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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte JUSTIN RICHARD HEBERT, STEPHEN J. HIGHAM,
and DANIEL G. PARSONS

Appeal 2010-008854
Application 11/506,331
Technology Center 2800

Before JEFFREY T. SMITH, KRISTEN L. DROESCH, and HUNG H. BUI, *Administrative Patent Judges*.

BUI, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants[1] seek our review under 35 U.S.C. § 134(a) of the Examiner's final rejections of claims 1-12 and 14-24. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.[2]

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[1] Real Party in Interest is Hewlett-Packard Development Company, L.P.

[2] Our decision refers to Appellants' Appeal Brief filed January 12, 2010 ("App. Br."); Reply Brief filed May 4, 2010 ("Reply Br."); Examiner's Answer mailed March 5, 2010; and the original Specification filed August 17, 2006 ("Spec.").

I. STATEMENT OF THE CASE

Appellants' Invention

Appellants' invention relates to a system and method for cooling a computer system in different orientations (e.g., vertical position, horizontal position, or mounted position) without using a cooling mechanism that includes moving parts, such as a fan. *See* Spec. ¶0011. FIG. 1 is reproduced below.

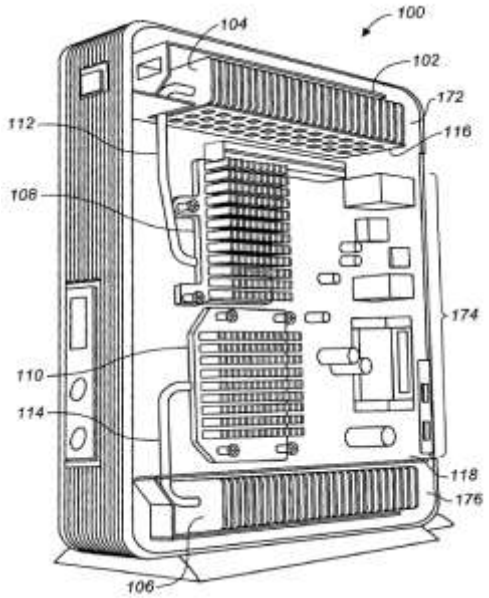

FIG. 1 shows a computer system including a first cooling assembly 110, 114 and a second cooling assembly 108, 114.

As shown in FIG. 1, the computer system 100 includes an enclosure 102 having a number of vents distributed across different portions of the enclosure 102 to provide different thermal pathways to transfer heat to air surrounding the computer system 100. *Id.* ¶0033. The enclosure 102 includes a first divider 116 (i.e., serving as a first thermal wall) and a second divider 118 (i.e., serving as a second thermal wall) to define a first region 176, a second region 172, and a third region 174 therebetween. The first

thermal wall 116 prevents heat transfer from the second region 172 to the third region 174. The second thermal wall 118 prevents heat transfer from the first region 176 to the third region 174. A first cooling assembly (e.g., heat sink 110 and heat pipe 114) is thermally coupled to a processor to cool the processor. Optionally, a second cooling assembly (e.g., heat sink 108 and heat pipe 112) is thermally coupled to a chipset to cool the chipset. *Id.* ¶¶0037-0038 and Abstract.

Claims on Appeal

Claims 1, 14, 16, and 18 are independent. Claim 1 is representative of the invention, as reproduced below with disputed limitations emphasized:

> 1. A computer system comprising:
>
> an enclosure having a plurality of vents distributed across different portions of said enclosure to provide a plurality of thermal pathways to transfer heat to air surrounding said computer system, wherein said computer system is configured to be operable under a plurality of orientations, wherein when said computer system is operating under any orientation of said plurality of orientations, at least one or more of said plurality of thermal pathways is able to transfer heat to air surrounding said computing system;
>
> a first thermal wall residing within said enclosure;
>
> a second thermal wall residing within said enclosure, wherein said first thermal wall and said second thermal wall define a first region, a second region, and a third region, wherein said third region is between said first region and said second region;
>
> a processor residing within said third region of said enclosure; and

a first cooling assembly thermally coupled to said processor, said first cooling assembly comprising:

a first heat sink for transferring heat from said processor to surrounding air; and

a first heat pipe thermally coupled to said first heat sink to facilitate the transfer of heat from said first heat sink to a first plurality of fins, wherein said first plurality of fins reside within said first region;

wherein said first thermal wall is configured to prevent heat transfer from the first region to the third region; and

wherein said second thermal wall is configured to prevent heat transfer from the second region to the third region.

Evidence Considered

The prior art relied upon by the Examiner in rejecting the claims on appeal is:

Askeland	U.S. 2003/0156385 A1	Aug. 21, 2003
Chen	U.S. 2004/0246677 A1	Dec. 9, 2004
Kim	U.S. 2005/0103477 A1	May 19, 2005
Cheng	U.S. 7,394,653 B2	Jul. 1, 2008

Examiner's Rejections

(1) Claims 1, 4, 5, 7, 9, 11, 12, 14, 16, 18, 20, and 22 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Cheng. Ans. 3-5.

(2) Claims 2, 3, 15, 17, and 19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Cheng and Kim. Ans. 5-6.

(3) Claims 6, 8, 21, and 24 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Cheng in view of what the Examiner has characterized as "Official Notice." Ans. 6-8.

(4) Claim 10 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Cheng. Ans. 8.

(5) Claim 23 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Cheng and Askeland. Ans. 8-9.

II. ISSUE

Based on Appellants' arguments, the dispositive issue on appeal is whether the Examiner has erred in rejecting claims 21, 4, 5, 7, 9, 11, 12, 14, 16, 18, 20, and 22 under 35 U.S.C. § 102(e) as being anticipated by Cheng. In particular, the issue turns on whether Cheng discloses: "*said first thermal wall [is] configured to prevent heat transfer from the first region to the third region"* and *"said second thermal wall [is] configured to prevent heat transfer from the second region to the third region*" as recited in independent claims 1 and 14, and similarly recited in independent claims 16 and 18. App. Br. 12-14; Reply Br. 1-2 (*emphasis added*).

III. ANALYSIS

Independent Claims 1, 14, 16, and 18

Appellants contend that Cheng does not disclose two disputed limitations, i.e., "*said first thermal wall [is] configured to prevent heat transfer from the first region to the third region"* and *"said second thermal wall [is] configured to prevent heat transfer from the second region to the third region*" as recited in independent claims 1 and 14, and similarly recited in independent claims 16 and 18 (App. Br. 12-14; Reply Br. 1-2) (*emphasis added*). In particular, Appellants argue that:

> (1) two support walls, shown in FIG. 4 of Cheng, do not constitute Appellants' claimed "thermal walls or means" because: (a) support wall between TV tuner card 23 and third heat dissipating area 40 does not physically isolate area 20 from area 40 leaving an opening for air to flow between areas 20, 40, (b) support wall between optical disk drive 42 and power supply module 31 comprises an opening for air to flow between areas 30, 40, and (c) both support walls do not prevent heat transfer between areas 20, 40 and between areas 30, 40 (App. Br. 13-14); and
>
> (2) "there is no disclosure within Cheng that these support walls possess any particular properties or features that enable them to prevent heat transfer therethrough", and therefore, are not "thermal walls" within the meaning as defined by Appellants' Specification (Reply Br. 2).

However, we disagree. At the outset, we note that Appellants' Specification does not describe any special properties or provide any special definition of a "thermal wall." According to Appellants' Specification, the "first thermal wall" and the "second thermal wall" refer to the first divider 116 and the second divider 118 arranged in the enclosure 104 of the computer system 100, as shown in FIG. 1. Specifically, Appellant's Specification:

> [0035] Additionally, a first divider 118 and a second divider 116 reside within the enclosure 102 to define a first region 176, a second region 172, and a third region 174. <u>A function served by the first divider 118 is to create a thermal wall between the first region 176 and the third region 174 such that the heat being dissipated by remote fins 106 residing within the first region 176 does not flow back towards the third region 174</u>. By having the first divider 118, <u>heat dissipated by the remote fins 106 residing within the first region 176 is more effectively directed away from the computing device 100</u>.

> [0036] Similarly, a function served by the second divider 116 is to create a thermal wall between the second region 172 and the third region 174 such that the heat being dissipated by remote fins 104 residing within the second region 172 does not flow back towards the third region 174. By having the second divider 116, heat dissipated by the remote fins 104 residing within the first region 176 is more effectively directed away from the computing device 100."

Spec. ¶¶[0035],[0036] (emphasis added).

In other words, Appellants' claimed "thermal walls" as simply support walls or dividers, i.e., a "first divider"[3] and a "second divider" arranged within the enclosure to define different regions, a first region 176, a second region 172, and a third region 174, as shown in FIG. 1, to direct heat dissipated by remote fins 104 residing within the first region 176 and the second region 172 away from computing devices, such as CPU located in the third region 174 (i.e., middle region).

Cheng describes a "support wall between TV tuner card 23 and third dissipating area 40" and "the support wall between optical disk drive 42 and power supply module 31" as shown in FIG. 4. FIG. 5 of Cheng shows the air flow direction and heat dissipation away from the middle region of Cheng's computer system.

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[3] We note that the first divider 116 (i.e., thermal wall), as shown in FIG. 1 of Appellants' Specification also contains a plurality of perforated openings to promote air flow between the second region 172 and the third region 174. As such, Appellants' efforts to distinguish the claimed "thermal walls" relative to Cheng's support walls based on the alleged openings "A" and "B" as outlined on page 13 of Appeal Brief are misplaced.

FIG. 5 of Cheng is reproduced below.

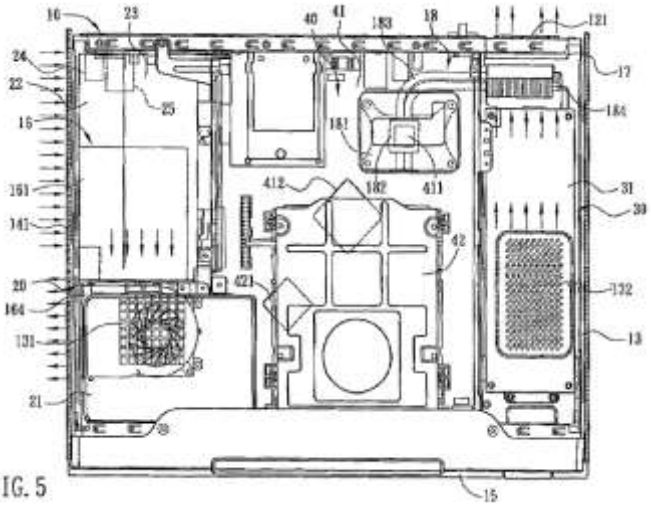

FIG. 5 of Cheng shows the direction of air flow and heat dissipation away from the middle region of Cheng's computer system 10.

In considering Cheng, it is proper to take into account not only specific teachings of Cheng but also the inferences which one skilled in the art would reasonably be expected to draw therefrom. *In re Preda*, 401 F.2d 825 (1968). In this regard, an inference can be drawn that "the support wall between TV tuner card 23 and third dissipating area 40" and "the support wall between optical disk drive 42 and power supply module 31" as shown in FIG. 4, are made from the same material (i.e., metal) as the enclosure of the Cheng's computer system. As such, we agree with the Examiner that "the support wall between TV tuner card 23 and third dissipating area 40" and "the support wall between optical disk drive 42 and power supply module 31," shown in FIG. 4 of Cheng, can serve to prevent at least some level of heat transfer between side regions and the middle region of the computer system. Ans. 10. Consequently, we agree with the Examiner that "the support wall between TV tuner card 23 and third dissipating area 40"

and "the support wall between optical disk drive 42 and power supply module 31" shown in FIG. 4 and FIG. 5 of Cheng, meet the disputed limitations of independent claims 1, 14, 16, and 18.[4]

For the reasons set forth above, Appellants have not persuaded us of error in the Examiner's rejection of claims 1, 14, 16, and 18 and their respective dependent claims 4, 5, 7, 9, 11, 12, 20, and 22, which were not separately argued. Accordingly, we sustain the Examiner's rejection of claims 1, 4, 5, 7, 9, 11-12, 14, 16, 18, 20, and 22 under 35 U.S.C. § 102(e) as being anticipated by Cheng.

With respect to dependent claims 2, 3, 6, 8, 10, 15, 17, 19, 21, 23, and 24, Appellants present no arguments for patentability of these claims separately from claims 1, 14, 16, and 18. App. Br. 14. As such, we also sustain the Examiner's rejections of claims 2, 3, 6, 8, 10, 15, 17, 19, 21, 23, and 24 under 35 U.SC §103(a) over various combinations of Cheng, Kim, Askeland and the Examiner's characterization as "Official Notice."

V. CONCLUSION

On the record before us, we conclude that the Examiner has not erred in rejecting claims 1-12 and 14-24 under 35 U.S.C. § 102(e) and § 103(a).

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[4] We also note that independent claim 18 only defines the "first thermal wall configured to prevent heat transfer therethrough." We note that Cheng discloses support walls (dividers) between optical disk drive 42 and power supply module 31, and between TV tuner card 23 and third heat dissipating area 40, as shown in FIG. 4 and FIG. 5 as discussed *supra*. Each of these support walls (dividers) can function as a thermal wall to prevent heat transfer therethrough, as recited Appellants' independent claim 18.

VI. DECISION

As such, we affirm the Examiner's final rejections of claims 1-12 and 14-24.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv) (2011).

AFFIRMED

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