



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.
15/387,297	12/21/2016	ROB JACOB HENDRIKS	NCC.001015A	4677
12466	7590	09/27/2019	EXAMINER	
Russell Ng PLLC 8729 Shoal Creek Blvd., Suite 100 Austin, TX 78757			HORNING, JOEL G	
			ART UNIT	PAPER NUMBER
			1712	
			NOTIFICATION DATE	DELIVERY MODE
			09/27/2019	ELECTRONIC

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.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

stephanie@russellnglaw.com

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte ROB JACOB HENDRIKS, PAUL ABEL, and ERICA COENEN

Appeal 2019-000456
Application 15/387,297
Technology Center 1700

Before MARK NAGUMO, N. WHITNEY WILSON, and
LILAN REN, *Administrative Patent Judges*.

WILSON, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant¹ appeals under 35 U.S.C. § 134(a) from the Examiner's February 22, 2018 decision rejecting claims 1–19 (“Non-Final Act.”).² We have jurisdiction over the appeal under 35 U.S.C. § 6(b).

We affirm.

¹ We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies Novacentrix Corporation as the real party in interest (Appeal Br. 3).

² Because at least some of the claims were twice rejected (in Office Actions mailed September 29, 2017 and February 22, 2018), appeal is permitted under 35 U.S.C. § 134(a).

CLAIMED SUBJECT MATTER

Appellant's disclosure relates to a method for selectively depositing a function material on a substrate as part of a printing process (Spec. 1). A plate 31 having a first surface (the top surface of plate 31 in Fig. 3C below) and a second surface (the bottom surface) is provided; a layer of light scattering material 37 is applied onto the first surface and a layer of a reflective material 38 is applied to second surface (Spec. 3). A group of wells 36 are formed on the second surface, and a layer of light absorbing material 34 is applied to the surface of wells 36 (*id.*). The wells are then filled with a functional material (*id.*). This general structure is illustrated by Fig. 3C:

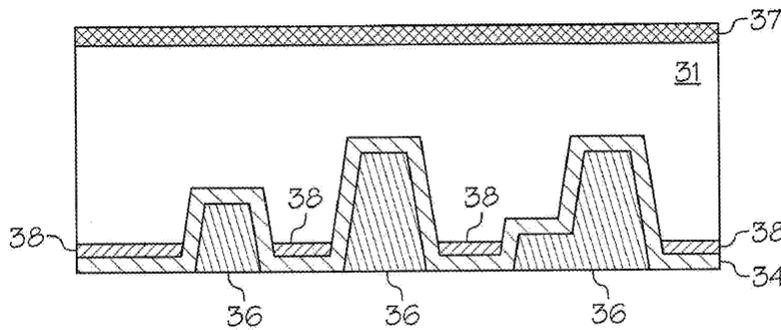


FIG. 3C

Fig. 3C shows a printing device for use with the claimed method

The plate is then irradiated with a pulse of light to heat light absorbing material 34, which generates a gas at the interface between the light absorbing material and the functional material, which releases the functional material from the wells onto a receiving substrate (*id.*). Details of the claimed method are set forth in claim 1, which is reproduced below from the Claims Appendix to the Appeal Brief:

1. A method for depositing a functional material on a substrate, said method comprising:
 - providing a plate having a first surface and a second surface;
 - removing materials from said second surface to form a plurality of wells within said second surface, wherein said plurality of wells have different depths;
 - depositing a light scattering material layer on said first surface;
 - depositing a light absorbing material layer on said second surface including said plurality of wells;
 - filling said plurality of wells with a functional material;and
 - irradiating said plate with pulsed light to heat said light-absorbing material in order to generate gas at an interface between said light-absorbing material and said functional material to release said functional material from said plurality of wells onto a receiving substrate.

REJECTIONS

1. Claims 1–4, 6–14, and 16–19 are rejected under 35 U.S.C. § 103 as unpatentable over Aoyama³ in view of Prenen⁴ and Cho.⁵

³ Aoyama, et al., US 2012/0251772 A1, published October 4, 2012.

⁴ Prenen, et al., EP 2 660 352 A1, published November 6, 2013. (Note that the first named inventor is Meinders, but the Examiner refers to “Prenen” (Non-Final Act.) so we will also do so for consistency with the Examiner’s Answer. Appellant makes reference to “Meinders” (Appeal Br. 5).

⁵ Cho, et al., US 2015/0333259 A1, published November 19, 2015.

2. Claims 5 and 15 are rejected under 35 U.S.C. § 103 as unpatentable over Aoyama in view of Prenen and Cho, and further in view of Duignan.⁶

DISCUSSION

Although Appellant formally indicates that only Rejection 1 is “to be reviewed on appeal” (Appeal Br. 5), we note that Appellant makes an argument regarding claim 5, which is only rejected in Rejection 2. Accordingly, it appears as though Appellant sought to appeal the rejection of claims 5 and 15. We will, therefore, consider arguments made in support of the patentability of claims 5 and 15.

Other than claims 5, 6, and 11, Appellant does not offer separate arguments for any claim. Therefore, we will focus our discussion on the rejection of claim 1 over Aoyama in view of Prenen and Cho. The remaining claims (other than claims 5 and 6) will stand or fall with claim 1.

The Examiner’s findings supporting the obviousness rejection are set forth at pages 3–5 of the Non-Final Action. The Examiner finds that Aoyama teaches a method for depositing functional material onto a substrate which includes all of the limitations of claim 1, except that it does not disclose (1) creating wells in the second surface of the plate by etching, or (2) having a light scattering layer on the first surface of the substrate (Non-Final Act. 4, 5). With regards to the creation of the wells by etching the second surface of the plate, the Examiner finds that Prenen (which according to the Examiner is “also directed towards methods for forming donor substrates for light induced forward transfer processes”) teaches the

⁶ Duignan, US 2003/0178395 A1, published September 25, 2003.

formation of trenches (wells) in the donor sheet (corresponding to the claimed plate) by machining or etching it (Non-Final Act. 4, citing Prenen ¶¶ 67, 68). The Examiner determines that it would have been obvious:

To...provide the plate in the process of Aoyama where material (including the reflective layer, so the reflective layer is not present in the wells) is removed from portions of the second surface of the plate by an etching process in order to form the plurality of wells within the second surface of Aoyama, since it was known as an effective way to build the desired well structures on such donor sheets and doing so would produce no more than predictable results and allow for the transfer of predefined high-resolution structures onto the receiving substrate.

(Non-Final Act. 4).

With regards to the light scattering layer on the first surface of the plate, the Examiner finds that Cho (said to be directed to thermal transfer substrates) teaches the inclusion of a light scattering layer to allow for uniform delivery of the light to a light absorbing layer (Non-Final Act. 5, citing Cho ¶¶ 4, 53, and 62–63). According to the Examiner, it would have been obvious to have included Cho’s light scattering layer on the first surface of Aoyama’s plate to improve the uniformity of the light delivery to the light absorbing layer (*id.*).

Appellant argues that “there are apparent conflicts between the teachings of Aoyama and Meinders [Prenen]” because Aoyama teaches a flat donor substrate from which functional materials drop down, while Meinders (Prenen) teaches a donor sheet having trenches from which function materials are expelled in an upward direction (Appeal Br. 6). Therefore, according to Appellant, “it would not have been obvious to

combine the teachings” of the references “without further explanations” (Appeal Br. 6). However, as explained in detail by the Examiner, “both references are directed towards light induced transfer deposition processes, where a “donor” substrate is first structured with wells (trenches) and coated with precursor materials (material layers) so that through the action of light energy on the "donor" substrate, the precursor materials in the layers thereon can be transferred onto another substrate as a desired layer” (Ans. 3).

Appellant argues in the Reply Brief, that the references differ because Aoyama builds up its wells (like an above-ground parking garage), while Prenen digs down its trenches (like an underground parking garage) (Reply Br. 2). The Examiner, however, has explained that the “building up” versus “digging down” techniques were known alternatives at the time of the invention (Ans. 3–4) – a finding that is undisputed by Appellant. Moreover, as found by the Examiner, a person of skill in the art would have been motivated to use Prenen’s etching technique in Aoyama’s process “in order to further be able to produce trenches of varying sizes and thus be able to transfer precursor structures of variable sizes” (Ans. 4).

Appellant argues that because Aoyama teaches wells made by building up layers, a person of skill in the art would have had no reason to use the etching method taught by Prenen (Appeal Br. 6). This argument is not persuasive, because the Examiner has explained why a person of skill in the art would have used the etching technique taught by Prenen: “since it was known as an effective way to build the desired well structures on such donor sheets and doing so would produce no more than predictable results” (Non-Final Act. 4)

Appellant also argues that claim 11 would not have been obvious, because the claimed coating and depositing steps “are not disclosed by Aoyama, Meinders and/or Cho” (Appeal Br. 7). To the extent that Appellant is arguing that none of the references individually teaches each of the claimed steps, that argument is not persuasive because the rejection is based on a combination of the teachings of the references. To the extent that Appellant is arguing that the combined teachings of the references fail to disclose the claimed coating and depositing steps, no explanation of why the Examiner has erred in concluding otherwise is presented. Without such an explanation, the naked assertion that art fails to teach the claimed limitations is not persuasive.

Finally, Appellant argues that Meinders does not disclose that the claimed removing step includes laser drilling (claim 5) or etching (claim 6). With regards to claim 5, the Examiner relies on the teachings of Duignan to provide a reason to use laser drilling in the claimed removal step (Non-Final Act. 6–7). Appellant does not challenge these findings (*see* Reply Br., generally). With regards to the etching step of claim 6, Appellant’s argument is not persuasive because Prenen (Meinders) specifically teaches the use of an etching step (*see* ¶ 68).

Accordingly, we determine that the preponderance of the evidence of record supports the obviousness rejections, which we therefore sustain.

CONCLUSION

In summary:

Claims Rejected	Basis	Affirmed	Reversed
1-4, 6-14, and 16-19	§ 103 Aoyama, Prenen, and Cho	1-4, 6-14, and 16-19	
5 and 15	§ 103 Aoyama, Prenen, Cho, and Duignan	5 and 15	
Overall Outcome		1-19	

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).

AFFIRMED