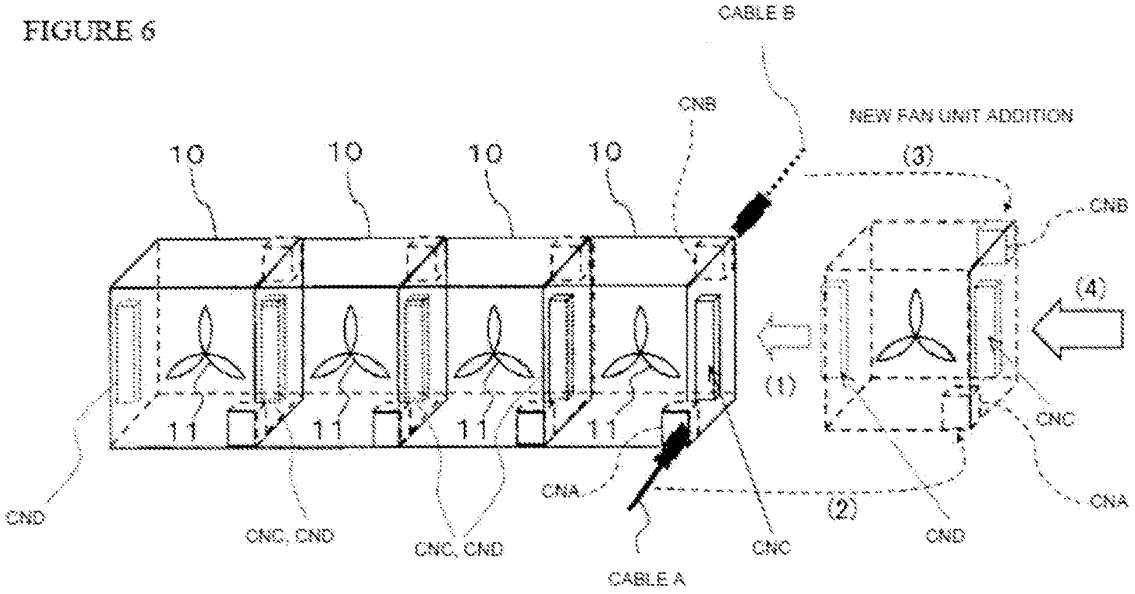


[0041] The power is supplied to the serially-connected plurality of fan units 10 from the power supplying unit 2 via the cables A and B and the connectors CNA, CNB, CNC, and CND explained above in a sequence. Moreover, the management unit 7 (I2C master; refer to FIGS. 8 to 13) and the fan controllers 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).

[0042] Next, ***the hot-swapping procedure of fan unit 10 according to the present embodiment will be explained while referring to FIG. 6 [reproduced below].*** Here, an operation performed by the maintenance person when adding a new fan unit 10 on one side (right side) and sliding the already installed fan unit 10 in server 1 to push out fan unit 10 on the other end (left side) is explained. At the start of the operation, four serially-connected fan units 10 are installed in server 1 and the connectors CNA and CNB of the fan unit on the right-most side are connected to the cables A and B, respectively.

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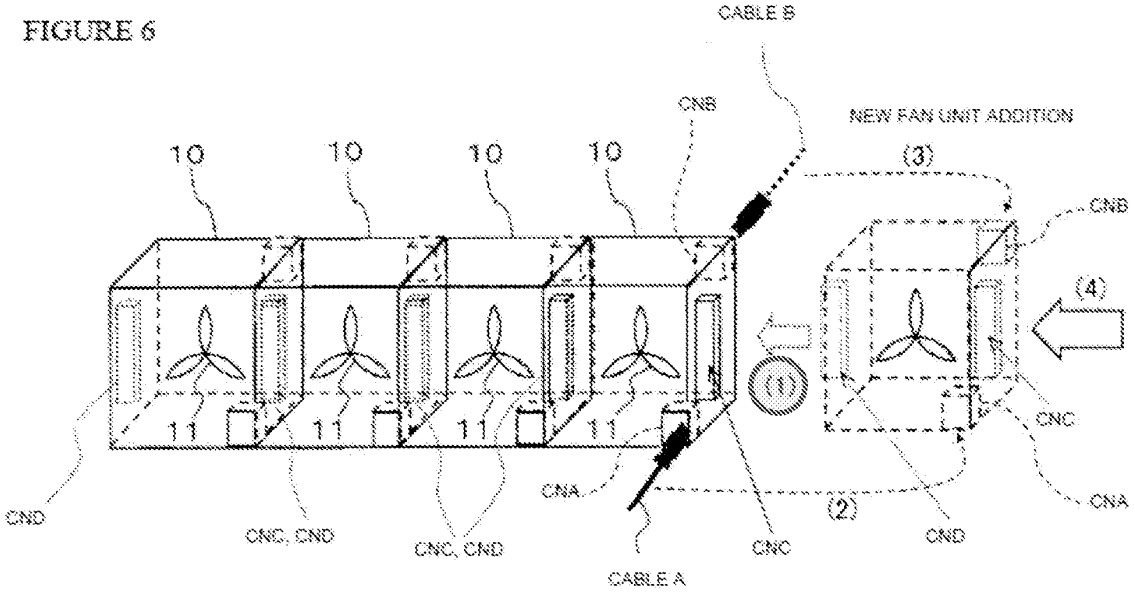
FIGURE 6



[0043] At this time, the maintenance person confirms that the insertable / removable indicator lamp 12 provided on the right side of fan unit 10 arranged on the right-most side among the already installed fan units 10 inside server 1 is in the green color state. In other words, the maintenance person confirms that the connectors CNA and CNB of fan unit 10 arranged on the right-most side is connected to the cables A and B, and is in a state in which the cable can be inserted / removed.

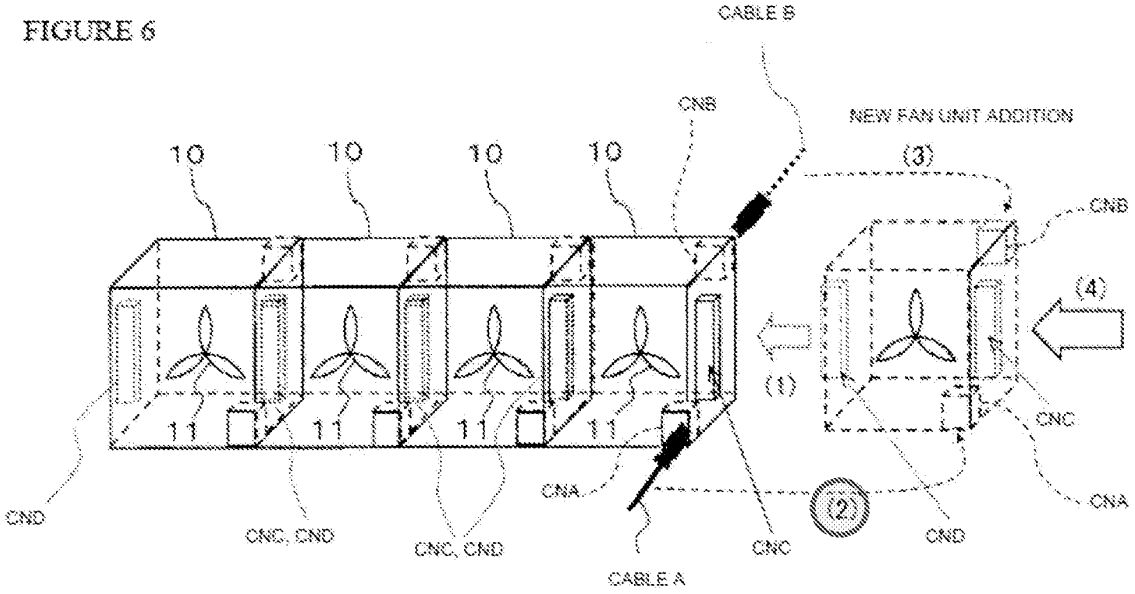
[0044] Upon visually confirming the insertable / removable indicator lamp 12 and confirming that it is the state in which the cable can be inserted / removed, ***the maintenance person engages the connector CNC (male) of fan unit 10 on the right-most side with the connector CND of the new fan unit 10 (refer to Arrow (1) shown in FIG. 6). Accordingly, the new unit 10 is connected to fan unit 10 on the right-most side as a fifth fan unit 10.***

FIGURE 6



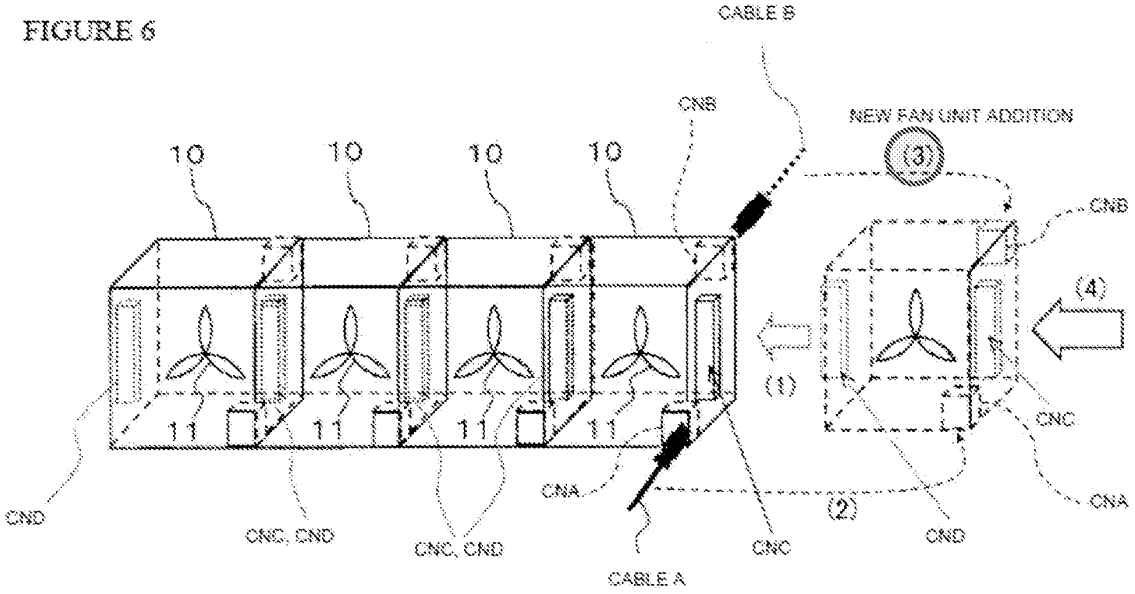
[0045] ***Subsequently, the maintenance person removes the cable A that is connected to the connector CNA of fan unit 10 on the right-most side, and connects the same to the connector CNA of the additionally- linked new fan unit 10, as shown by Arrow (2) of FIG. 6.*** At this step, the insertable / removable indicator lamp 12 switches from the green color state to the yellow color state when the cable A is removed, and switches back to the green color when the cable A is connected to the connector CNA of the new fan unit 10.

FIGURE 6



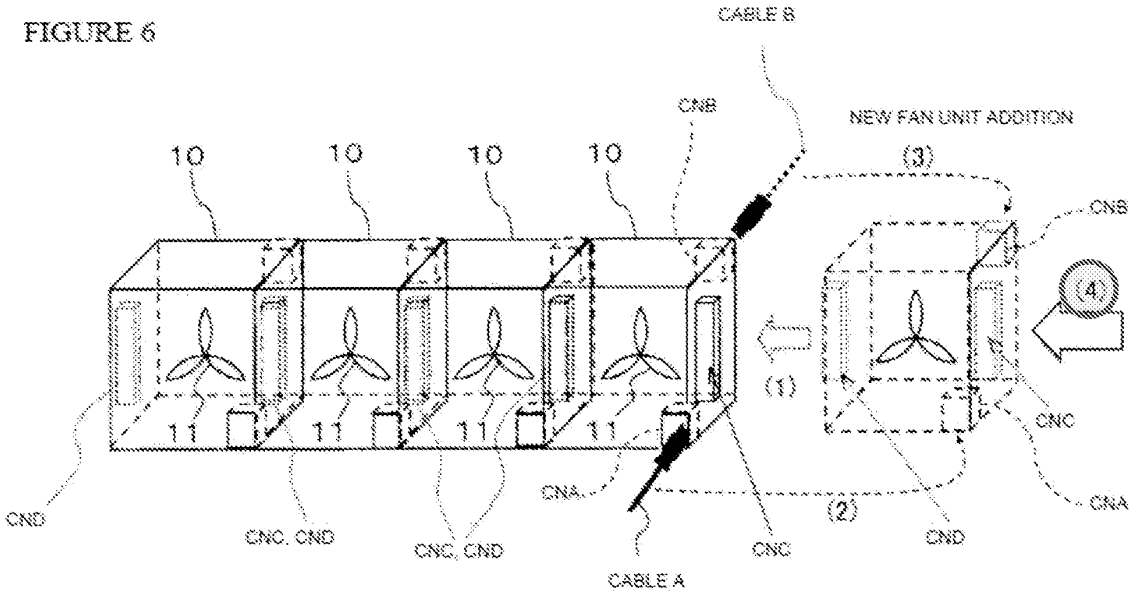
[0046] ***Furthermore, the maintenance person removes the cable B that is connected to the connector CNB of fan unit 10 on the right-most side, and connects the same to the connector CNB of the additionally- linked new fan unit 10, as shown by Arrow (3) of FIG. 6.*** Even at this step, the insertable / removable indicator lamp 12 switches from the green color state to the yellow color state when the cable B is removed, and switches back to the green color when the cable B is connected to the connector CNB of the new fan unit 10.

FIGURE 6



[0047] Subsequently, the maintenance person performs the sliding operation to move all five fan units 10 in which the new fan unit 10 is added on the right-most side in a direction of the Arrow (4) (left side) shown in FIG. 6. Accordingly, the new fan unit 10 is pushed inside server 1, and a fifth fan unit 10 from the right (left-most side) is pushed outside from server 1.

FIGURE 6



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> [0048] At this time, when the pushed-out fan unit 10 is a faulty fan unit to be swapped (target fan unit), the pushed out fan unit 10 is removed, and the swapping operation is completed. When the pushed-out fan unit 10 is not the target fan unit, the maintenance person adds and connects that pushed-out fan unit 10 on the right-most side and pushes thereof inside server 1 as the new fan unit 10 as explained above. The maintenance person repeats such an operation till the target fan unit is pushed out.
>
> [0049] In such a way, a specific fan unit among the serially-connected four fan units 10 (faulty fan unit) can be swapped with a new fan unit 10 without stopping the power supply to fan unit 10. Accordingly, swapping of fan unit 10 in a state in which rotation of the cooling fan 11 provided in each fan unit 10 is maintained as is, that is, swapping of fan unit 10 in the hot state can be performed.

Fujitsu, ¶¶ 40-49.

90. In my opinion, Lai alone or in view of Fujitsu does not render any '336 claims Obvious. The Action maps a connector CNC in the Fujitsu patent as the "first connector" in the '336 claim language. Fujitsu explains that "connector CNC (male) … is provided by protruding on the right side surface when viewed from a front surface of each fan unit 10". [Fujitsu ¶ 0038] In the language of the '336 patent, connector CNC would indeed be considered as being "on one side of the body". However, by glossing over the fact that Fujitsu and the '336 patent used the word "side" in two entirely different meanings (as recently explained above), the Action incorrectly concludes that Fujitsu embodies the claim limitation "a power socket and a first connector on one side of the body". For this to be true, the power socket and first connector would both need to be on the same side of the body. But a POSITA would conclude that they are

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obviously not on the same sides, as clearly shown in the colored annotations of Fujitsu's Figures 6 and 7:

FIGURE 6
(Excerpt)

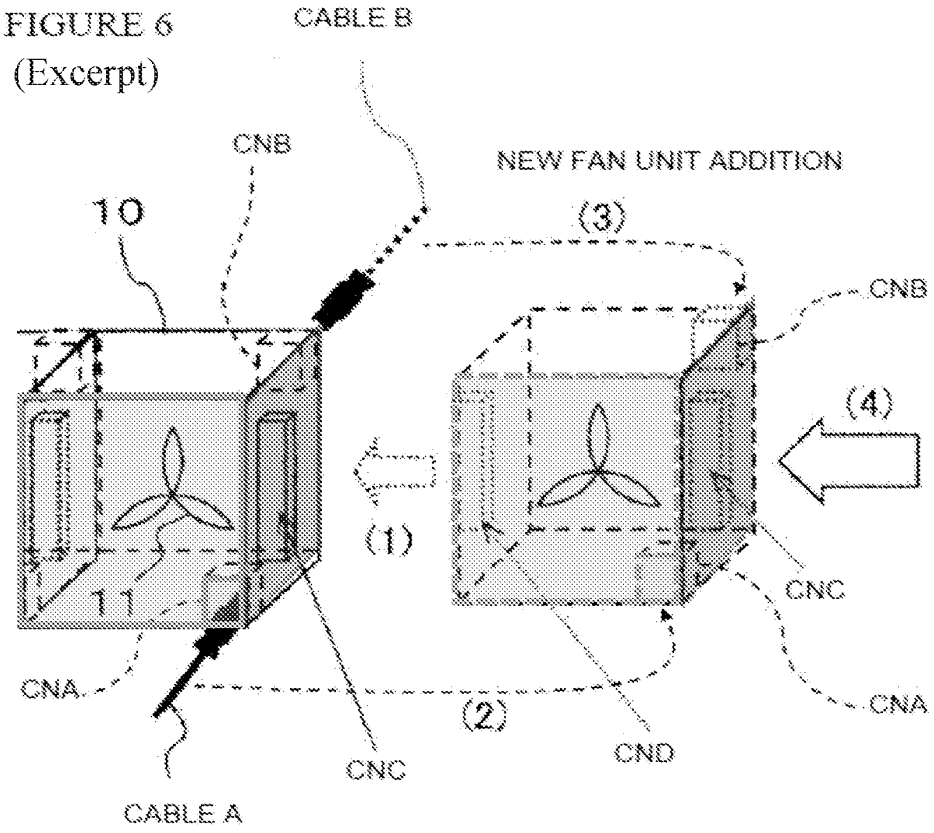
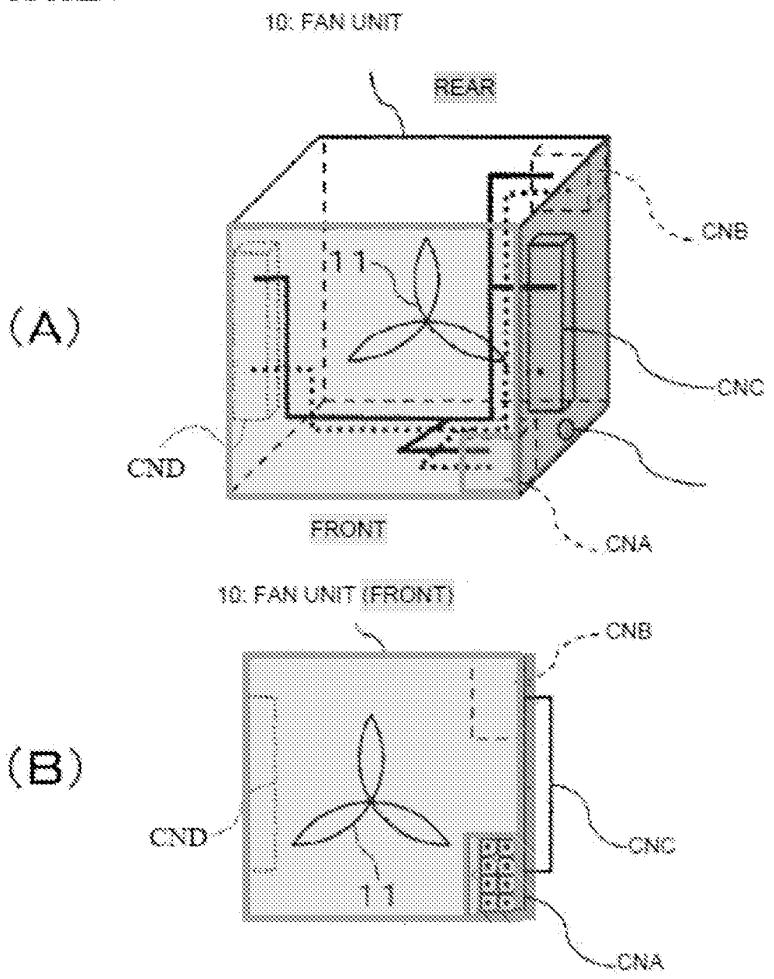


FIGURE 7



91. The Action identifies connector CNC as being the "first connector", and connectors CNA and CNB are each identified as a "power socket". Action at 6. But it is unequivocal from the Figures 6 and 7 (reproduced and annotated above) that connector CNA is mounted on a surface facing the reader (Fujitsu's "front surface", which is equivalent to the '336 patent's "top of the body"), connector CNC is mounted on a surface facing to the right (Fujitsu's "right side surface" or "end side", and the '336 patent's "side of the body"), and connector CNB is mounted on a

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surface facing away from the reader (Fujitsu's "rear surface" and what would be considered the "bottom of the body" in the '336 patent, though that term is never used). So, in both figures and text, Fujitsu does not teach having a power connector/socket and another connector being on the same side of the fan unit.

92. In one or more of the '336 patent's embodiments, the power socket and first connector are located on one side of the body, and a second connector is located on another side of the body. Claim 1 of the '336 patent requires, *inter alia*, "a power socket and a first connector on one side of the body and "the power socket on the one side of the body." These two claim phrases together confirm that the "power socket" and the "first connector" must be on the ***same side*** of the illumination fan's body. This required configuration of the power socket **4** and the first connector **5** being located on the ***same side*** of the body of the illumination fan (red) is depicted in Figure 1 of the '336 patent, as shown below:

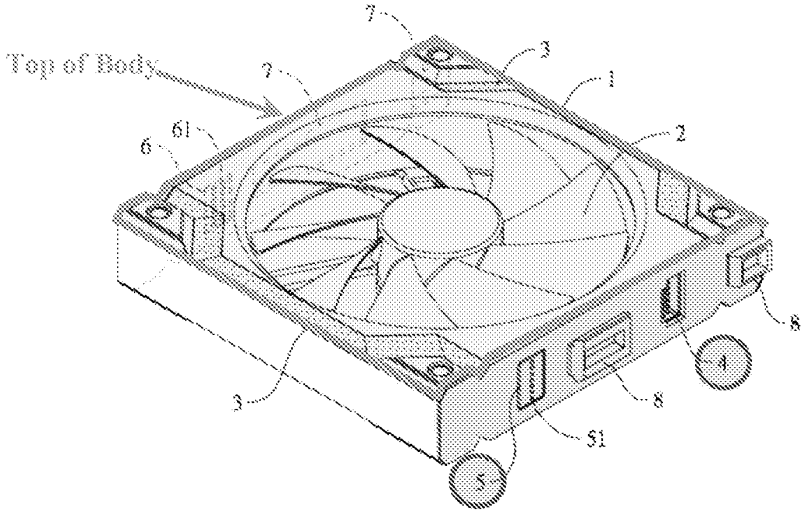


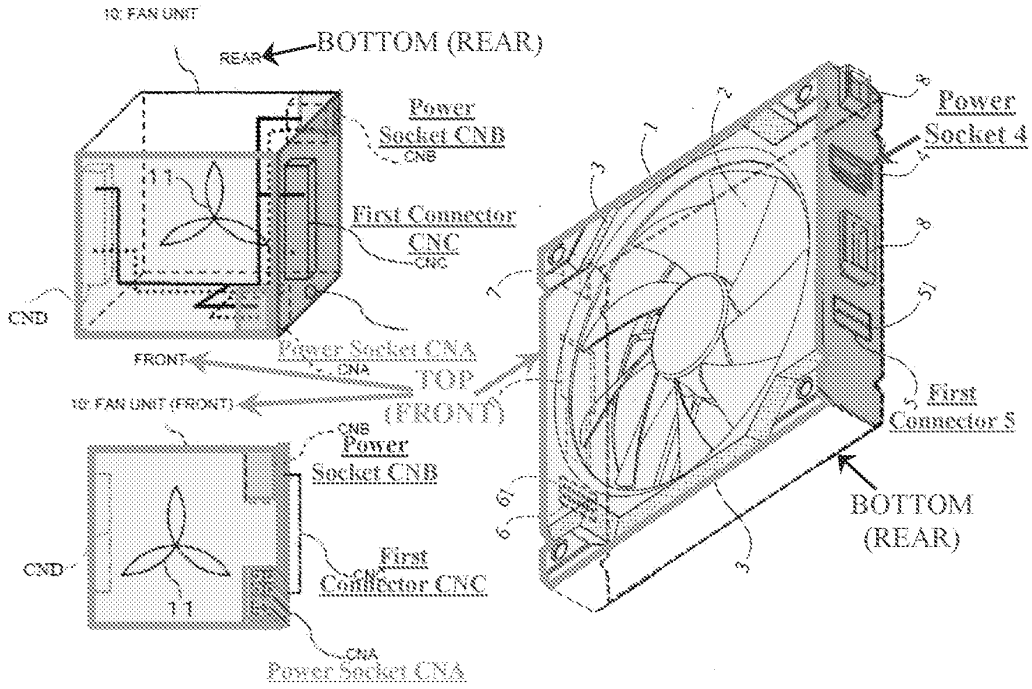
Fig. 1

('336 patent at Fig. 1). In contrast to the illumination area **3** located at the top of the body, the power socket **4** and the first connector **5** are ***not*** located at the top of the body (cyan) because they are located on the side of the body (red).

93. This feature is expressly required by claim 1, which recites "**a power socket and a first connector on one side of the body**," *i.e.*, with both being on the same side of the body. In contrast to the illumination area **3** located at the top of the body, the power socket **4** and the first connector **5** are ***not*** located at the top of the body because they are located on the side of the body.

94. In contrast, Fujitsu illustrates the alleged power socket (CNA or CNB) on the "front" (equivalent to the "top" of the illumination fan body in '336 patent's Fig. 1 embodiment) or the "rear" (equivalent to the bottom of the illumination fan body in '336 patent's Fig. 1 embodiment), while the alleged first connector (CNC) is positioned on a separate "side." This arrangement in Fujitsu does not read on the structure required by claim 1.

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Compare Fig. 7 of Fujitsu, alleged "Power Socket CNA/CNB" *with* '336 pat. Fig. 1 (rotated), "Power Socket 4") (annotated).

95. The diagram above depicts a comparison between (1) on the left, a portion of Figure 7 from Fujitsu showing the location of the connectors that the Action maps to the claimed "**power socket**" (*i.e.*, CNA/CNB) and (2) on the right, Figure 1 of the '336 patent depicting the location of the claimed power socket on the same side of the body as that the first connector is on. As can be seen further above in annotated Figures 6 and 7 of Fujitsu, the connectors that the Action has mapped to the claimed "**power socket**" (CNA/CNB) are not located on the same side of the body as the connector that the Action mapped to the claimed "**first connector**" (CNC). Instead, as shown, the CNA structure is located on the equivalent "top" (front) whereas the CNB structure is located on the equivalent bottom (rear) of the fan unit. Because neither CNA nor CNB is located

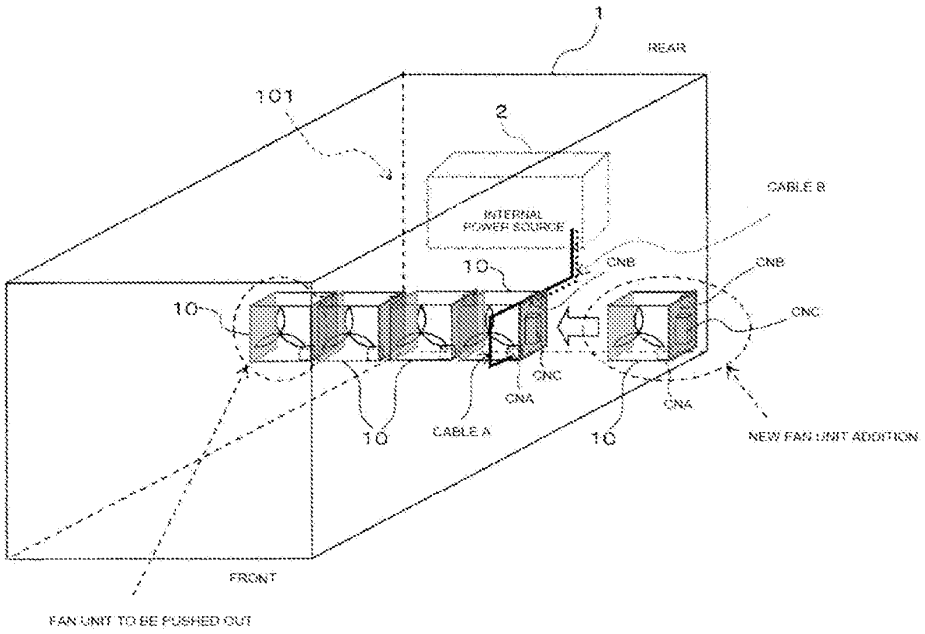
on the same side of the fan unit as where CNC is, Fujitsu fails to disclose "a power socket ***and*** a first connector ***on one side of the body***", as recited in claim 1.

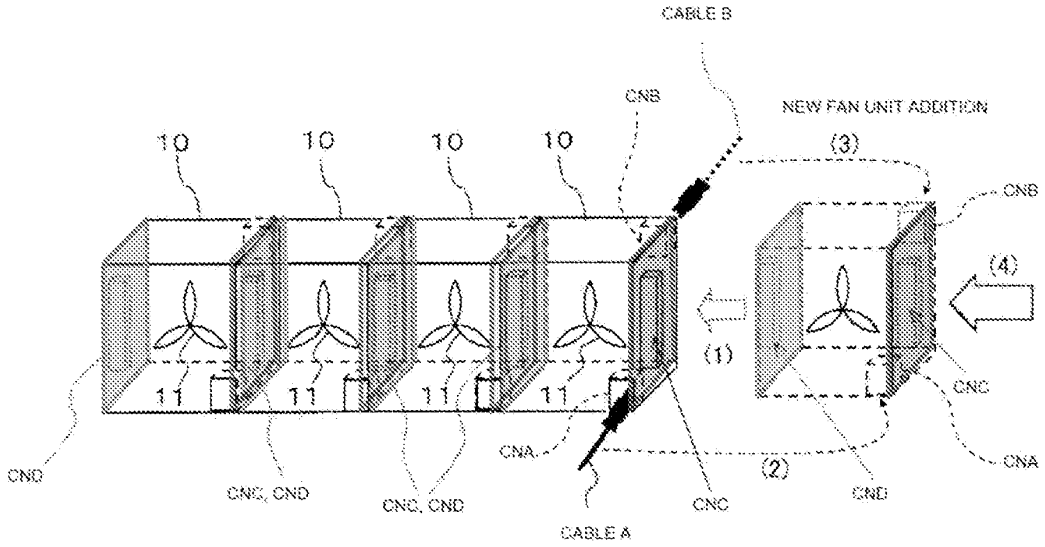
96. As discussed previously in paragraphs 25, *et seq.*, a POSITA would clearly not interpret "one side of the body" and the "another side of the body" as two halves of the "body" because such interpretation causes the previously described nonsensical results. The ordinary meaning of "sides" and "top" as known by a POSITA is consistent with the usage of such terms in the claims of the '336 patent. The tortured explanation of "sides" by the Action creates ambiguity. A POSITA knows that "top of the body" means the top. And, a POSITA knows that "sides" of a body means a side. Thus, a POSITA would clearly not understand "sides" to mean that the claimed body only has two sides according to the Action's interpretation of the use of "side[s]" in claim 1. Rather, a POSITA would understand the '336 patent to disclose a body having four sides, a top and a bottom.

97. An astute reader might now say, "well, OK, it's now evident that the power socket and first connector in Fujitsu are not on the same side of the body. But surely it would be obvious to a POSITA that one could move them onto the same side as a matter of design choice, right?" ***Actually, no*** – **because *this proposed arrangement would be impossible.*** The way the hot-swap process works, one must first connect a new fan unit to the right of the rightmost existing fan unit (mating connector CND of the new fan unit to connector CNC of the existing fan unit). This connection is done while "connectors CNA and CNB of the fan unit on the right-most side are connected to the cables A and B, respectively" [Fujitsu ¶ 0042]. In other words, the power cables A and B initially remain plugged into the pre-existing right-most fan while the new fan is attached; if both cables were removed, then all the fans would shut down, which could overheat the server. Leaving the cables attached would not be possible if either CNA or CNB was on the same side as

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connector CNC; the cable would be squashed when the two fans are plugged together, as is evident from inspection of Fujitsu's Figures 5 and 6 below.





98. Indeed, the hot-swap procedure requires that one remove the two cables, one at a time, on the fan that is now in second position after a new fan has been attached on the right, so

that they can be re-connected one at a time to the new right-most fan. And if the CNA and CNB are located on the same "side" as that CNC is located on, cables A and B will be jammed between the fans, making the serial removal of them, and hence the required "hot-swapping", rendered impossible.

99. Fujitsu's entire hot-swapping concept relies on the physical necessity that connectors CNA and CNB (the "power socket" in the Action's rejection) not be located on the same side as connector CNC (aka the "first connector" in Action's rejection). ***Fujitsu therefore teaches away from the power socket and first connector being on the same side of the body***, as his concept cannot be implemented in such a configuration. Fujitsu cannot be modified to comport with the above claim limitation. And, Lai cannot cure Fujitsu's deficiency for the reasons previously set forth herein.

100. In sum, it is a physical impossibility in Fujitsu's hot-swapping scheme to have the power socket located on the same "side of the body" as that the first connector is located on as required by claim 1 of the '336 patent.

101. I will note that a POSITA would not have been motivated to combine Fujitsu's server fan with Tsai's illumination features, as doing so would impose unnecessary cost and run counter to Fujitsu's technical objectives.

102. I understand claim 4 of the '336 patent is being amended, and new claims 6-48 are being added, and that these claims have been submitted.

103. Below I provide the explanation of support for the amended 4 and the new claims 6-48 that have been submitted. Based on my review, it is my opinion that a POSITA would have found the support needed in the specification of the '336 patent based on the explanation of support for the corresponding claim language in each row of the following table:

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Amended or New Claim	Explanation of Support
4. (Currently Amended) The illumination fan connectable with at least one illumination fan for a computer of claim 1, wherein a groove is provided on one side of the body of the illumination fan, while an engaging block of the body of another illumination fan 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.	The underlined added text in "an engaging block of the body of another illumination fan is provided on another side thereof to be engaged into the groove" provides proper antecedent basis for the later statement in the same claim 4 of "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". This added text is supported at Column 2, lines 24-30 and Column 3, lines 18-28 and Figures 4 and 5 showing the grooves and engaging block.
6. (New) The illumination fan connectable with at least one illumination fan for a computer of claim 1, wherein the top of the body is adjacent to the one side of the body of the illumination fan.	Column 1, line 53 – Column 2, line 2 and Column 2, line 61 – Column 3, line 3 and Figs. 1-5 (showing the top of body as being adjacent to one side of the body of the illumination fan.)
7. (New) The illumination fan connectable with at least one illumination fan for a computer of claim 1, wherein the top of the body is adjacent to the another side of the body of the illumination fan.	Column 1, line 53 – Column 2, line 2 and Column 2, line 61 – Column 3, line 3 and Figs. 1-5 (showing the top of body as being adjacent to another side of the body of the illumination fan.)
8. (New) The illumination fan connectable with at least one illumination fan for a computer of claim 1, wherein the one side of the body of the illumination fan and the another side of the body of the	Column 1, line 53 – Column 2, line 2 and Column 2, line 61 – Column 3, line 3 and Figs. 1-5 (showing the one side of the body of the illumination fan and the another side of the body of the illumination fan as being adjacent

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Amended or New Claim	Explanation of Support
illumination fan are adjacent to a bottom of the body of the illumination fan.	to a bottom of the body of the illumination fan.)
9. (New) The illumination fan connectable with at least one illumination fan for a computer of claim 2, wherein the top of the body is adjacent to the one side of the body of the illumination fan.	Column 1, line 53 – Column 2, line 2 and Column 2, line 61 – Column 3, line 3 and Figs. 1-5 (showing the top of the body being adjacent to the one side of the body of the illumination fan.)
10. (New) The illumination fan connectable with at least one illumination fan for a computer of claim 2, wherein the top of the body is adjacent to the another side of the body of the illumination fan.	Column 1, line 53 – Column 2, line 2 and Column 2, line 61 – Column 3, line 3 and Figs. 1-5 (showing the top of the body being adjacent to the another side of the body of the illumination fan
11. (New) The illumination fan connectable with at least one illumination fan for a computer of claim 2, wherein the one side of the body of the illumination fan and the another side of the body of the illumination fan are adjacent to a bottom of the body of the illumination fan.	Column 1, line 53 – Column 2, line 2 and Column 2, line 61 – Column 3, line 3 and Figs. 1-5 (showing the one side and the another side of the body of the illumination fan as adjacent to a bottom of the body of the illumination fan.)
12. (New) The illumination fan connectable with at least one illumination fan for a computer of claim 3, wherein the top of the body is adjacent to the one side of the body of the illumination fan.	Column 1, line 53 – Column 2, line 2 and Column 2, line 61 – Column 3, line 3 and Figs. 1-5 (showing the top of the body being adjacent to the one side of the body of the illumination fan.)
13. (New) The illumination fan connectable with at least one illumination fan for a computer of claim 3, wherein the top of the body is adjacent to the another side of the body of the illumination fan.	Column 1, line 53 – Column 2, line 2 and Column 2, line 61 – Column 3, line 3 and Figs. 1-5 (showing the top of the body being adjacent to the another side of the body of the illumination fan.)

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Amended or New Claim	Explanation of Support
14. (New) The illumination fan connectable with at least one illumination fan for a computer of claim 3, wherein the one side of the body of the illumination fan and the another side of the body of the illumination fan are adjacent to a bottom of the body of the illumination fan.	Column 1, line 53 – Column 2, line 2 and Column 2, line 61 – Column 3, line 3 and Figs. 1-5 (showing the one side and the another side of the body of the illumination fan being adjacent to a bottom of the body of the illumination fan.)
15. (New) The illumination fan connectable with at least one illumination fan for a computer of claim 4, wherein the top of the body is adjacent to the one side of the body of the illumination fan.	Column 1, line 53 – Column 2, line 2 and Column 2, line 61 – Column 3, line 3 and Figs. 1-5 (showing the top of the body being adjacent to the one side of the body of the illumination fan.)
16. (New) The illumination fan connectable with at least one illumination fan for a computer of claim 4, wherein the top of the body is adjacent to the another side of the body of the illumination fan.	Column 1, line 53 – Column 2, line 2 and Column 2, line 61 – Column 3, line 3 and Figs. 1-5 (showing the top of the body being adjacent to the another side of the body of the illumination fan.)
17. (New) The illumination fan connectable with at least one illumination fan for a computer of claim 4, wherein the one side of the body of the illumination fan and the another side of the body of the illumination fan are adjacent to a bottom of the body of the illumination fan.	Column 1, line 53 – Column 2, line 2 and Column 2, line 61 – Column 3, line 3 and Figs. 1-5 (showing the one side of the body of the illumination fan and the another side of the body of the illumination fan being adjacent to a bottom of the body of the illumination fan.)
18. (New) The illumination fan connectable with at least one illumination fan for a computer of claim 5, wherein the first connector of the illumination fan is	Column 1, line 53 – Column 2, line 2; Column 2, lines 3-11; Column 2, line 61 – Column 3, line 3 and Column 3, lines 6-22

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Amended or New Claim	Explanation of Support
electrically connected with the second connector of the another illumination fan.	
19. (New) The illumination fan connectable with at least one illumination fan for a computer of claim 5, wherein the second connector of the illumination fan is connected with a first connector of the another illumination fan.	Column 3, lines 7-22 and Figs. 2 and 4 (showing the second connector of the illumination fan being connected with a first connector of the another illumination fan.)
20. (New) The illumination fan connectable with at least one illumination fan for a computer of claim 5, wherein the second connector of the illumination fan is electrically connected with a first connector of the another illumination fan.	Column 1, line 53 – Column 2, line 2; Column 2, lines 3-11; Column 2, line 61 – Column 3, line 3 and Column 3, lines 6-22
21. (New) The illumination fan connectable with at least one illumination fan for a computer of claim 1, wherein the power socket on the one side of the illumination fan has an opening located on the one side of the illumination fan.	Column 1, line 53 – Column 2, line 2; Column 2, line 61 – Column 3, line 6 and Column 3, lines 29-29 and Figs. 1, 2 and 4 (showing the power socket on the one side of the illumination fan having an opening located on the one side of the illumination fan.)
22. (New) The illumination fan connectable with at least one illumination fan for a computer of claim 21, wherein the top of the body is adjacent to the one side of the body of the illumination fan.	Column 1, line 53 – Column 2, line 2 and Column 2, line 61 – Column 3, line 3 and Figs. 1-5 (showing the top of the body being adjacent to the one side of the body of the illumination fan.)
23. (New) The illumination fan connectable with at least one illumination fan for a computer of claim 21, wherein the top of the body is adjacent to the another side of the body of the illumination fan.	Column 1, line 53 – Column 2, line 2 and Column 2, line 61 – Column 3, line 3 and Figs. 1-5 (showing the top of the body being adjacent to the another side of the body of the illumination fan.)

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Amended or New Claim	Explanation of Support
24. (New) The illumination fan connectable with at least one illumination fan for a computer of claim 21, wherein the one side of the body of the illumination fan and the another side of the body of the illumination fan are adjacent to a bottom of the body of the illumination fan.	Column 1, line 53 – Column 2, line 2 and Column 2, line 61 – Column 3, line 3 and Figs. 1-5 (showing the one side and the another side of the body of the illumination fan being adjacent to a bottom of the body of the illumination fan.)
25. (New) The illumination fan connectable with at least one illumination fan for a computer of claim 1, wherein an electrically conductive contact surface is provided in the second connector of the illumination fan and is located on the another side of the illumination fan.	Column 1, line 53 – Column 2, line 2; Column 2, lines 3-11; Column 2, line 61 – Column 3, line 3 and Column 3, lines 6-22 and Figs. 1, 2, 4 and 5 (showing an electrically conductive contact surface being provided in the second connector of the illumination fan and being located on the another side of the illumination fan.)
26. (New) The illumination fan connectable with at least one illumination fan for a computer of claim 25, wherein the top of the body is adjacent to the one side of the body of the illumination fan.	Column 1, line 53 – Column 2, line 2 and Column 2, line 61 – Column 3, line 3 and Figs. 1-5 (showing top of the body being adjacent to the one side of the body of the illumination fan.)
27. (New) The illumination fan connectable with at least one illumination fan for a computer of claim 25, wherein the top of the body is adjacent to the another side of the body of the illumination fan.	Column 1, line 53 – Column 2, line 2 and Column 2, line 61 – Column 3, line 3 and Figs. 1-5 (showing the top of the body being adjacent to the another side of the body of the illumination fan.)
28. (New) The illumination fan connectable with at least one illumination fan for a computer of claim 25, wherein the one side of the body of the illumination fan and the another side of the body of the	Column 1, line 53 – Column 2, line 2 and Column 2, line 61 – Column 3, line 3 and Figs. 1-5 (showing the one side and the another side of the body of the illumination fan being

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Amended or New Claim	Explanation of Support
illumination fan are adjacent to a bottom of the body of the illumination fan.	adjacent to a bottom of the body of the illumination fan.)
29. (New) The illumination fan connectable with at least one illumination fan for a computer of claim 1, wherein an electrically conductive terminal is provided in the first connector of the illumination fan and is located on the one side of the body of the illumination fan.	Column 1, line 53 – Column 2, line 2; Column 2, lines 3-11; Column 2, line 61 – Column 3, line 3 and Column 3, lines 6-22 and Figs. 1-5 (showing an electrically conductive terminal in the first connector of the illumination fan and being located on the one side of the body of the illumination fan.)
30. (New) The illumination fan connectable with at least one illumination fan for a computer of claim 29, wherein the top of the body is adjacent to the one side of the body of the illumination fan.	Column 1, line 53 – Column 2, line 2 and Column 2, line 61 – Column 3, line 3 and Figs. 1-5 (showing the top of the body being adjacent to the one side of the body of the illumination fan.)
31. (New) The illumination fan connectable with at least one illumination fan for a computer of claim 29, wherein the top of the body is adjacent to the another side of the body of the illumination fan.	Column 1, line 53 – Column 2, line 2 and Column 2, line 61 – Column 3, line 3 and Figs. 1-5 (showing the top of the body being adjacent to the another side of the body of the illumination fan.)
32. (New) The illumination fan connectable with at least one illumination fan for a computer of claim 29, wherein the one side of the body of the illumination fan and the another side of the body of the illumination fan are adjacent to a bottom of the body of the illumination fan.	Column 1, line 53 – Column 2, line 2 and Column 2, line 61 – Column 3, line 3 and Figs. 1-5 (showing one side and the another side of the body of the illumination fan being adjacent to a bottom of the body of the illumination fan.)
33. (New) The illumination fan connectable with at least one illumination fan for a computer of claim 1, wherein the second connector of the body of the	Column 1, line 53 – Column 2, line 2; Column 2, lines 3-11; Column 2, line 61 – Column 3, line 3 and Column 3, lines 6-22 and Figs. 2-5 (showing the second connector of the body of

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Amended or New Claim	Explanation of Support
illumination fan is connected with a first connector of the body of another illumination fan.	the illumination fan being connected with a first connector of the body of another illumination fan.)
34. (New) The illumination fan connectable with at least one illumination fan for a computer of claim 33, wherein the top of the body is adjacent to the one side of the body of the illumination fan.	Column 1, line 53 – Column 2, line 2 and Column 2, line 61 – Column 3, line 3 and Figs. 1-5 (showing the top of the body being adjacent to the one side of the body of the illumination fan.)
35. (New) The illumination fan connectable with at least one illumination fan for a computer of claim 33, wherein the top of the body is adjacent to the another side of the body of the illumination fan.	Column 1, line 53 – Column 2, line 2 and Column 2, line 61 – Column 3, line 3 and Figs. 1-5 (showing the top of the body being adjacent to the another side of the body of the illumination fan.)
36. (New) The illumination fan connectable with at least one illumination fan for a computer of claim 33, wherein the one side of the body of the illumination fan and the another side of the body of the illumination fan are adjacent to a bottom of the body of the illumination fan.	Column 1, line 53 – Column 2, line 2 and Column 2, line 61 – Column 3, line 3 and Figs. 1-5 (showing the one side and the another side of the body of the illumination fan being adjacent to a bottom of the body of the illumination fan.)
37. (New) The illumination fan connectable with at least one illumination fan for a computer of claim 2, wherein the first connector of the body of the illumination fan is electrically connected with the second connector of the body of another illumination fan when the first connector of the body of the illumination fan is connected with the second connector of the body of another illumination fan.	Column 1, line 53 – Column 2, line 2; Column 2, lines 3-11; Column 2, line 61 – Column 3, line 3 and Column 3, lines 6-22; Column 1, line 53 – Column 2, line 2; Column 2, line 61 – Column 3, line 3 and Column 3, lines 6-22 and Figs. 3 and 5 (showing the first connector of the body of the illumination fan being electrically connected with the second connector of the body of another illumination fan.)

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Amended or New Claim	Explanation of Support
38. (New) The illumination fan connectable with at least one illumination fan for a computer of claim 37, wherein the second connector of the illumination fan is connected with a first connector of the another illumination fan when the first connector of the body of the illumination fan is connected with the second connector of the body of another illumination fan.	Column 1, line 53 – Column 2, line 2; Column 2, lines 3-11; Column 2, line 61 – Column 3, line 3 and Column 3, lines 6-22
39. (New) The illumination fan connectable with at least one illumination fan for a computer of claim 38, wherein the second connector of the illumination fan is electrically connected with the first connector of the another illumination fan when the first connector of the body of the illumination fan is connected with the second connector of the body of another illumination fan.	Column 1, line 53 – Column 2, line 2 and Column 2, line 61 – Column 3, line 3 and Figs. 3 and 5 (showing the second connector of the illumination fan being electrically connected with the first connector of the another illumination fan.)
40. (New) The illumination fan connectable with at least one illumination fan for a computer of claim 37, wherein the second connector of the illumination fan is electrically connected with the first connector of the another illumination fan when the first connector of the body of the illumination fan is connected with the second connector of the body of another illumination fan.	Column 1, line 53 – Column 2, line 2; Column 2, lines 3-11; Column 2, line 61 – Column 3, line 3 and Column 3, lines 6-22 and Figs 3 and 5 (showing the second connector of the illumination fan being electrically connected with a first connector of the another illumination fan.)

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Amended or New Claim	Explanation of Support
41. (New) An illumination fan connectable with at least one other illumination fan for a computer, comprising: a body, provided with a fan in a center of the body, an illumination area on at least two sides of the fan at a 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, 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 the another illumination fan are respectively driven into rotation and illumination.	Column 1, line 53 – Column 2, line 2; Column 2, line 61 – Column 3, line 22 and Column 3, lines 29-39 and Figs. 1-5.
42. (New) The illumination fan connectable with at least one other illumination fan for a computer of claim 41, wherein an electrically conductive terminal	Column 1, line 53 – Column 2, line 2; Column 2, lines 3-11; Column 2, line 61 – Column 3, line 3 and Column 3, lines 6-22 and Figs. 1-5

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