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BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte ANDREW T. SULTENFUSS, TRAVIS C. NORTH, and DEEDER M. AURONGZEB

Appeal 2018-000284
Application 13/779,598
Technology Center 2800

Before TERRY J. OWENS, MONTÉ T. SQUIRE, and DEBRA L. DENNETT, *Administrative Patent Judges*.

DENNETT, *Administrative Patent Judge*.

DECISION ON APPEAL[1]

STATEMENT OF THE CASE

Appellant[2] appeals under 35 U.S.C. § 134(a) from a rejection of claims 1, 4–8, 21, 22, and 24–29. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

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[1] In our Opinion, we refer to the Specification filed February 27, 2013 ("Spec."); the Final Office Action mailed August 15, 2016 ("Final Act."); the Advisory Action mailed September 15, 2016 ("Adv. Act."); the Appeal Brief filed March 13, 2017 ("Appeal Br."); the Examiner's Answer mailed August 11, 2017 ("Ans."); and the Reply Brief filed October 6, 2017 ("Reply Br.").

[2] Appellant is the applicant, Dell Products L.P., identified as the real party in interest. App. Br. 1.

The claims are directed to information handling systems comprising a housing heat spreader. Claim 1, reproduced below from the Claims Appendix of the Appeal Brief, is illustrative of the claimed subject matter:

> 1. An information handling system comprising:
>
> a housing sized to contain processing components for processing information, at least a portion of the housing having a graphene outer surface coupled to a substrate material, the substrate having inner and outer layers of carbon fiber with an insulative aerogel layer disposed between the inner and outer layers of carbon fiber; and
>
> processing components disposed in the housing and operable to process information, the processing components generating thermal energy, the graphene spreading the thermal energy at the outer surface.

REFERENCES

The Examiner relies on the following prior art in rejecting the claims on appeal:

Roscoe et al. ("Roscoe")	US 6,498,731 B1	Dec. 24, 2002
Kim et al. ("Kim")	US 2005/0068738 A1	Mar. 31, 2005
Waltz	US 2010/0194179 A1	Aug. 5, 2010

REJECTIONS[3]

The Examiner maintains and Appellant seeks review of the following rejections under 35 U.S.C. § 103(a): (1) claims 1, 4–7, 21, 22, 24–27, and 29 over Kim in view of Waltz; and (2) claims 8 and 28 over Kim in view of Waltz, and further in view of Roscoe. Final Act. 2–6; App. Br. 2–4.

[3] The Office Action Summary of the Final Office Action lists claims 3 and 23 as among the rejected claims. Final Act. 1. However, the Examiner does not address claim 3 or 23 elsewhere in the Final Office Action, or in the Answer. Therefore, we do not consider claims 3 and 23 as rejected.

The Examiner provides a provisional double patenting objection to claims 22–29, should claims 1, 3–8, and 21 be found patentable. Final Act. 6. Objections or other requirements imposed by an Examiner are reviewed by way of a petition to the Director under Rule 181. 37 C.F.R. § 1.113(a); we do not address the Examiner's double patenting objection.

OPINION

We need address only the broadest claim, claim 1.

The Examiner finds that Kim teaches the limitations of claim 1 except for a substrate having inner and outer layers of carbon fiber with an insulative aerogel layer disposed between the inner and outer layers of carbon fiber. Final Act. 2–3. The Examiner finds that Waltz teaches the substrate as claimed. *Id.* at 3. The Examiner uses the substrate structure taught in Waltz "in place of the simple graphene layer taught by Kim as Waltz's substrate would assist in heat spreading as well as enhancing the structural integrity of the device." Ans. 2. The Examiner states that substitution and combination of equivalents for the same purpose is obvious. *Id.*

Appellant argues that Kim seeks to transfer heat from an interior to an exterior, with no suggestion of combining with an insulative layer. App. Br. 3. Appellant contends that Waltz, in contrast to Kim, discloses an insulating aerogel that prevents heat from transferring through the laminate material to the outer surface. *Id.* Appellant argues that the Examiner improperly combines the references. *Id.* at 2.

The Examiner fails to establish that the combined references result in the claimed structure. *In re Fine*, 837 F.2d 1071, 1074 (Fed. Cir. 1988)

("The PTO has the burden under section 103 to establish a prima facie case of obviousness. . . . It can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references.").

Kim concerns a display apparatus, such as an organic light emitting display (OLED), having a heat transfer sheet. Kim Abstract, ¶ 5. Figure 12 of Kim is reproduced below:

FIG. 12

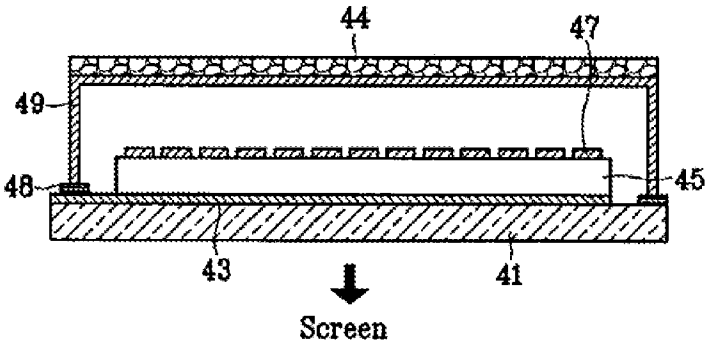

Figure 12 shows a schematic view of an organic light emitting display device including a heat transfer sheet including a plurality of pores according to an embodiment of Kim's invention. *Id.* at ¶ 50. A housing **49**[4] may cover at least the organic light emitting layer **45**. *Id.* at ¶ 94. A porous heat transfer sheet **44** may be arranged adjacent to a rear surface of the housing, efficiently transmitting heat generated within the OLED to outside the housing. *Id.* at 95.

Waltz is drawn to thermal management composite heat shields. Waltz Abstract. The thermal management system comprises a shield portion and a

[4] Throughout this Opinion, for clarity, labels to elements are presented in bold font, regardless of their presentation in the original document.

dissipation portion. *Id.* Figure 2 of Waltz, illustrating a shield portion of a thermal management system, is reproduced below:

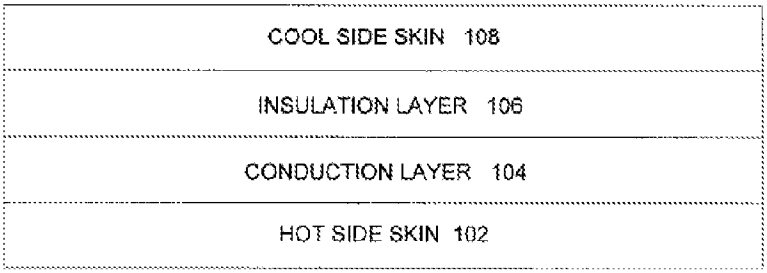

FIGURE 2

Id. at ¶ 11. The shield section **110** comprises a hot side skin **102**, a conduction layer **104**, an insulation layer **106**, and a cool side skin **108**. *Id.* at ¶ 20. The hot side skin and the cool side skin may comprise silicon carbide reinforced with a high conductivity carbon fiber. *Id.* at ¶¶ 21, 50. The hot side skin fully or partially transmits heat received from an external source to conduction layer **104**. *Id.* at ¶ 21. Conduction layer **104** may extend at least partially into dissipation section **130** (not shown). *Id.* at ¶ 28. The conduction layer may comprise molded exfoliated graphite particulate, and may be configured to reduce hot spots resulting from uneven application of thermal energy to conduction layer **104** by spreading heat via in-plane thermal conduction. *Id.*

The structure resulting from the Examiner's substitution of Kim's heat transfer sheet with Waltz's four-layered shield section does not have "a graphene outer surface" that "spread[s] the thermal energy at the outer surface," as required by claim 1. Waltz discloses that its conduction layer **104** transfers heat in-plane to, e.g., a separate dissipation section. Waltz ¶ 28. Waltz's equivalent of Kim's heat transfer sheet is on the inner side of the outer layer of carbon fiber (the cool side skin), thus cannot be the

graphene *outer* surface on the outer surface of the claimed substrate. *See id.* Fig. 2. Kim's heat transfer sheet transfers heat from internal hot spots to outside of the housing. Kim ¶ 95. Waltz, on the other hand, transfers heat to a dissipation section **130** and, via insulation layer **106**, prevents heat from reaching the outer surface (cool side skin **108**).

Because the Examiner's combination of Kim and Waltz does not disclose the elements of claim 1, we do not sustain the rejection. For the same reasons given regarding claim 1, we also do not sustain the rejections of claims 4–8, 21, 22, and 24–29.

DECISION

The rejection of claims 1, 4–8, 21, 22, and 24–29 is reversed.

REVERSED