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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* JULIAN KUNTZ and FRANZ STADLER

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Appeal 2015-006292
Application 13/318,856
Technology Center 1700

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Before JAMES C. HOUSEL, MONTÉ T. SQUIRE and AVELYN M. ROSS, *Administrative Patent Judges*.

ROSS, *Administrative Patent Judge*.

DECISION ON APPEAL[1]

Appellants[2] appeal under 35 U.S.C. § 134(a) from the Examiner's final rejection of claims 16 and 22–29. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

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[1] In our Decision below we refer to the Specification filed April 11, 2011 (Spec.), the Final Office Action mailed June 13, 2014 (Final Act.), the Appeal Brief filed January 26, 2015 (Appeal Br.), the Examiner's Answer mailed April 15, 2015 (Ans.), and the Reply Brief filed June 10, 2015 (Reply Br.).

[2] Appellants identify the real party in interest as EADS Deutschland GmbH. Appeal Br. 3.

## STATEMENT OF CASE

The claims are directed to a device for shaping a workpiece having a first and second component between which the workpiece to be shaped can be molded during heating. Spec. 1. Claim 16, reproduced below, is illustrative of the claimed subject matter:

> 16. A device for shaping a workpiece, the device comprising:
> a first component; and
> a second component,
> wherein between the first and second component the workpiece is arranged for molding while heated, and
> wherein a configuration and material properties of the first or second components is selected such that thermal expansion of the first or second component is different in different directions,
> wherein the first or second component, which has a different thermal expansion in different directions, comprises at least one layer of carbon fiber reinforced plastic arranged on top of at least one layer of glass fiber reinforced plastic,
> wherein fibers of the at least one layer of carbon fiber reinforced plastic and fibers of the at least one layer of glass fiber reinforced plastic are not oriented parallel to each other.

Claims Appendix at Appeal Br. 14.

## REJECTIONS[3]

The Examiner rejects claims 16 and 22–29 under 35 U.S.C. § 103(a) as being unpatentable over Satoh[4] in view of Tomoko.[5] Final Act. 2.

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[3] The rejection of claims 16 and 22–29 under 35 U.S.C. §103(a) as being unpatentable over Astwood et al. (US2009/0001630 A1, published June 26, 2008) in view of Tomoko and further in view of Satoh has been withdrawn and is not before us on appeal. Ans. 5.

[4] Hajime Satoh, EP 0 415 207 A2, published June 3, 1991 ("Satoh").

[5] Tomoko et al., JP 04279331, published October 5, 1002 ("Tomoko").

Appellants seek our review of the Examiner's rejection of claims 16 and 22–29, but present argument directed to independent claim 16 only and provide no additional argument as to claims 22–29. Appeal Br. 6–9. Therefore, we focus our discussion below on claim 16 to resolve the issues on appeal.

## OPINION

The Examiner rejects claim 16 as unpatentable in view of Satoh and Tomoko. Final Act. 2. The Examiner finds that Satoh teaches a method of producing a hollow article comprising a fiber reinforced thermoplastic resin that is formed between a cylindrical mandrel and outer mold. *Id.* The mandrel may be reinforced with glass fibers that restrict thermal expansion and may run parallel and perpendicular to the axis of the mandrel. *Id.* The Examiner acknowledges that "Satoh ('207) fails to teach or suggest that the first component (31) or second component (34) compris[es] the at least one layer of carbon fiber reinforced plastic arranged on the at least one layer of glass fiber reinforced plastic." *Id.* at 3. The Examiner finds however, that Tomoko, teaches "a fiber-reinforced resin laminated body (1) to have a sufficient dispersion of carbon fibers and glass fibers by alternately laminating the carbon fibers (3) and the glass fibers (2)." *Id.* According to the Examiner, Tomoko also teaches that "the glass fiber resin layers (20) and carbon fiber resin layers (30) that are spread together laterally in multiple stages in this manner**, the reinforced fibers in each layer may form the same angle** . . ., or **the reinforced fibers in each layer may have a diagonal laminate symmetrical to the neutral axis**." *Id.* The Examiner reasons that one skilled in the art would have had reason to modify Satoh to

include at least one carbon fiber reinforced plastic layer and at least one glass fiber reinforced plastic layer to "obtain [the] same physical properties as those for either carbon fiber reinforced plastic or glass fiber reinforced plastic" and to reduce costs. *Id.* at 4.

Appellants present multiple arguments in response to the Examiner's rejection. Appeal Br. 6–9. First, Appellants argue that

> [i]n contrast to Satoh's disclosure of using only a single set of glass fibers to achieve different expansion in different directions, Appellant's claim 16 requires that the different expansion characteristics in different directions is achieved with two fiber reinforced plastic layers with two different types of fibers (i.e., glass and carbon fibers) that are arranged so that they are not parallel with each other.

*Id.* at 7. Thus, Satoh does not teach a shaping device that has two layers of different types of fiber reinforced plastic. *Id.* 6–7.

Appellants fail to persuade us of reversible error. Appellants' arguments are directed to the teachings of Satoh alone and fail to address the combined teachings of Satoh and Tomoko as presented by the Examiner. "Non-obviousness cannot be established by attacking references individually where the rejection is based upon the teachings of a combination of references." *In re Merck & Co.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986). Rather, "[t]he test for obviousness is what the combined teachings of the references would have suggested to those having ordinary skill in the art." *In re Keller*, 642 F.2d 413, 425 (CCPA 1981).

Second, Appellants recognize that "Tomoko notes that the breaking strain of carbon fiber reinforced laminates can be improved using glass fibers, and accordingly discloses a particular method of forming a laminate that includes both carbon and glass fibers." Appeal Br. 7. But, Appellants

urge that "Tomoko contains no disclosure of any advantages of replacing an all glass fiber arrangement, such as the arrangement of Satoh, to include some carbon fibers." *Id.*

Appellants fail to identify reversible error. Tomoko teaches, as the Examiner finds, that "glass fibers have low elasticity, the aforementioned conventional fiber-reinforced resin laminate has the drawback of not sufficiently utilizing the merits of high strength and high elasticity possessed by the carbon fibers." Tomoko ¶4. Tomoko also teaches that "when both fibers are sufficiently dispersed, there is a drawback that the physical properties, including the strength and elasticity, etc., *decline with an increase in the ratio of the glass fibers* incorporated therein." *Id.* (emphasis added). Tomoko aims to strike a balance that maximizes strength, flexibility and cost efficiencies by utilizing a combination of glass and carbon fibers (*Id.* at 5) and therefore provides reason to include carbon fibers in the glass fiber arrangement of Satoh.

Third, Appellants contend that because Satoh teaches that "different expansion characteristics in different directions can be achieved using a single set of glass fibers and when two non-parallely arranged sets of fibers are employed there will be the same expansion characteristics in different directions," there would be no need to look for additional teachings beyond Satoh to achieve the desired results. Appeal Br. 7–8.

Appellants do not persuade us of reversible error. Appellants' argument presupposes that the reason to combine the references needs to be identical to those advantages sought by Appellants. But, it has been established that the reason for combining references does not have to be identical to that of the applicant in order to establish obviousness. *See In re*

*Kemps*, 97 F.3d 1427, 1430 (Fed. Cir. 1996). "As long as some motivation or suggestion to combine the references is provided by the prior art taken as a whole, the law does not require that the references be combined for the reasons contemplated by the inventor." *In re Beattie*, 974 F.2d 1309, 1312 (Fed. Cir. 1992). Here, Tomoko teaches, as the Examiner finds (Final Act. 3 and Ans. 5–6), that the combination of the glass fibers reinforced plastic and the carbon fibers reinforced plastic within the laminated body allow for "a fiber-reinforced resin laminate that makes it possible to obtain nearly [the] same physical properties as in the carbon fiber-reinforced resin and that can also improve the breaking tenacity and to reduce the cost." Tomoko ¶ 5; *see also id.* ¶¶ 2 and 4. Thus, the Examiner aptly reasons that the skilled artisan would have reason to modify Satoh to achieve the "improved properties of strength and elasticity." Ans. 6.

Fourth, Appellants dispute that Satoh and Tomoko are in the same field of endeavor. Appeal Br. 8. Specifically, Appellants contend that "Satoh is not in the field of different layers of fiber reinforced plastic." *Id.*

Appellants' arguments in this regard are not persuasive of reversible error by the Examiner. Prior art is analogous if it is either: (1) from the same field of endeavor as the claimed invention; or (2) reasonably pertinent to the particular problem faced by the inventor. *In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004); *In re Wood and Eversole*, 599 F.2d 1032, 1036 (CCPA 1979). Thus, in order to be considered analogous art, a prior art reference that is not from the same field of endeavor as a claimed invention MUST be "reasonably pertinent" to the problem addressed by the inventor. Prior art is "reasonably pertinent" when it would "logically commend itself" to an inventor's attention in considering his problem. *In re Icon Health and*

*Fitness, Inc.*, 496 F.3d 1374, 1379–80 (Fed. Cir. 2007)(citing *In re Clay*, 966 F.2d 656, 658–59 (Fed. Cir. 1992)); *see also* MPEP § 2141.01(a). Here, both Satoh and the claimed invention are directed to molding a workpiece, made of a fiber-containing composite, between a first component and a second component. Final Act. 2–3; *Compare* Satoh col. 2, ll. 32–41 and col. 16, l. 15–col. 17, l. 27 *with* Spec. ¶¶ 1–4. Therefore, Satoh is in the same field of endeavor.[6] Moreover, because both Satoh and the claimed invention desire to accomplish uniform thermal expansion so that warpage and wrinkles do not result in the workpiece being molded and quality of the resulting product is improved, Satoh is reasonably pertinent to the problem addressed by Appellants. *Compare* Satoh col. 6, l. 58–col. 7, l. 15, col. 9, ll. 23–33, and col. 16, l. 55–col. 17, l. 16 *with* Spec. ¶ 2. Appellants do not provide any argument specific to the Tomoko reference. Appeal Br. 8. Accordingly, the Examiner's findings with respect to Tomoko are uncontroverted.

And finally, Appellants argue that the Examiner's reason for combining the prior art's teachings, i.e., cost savings, is not supported by the teachings of Tomoko. Appeal Br. 8. In particular, Appellants contend that Tomoko "discloses that carbon fibers are more expensive than glass fibers,

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[6] The Examiner explains that "Satoh and Tomoko are both in the same field of endeavor, such as device comprising a component composed of a plurality layers of fiber reinforced plastic, wherein each layers of the fiber reinforced plastics are oriented in predetermined manner." Final Act. 3. However, this definition of the field of endeavor is incomplete and focuses on the invention's structural solution as opposed to the functional purpose shared by both Satoh and the claimed invention—more fully described by the Examiner in discussing the express teachings of Satoh. *See e.g.*, Final Act. 2–3; Ans. 5.

and accordingly the proposed modification to replace the lower cost glass fibers of Satoh to include the more expensive carbon fibers of Tomoko would have increased costs and not reduced costs." *Id.*

Appellants do not persuade us of reversible error. To begin, improved cost was but one reason the Examiner offered as an explanation for why the skilled artisan would have been motivated to combine the teachings of Satoh and Tomoko to arrive at the claimed invention. As the Examiner explained:

> the person of ordinary skilled [sic] art would understand to modify the device for shaping workpiece of Satoh ('207) with the combination of the glass fibers reinforced plastic and the carbon fibers reinforced plastic, in order to utilize/exhibit the modified device with improved properties of strength and elasticity (See paragraphs [0004], [0008] of translation of Tomoko et al. ('331)).

Ans. 5–6; *see also* Final Act. 4. Moreover, although carbon fibers may cost more than glass fibers, including carbon fibers yields certain property benefits that can be economized. Tomoko ¶¶ 4 and 9. Therefore, the Examiner identified sufficient reason for skilled artisan to combine the teachings of Satoh and Tomoko to achieve the invention of claim 16.

## CONCLUSION

The Examiner did not reversibly err in rejecting claims 16 and 22–29.

## DECISION

For the above reasons, the Examiner's rejection of claims 16 and 22–29 is affirmed.

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).

AFFIRMED