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EXAMINER
MURATA, AUSTIN

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL
AND APPEAL BOARD

Ex parte KOCK-YEE LAW

Appeal 2011-013685
Application 11/614,408
Technology Center 1700

Before JEFFREY T. SMITH, MICHAEL P. COLAIANNI, and
JAMES C. HOUSEL, *Administrative Patent Judges*.

COLAIANNI, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant appeals under 35 U.S.C. § 134 the final rejection of claims 12-14, 16, 18-21, and 24-30. We have jurisdiction over the appeal pursuant to 35 U.S.C. § 6(b).

We AFFIRM.

Appellant's invention is directed to a method of coating an electrically conductive coating on an intermediate transfer component used in xerographic applications (Spec. para. [0005]).

Claim 12 is illustrative:

12. A method, comprising:

blending a plurality of carbon nanotubes and a fluoropolymer together to form a composite;

dispersing the composite into an effective solvent to form a suspension; and

coating the suspension onto a transfer member substrate to form a conformance resistive layer on the transfer member substrate,

wherein a carbon nanotube concentration in the conformance resistive layer comprises from about 0.001% to about 2% by weight; and

wherein the conformance resistive layer comprises an electrical resistivity in a range of from about 10^7 ohm-cm to about 10^{13} ohm-cm.

Appellant appeals the following rejection:

1. Claims 12-14, 16, 18-21, and 24-30 are rejected under 35 U.S.C. § 103(a), as being unpatentable over Tarnawskyj (US 5,761,595 patented June 2, 1998) in view of McElrath (US 2005/0002851 A1 published January 6, 2005).

Appellant argues the claims as a group with the arguments focused solely on the limitations of independent claim 12 (App. Br. 8-16; Reply Br. 5-10). Accordingly, the rejection of dependent claims 13, 14, 16, 18-21, and 24-30 will stand or fall with our analysis regarding claim 12.

ISSUE

Did the Examiner reversibly err in finding that the combined teachings of Tarnawskyj and McElrath would have suggested substituting McElrath's fluorinated carbon nanotubes for the fluorinated carbon material in Tarnawskyj's intermediate transfer member coating? We decide this issue in the negative.

FINDINGS OF FACT AND ANALYSES

Appellant argues that the combined teachings of Tarnawskyj and McElrath fail to teach or suggest the following features of claim 12: (1) a coating having a resistivity 10^7 ohm-cm to about 10^{13} ohm-cm, (2) substituting carbon nanotubes for the carbon material in Tarnawskyj, and (3) blending the fluorocarbon and carbon nanotubes into a composite before adding the composite to a solvent (App. Br. 9-16). Appellant contends that the Examiner fails to provide a reason for substituting McElrath's carbon nanotubes for Tarnawskyj's carbon material and that such a substitution would have destroyed the advantageous property achieved by using Tarnawskyj's fluorinated carbon material (App. Br. 9-12).

Appellant's arguments are not persuasive because they are based on the erroneous presumption that the Examiner is proposing to substitute McElrath's unfluorinated carbon nanotubes for Tarnawskyj's fluorinated carbon material. Contrary to Appellant's argument, the Examiner proposes to substitute McElrath's fluorinated carbon nanotubes for Tarnawskyj's fluorinated carbon material. Accordingly, the Examiner's proposed substitution would not have destroyed Tarnawskyj's advantageous property achieved by using fluorinated carbon material. While Appellant argues that McElrath's teachings do not suggest or provide a reasonable expectation that the genus of carbon nanotubes would yield the advantageous properties sought by Tarnawskyj (Reply Br. 8-9), the arguments are not persuasive as the claimed "carbon nanotubes" do not exclude fluorinated carbon nanotubes.

Contrary to Appellant's argument, the Examiner provides a reason for substituting McElrath's fluorinated carbon nanotube for Tarnawskyj's fluorinated carbon material based upon the substitution of one fluorinated

carbon material that controls resistivity for another fluorinated carbon material that controls resistivity (Ans. 5, 8). In other words, the Examiner's combination is based on the predictable substitution of prior art elements (i.e., fluorinated carbon nanotubes for other fluorinated carbon material) according to their established function (i.e., controlling resistivity). *KSR Int'l Co. v. Teleflex Inc.*, 550 US 398, 417 (2007). As we find that the Examiner's reason for the proposed modification noted above sufficient for the obviousness conclusion, we need not reach the other rationale provided by the Examiner and argued by Appellant based on adding optional filler to enhance mechanical strength of the film (Ans. 8; Reply Br. 5-6).

Appellant's arguments regarding the claimed resistivity of McElrath's material are based on McElrath's Example 7 showing resistivities outside the claimed range (App. Br. 14-15). Appellant contends that McElrath's Example 7 evinces that there is no reasonable expectation that using McElrath's carbon nanotubes would have successfully achieved a resistivity within the claimed range.

However, the Examiner correctly indicates that the data included in McElrath's Example 7 relates to a coating made of carbon nanotubes and polycarbonate, not a fluoropolymer as taught by Tarnawskyj in the combination (Ans. 9). McElrath is open to using a wide variety of polymers as the matrix material for the carbon nanotubes (McElrath para. [0082]). Tarnawskyj teaches a range of resistivities that encompass the claimed resistivity range as found by the Examiner (Ans. 5). Tarnawskyj teaches that fluorinated coke, crystalline graphite and carbon black are preferred, but that a variety of carbon sources may be used (col. 10, ll. 34-37). Accordingly, in our view, the prior art establishes a reasonable expectation

that using McElrath's fluorinated carbon nanotubes as the fluorinated carbon material in Tarnawskyj's fluoropolymer coating would have successfully achieved resistivities within the claimed range.

Regarding Appellant's argument that the order of the claimed steps is missing from the prior art, we agree with the Examiner that no criticality has been shown by the order of the steps (Ans. 8-9). *In re Burhans*, 154 F2d 690, 692 (CCPA 1946) ("There is no merit in the point here [made that the references do not teach the claimed four method steps] in the absence of any proof in the record that the order of performing the steps produces any new or unexpected results.").

The Examiner finds that the prior art does not teach mixing the carbon nanotubes and fluoropolymer to form a composite which is then added to a solvent as recited in claim 12 (Ans. 5). However, the Examiner does not find that claimed sequence of steps patentably distinguishes over the prior art because Appellant's mere argument that better uniformity in dispersing the nanotubes into the fluoropolymer does not establish criticality in the sequence of steps (Ans. 8). We agree.

Appellant's Specification evidence (paragraphs [0023], [0024], [0057], [0059], [0062], and [0064]) and reference to Chatterjee as showing difficulty with blending nanotubes and polymers fail to establish that the claimed order of method steps is critical to achieving a uniform dispersion of carbon nanotubes in the fluoropolymer (App. Br. 14 n. 23; Reply Br. n. 6). Indeed, the Specification discloses that the carbon nanotubes and fluoropolymer may be added to a solvent without initially blending the carbon nanotubes and fluoropolymer as an alternative to the pre-blending of the carbon nanotubes and fluoropolymer before adding to a solvent (Spec.

para. [0064]). Even Appellant's Figure 4 shows that step 110 of blending the carbon nanotubes and fluoropolymer is an optional step.

On this record and for the above reasons, we affirm the Examiner's § 103 rejection.

DECISION

The Examiner's decision 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

ORDER

AFFIRMED

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