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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/355,394	01/16/2009	Huimin Liu	81177734	6642
28395	7590	03/01/2018	EXAMINER	
BROOKS KUSHMAN P.C./FGTL 1000 TOWN CENTER 22ND FLOOR SOUTHFIELD, MI 48075-1238			CIGNA, JACOB JAMES	
			ART UNIT	PAPER NUMBER
			3726	
			NOTIFICATION DATE	DELIVERY MODE
			03/01/2018	ELECTRONIC

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte HUIMIN LIU¹

Appeal 2017-006785
Application 12/355,394
Technology Center 3700

Before STEFAN STAICOVICI, LEE L. STEPINA, and
ARTHUR M. PESLAK, *Administrative Patent Judges*.

STEPINA, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellant appeals under 35 U.S.C. § 134(a) from a rejection of claims 1, 3, 4, 7–9, 14, 16–21, and 24–26. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

¹ The Appeal Brief lists Ford Motor Company as the real party in interest. Appeal Br. 3.

CLAIMED SUBJECT MATTER

Appellant's disclosure is directed to "texturing of thin metal sheets/foils . . . for enhanced formability and manufacturability." Spec. 1:8–9. Claim 1, reproduced below, is illustrative of the claimed subject matter:

1. A method comprising:
texturing a metal sheet or foil to form a first plurality of waves extending in a first direction with a first wavelength a second plurality of waves having a second wavelength exceeding the first wavelength and extending in a second direction; and
forming curved channels with channel-widths formed by the first wavelength of the first plurality of waves, and channel-lengths formed by the second wavelength of the second plurality of waves.

Appeal Br. (Claims App. 1).

REFERENCES

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

Chapman	US 2007/0105000 A1	May 10, 2007
Matsui	JP 2000-317531 A	Nov. 21, 2000

REJECTIONS

(I) Claim 9 is rejected under 35 U.S.C. § 112, second paragraph, as indefinite.

(II) Claims 1, 3, 4, 7–9, 14, 16–21, and 24–26 are rejected under 35 U.S.C. § 103(a) as unpatentable over Chapman and Matsui.

OPINION

Rejection (I)

Claim 9 recites, in part, “wherein the texturing is carried out at a high-speed metal mill.” Appeal Br. (Claims App. 2). The Examiner finds that the term “high speed” is a relative term that renders the claim indefinite. Final Act. 3.

Appellant does not address Rejection (I). *See* Appeal Br. 6–12. Accordingly, this rejection is summarily affirmed.

Rejection (II)

Claims 1, 3, 4, 7–9, 14, 16–20, 25, and 26

The Examiner relies on Chapman to teach many of the features recited in claim 1, but relies on Matsui (Figures 5(a)–(c)) to teach that the process of forming channels includes a texturing step. *See* Final Act. 3–5. According to the Examiner, “the wavelengths of CHAPMAN are formed by the first pressing step of MATSUI . . . the first wave lengths are considered to be the channel widths as shown . . . the channel lengths . . . are considered the second wavelengths and are longer than the first wavelengths.” Final Act. 5.

Appellant argues that although Chapman discusses various methods of forming channels in the background of the invention, Chapman does not disclose a method other than sandblasting to form intricate channels. Appeal Br. 8. According to Appellant, because Matsui’s texturing is to improve metal flow and because there is no metal flow in sandblasting, one of ordinary skill in the art would not use Matsui’s texturing techniques prior to Chapman’s sandblasting. *Id.*

The Examiner responds by stating, “Chapman is not relied upon to teach the method by which the channels are formed,” rather, in the rejection, “the groove shape of Chapman [is] made entirely by the process of Matsui.”

Ans. 14–15. The Examiner states that because Chapman discloses that machining, embossing, molding, and sandblasting are known alternate methods of forming grooves, Chapman’s choice of a preferred method, i.e., sandblasting does not negate the underlying disclosure of different groove forming methods. *Id.* The Examiner concludes that although “the dies of Matsui would need to be designed to mimic the shape of Chapman,” one of ordinary skill in the embossing art would have known how to configure embossing dies and following the teachings of “Matsui would have known how to achieve the end of goal of a geometry having the grooves of Chapman.” *Id.* at 15.

Appellant replies that because “Chapman describes sandblasting as being ‘particularly useful for the present invention,’” the Examiner has provided “no evidence that machining, embossing, or moulding could or would be used to form the shape of the final product of [Chapman’s] Figure 16 due to its intricacies.” Reply Br. 2 (citing Chapman, ¶ 6). Appellant contends that “the Examiner has cited to no evidence as to how or why the texturing of Matsui could be modified to arrive at the final shape of Chapman, other than to conclude that ‘the dies of Matsui would need to be designed to mimic the shape of Chapman.’” *Id.*

Appellant’s argument that sandblasting must be used to form intricate channels is not persuasive. Chapman relates to fuel cells and discloses that the fuel cells are formed from a stack of plates having a pattern of grooves on a surface of the plate. Chapman, ¶¶ 1 and 5. Chapman further discloses that “it has been proposed to form such grooves by machining, embossing or moulding (WO00/41260), and (as is particularly useful for the present invention) by sandblasting through a resist.” *Id.* ¶ 6. Appellant points to no

portion of Chapman that states that sandblasting must be used. Thus, we agree with the Examiner that any of the known methods of forming grooves in a fuel cell plate would have been considered by one of ordinary skill in the art. We also agree with the Examiner that the knowledge of one of ordinary skill in the art would include designing dies to achieve the desired channel geometry. Appellant does not assert that the Examiner's proposed die modification would have been beyond the capabilities of one of ordinary skill in the art. Further, Appellant has not provided any factual evidence or persuasive technical reasoning to contradict the Examiner's position regarding the interchangeability of Chapman's channel forming methods, and thus does not apprise us of error.

Appellant also argues that Matsui does not teach texturing to form channels, because "any 'channels' in Matsui, [] exist between the bumps formed into the metal sheet." Appeal Br. 10. According to Appellant, the Examiner's articulated reasoning is improper because it is premised on "pre-textur[ing] metal with wavelengths that are eventually formed *into* channels [whereas] Matsui clearly teaches pre-texturing metal with bumps to create channels *between* the bumps." *Id.*

The Examiner responds that although "Matsui only pre-textures along the lines that will later be finally formed, this still meets the claim limitation to texturing. The texturing occurs as waves that extend in a first and second wavelength due to the shape of the channels of Chapman." Ans. 16. The Examiner states that the texturing of Matsui forms the channels of Chapman, which have channel lengths and channel widths, and that the channel lengths have a longer wavelength than a wavelength of the channel widths. Ans. 16–17.

Appellant replies that Matsui’s method forms bulges and that the “‘channels’ reside in the areas *between* the bulges. And, these areas between the bulges are ***not formed by the bulges themselves***. In other words, the channels (*i.e.*, the areas between the bulges) are ***not*** formed by the waves (*i.e.*, the bulges in Figure 5a),” as required by the claims. Reply Br. 2–3.

We are not persuaded by Appellant’s argument on this point because it does not address the Examiner’s rejection of claim 1, which provides that Chapman discloses first and second wavelengths and “the wavelengths of CHAPMAN are formed by the first pressing step of MATSUI.” Final Act. 5. The Examiner finds that “the first wave lengths are considered to be the channel widths . . . the channel lengths . . . are considered the second wavelengths and are longer than the first wavelengths.” *Id.* Appellant does not dispute these findings. Arguments Appellant could have made but chose not to make in the Briefs are waived. *See* 37 C.F.R. §41.37(c)(1)(iv). Thus, Chapman already forms channels that are formed by the waves, and the Examiner’s modification resides in forming the waves using a texturing process as in Matsui. Appellant’s argument pointing out the deficiencies in Matsui does not address the Examiner’s proposed combination of Chapman and Matsui, which meets all the limitations of claim 1.

We have considered all of Appellant’s arguments regarding claim 1 and the rejection thereof as unpatentable over Chapman and Matsui, but we are not apprised of Examiner error. Accordingly, we affirm the Examiner’s rejection of claim 1 as unpatentable over Chapman and Matsui. Appellant relies on the same arguments for the patentability of independent claim 14 (Appeal Br. 10), and for the same reasons discussed regarding the rejection of claim 1, we affirm the rejection of claim 14 as unpatentable over

Chapman and Matsui. Appellant makes no additional arguments for claims 3, 4, 7–9, 16–20, 25, and 26 (Appeal Br. 8–10), all of which depend from either claim 1 or claim 14, and these claims fall with claims 1 and 14.

Claims 21 and 24

Appellant relies on the same arguments discussed above for the patentability of independent claim 21, and additionally argues that “Matsui only teaches forming an array of uniform bumps with uniform channels formed therebetween. There is no teaching whatsoever in Matsui as to pre-texturing the metal to have different wavy patterns that are eventually formed into straight channel portions and curved channel portions.” Appeal Br. 11. As discussed above, the Examiner does not rely on Matsui having different wavy patterns that are eventually formed into straight channel portions and curved channel portions, and finds that Chapman discloses these limitations. *See* Final Act. 5. Thus, Appellant’s additional argument pointing out the deficiencies in Matsui, relating to features for which Matsui is not relied upon, does not apprise us of Examiner error based on the combination of Chapman and Matsui.

For this reason and for the same reasons discussed above regarding the rejection of claims 1 and 14, we affirm the Examiner’s rejection of claim 21 as unpatentable over Chapman and Matsui. Appellant makes no additional arguments for claim 24 (Appeal Br. 11), which depends from claim 21, and, thus, falls with claim 21.

DECISION

The Examiner’s rejection of claim 9 as indefinite is affirmed.

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The Examiner's rejection of claims 1, 3, 4, 7–9, 14, 16–21, and 24–26 as unpatentable over Chapman and Matsui 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). *See* 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED