

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ROBERT M. SMITH, GEORGE C. McLARTY, ANDREW D. CHILD, SAMUEL E. GRAHAM and RANDOLPH W. HURSEY

Appeal 2008-1497
Application 10/640,588
Technology Center 1794

Decided: April 28, 2008

Before EDWARD C. KIMLIN, ROMULO H. DELMENDO, and LINDA M. GAUDETTE, *Administrative Patent Judges*.

GAUDETTE, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal from the Examiner's final rejection of claims 1-5, 7, 9, and 12-16, the only claims remaining in the application. 35 U.S.C. § 134. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

STATEMENT OF THE CASE

Appellants' invention relates to facers for wallboards, and more particularly, a composite facer comprising a nonwoven mat that is adhesively bonded to a scrim fabric reinforcement. (Spec. 1.) Figure 1 of Appellants' Specification is shown below:

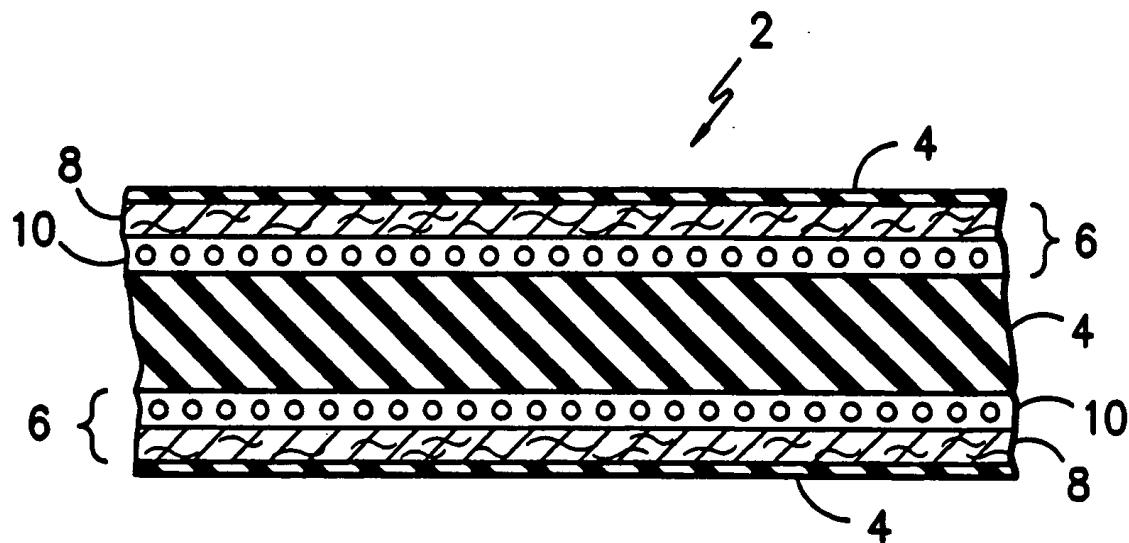


FIG. -1-

Figure 1 shows a wallboard 2 having an integral matrix of cementitious material as a core 4 and a composite facer material 6 embedded in a top and bottom face thereof (Spec. 6). In accordance with the Specification, "the first layer 8 is preferably a carded polyester nonwoven mat 8, which is bonded to a laid scrim reinforcement layer 10" (Spec. 6).

Claim 1 is illustrative of the invention and is reproduced below:

1. A composite material for use as a facer material for reinforcing gypsum wallboards, said composite material comprising:

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a nonwoven mat, wherein said nonwoven mat is selected from the group consisting of a spunlaced mat, an air laid mat, a hydroentangled mat, and any combination thereof; and
a reinforcing fabric layer bonded to one side of said nonwoven mat;
wherein said composite material is sufficiently open to allow gypsum slurry to flow therethrough.

The Examiner relies upon the following references in rejecting the appealed claims:

Porter	2002/0182953 A1	Dec. 5, 2002
Bruce	6,703,331 B1	Mar. 9, 2004

The Examiner made the following rejection:

Claims 1-5, 7, 9, and 12-16 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Porter in view of Bruce.

Appellants, in their Appeal Brief, argue all claims as a group.¹ We select representative claim 1 to decide the appeal as to all pending claims. 37 C.F.R. § 41.37(c)(1)(vii). Accordingly, claims 2-5, 7, 9, and 12-16 stand or fall with claim 1.

The Examiner finds that Porter discloses the invention as claimed “except for the specific teaching that the nonwoven mat is airlaid or hydroentangled.” (Ans. 3.) The Examiner further finds that Bruce teaches hydroentangled fibrous webs. (*Id.*) The Examiner contends that it would have been obvious to one of ordinary skill in the art at the time of the invention to have used hydroentangled sheets as taught by Bruce in place of the nonwoven mats of Porter, motivated by the desire to create a laminate

¹ Our decision will make reference to Appellant’s Appeal Brief (“Br.”, filed January 30, 2007), and the Examiner’s Answer (“Ans.”, mailed June 29, 2007).

that has increased strength. (*Id.*) As further support for the combination of Porter and Bruce, the Examiner asserts “it is well known to one having ordinary skill in the art that hydroentangled fabrics provide increased strength and durability when used alone or in laminates.” (Ans. 4.)

Appellants contend that the Examiner reversibly erred in rejecting the claims for several reasons. Appellants argue Porter relates to cement boards, while Bruce is non-analogous art because it relates to gypsum boards. (Br. 7-8.) Appellants also argue that Bruce teaches away from the instant invention because of a preference that the gypsum slurry not completely penetrate through the nonwoven liner. (Br. 7.) Appellants additionally argue that the combination of Porter and Bruce fails to provide the teaching, suggestion, or motivation necessary to produce the claimed invention, and thus, the Examiner’s rejection is “improper based on hindsight.” (Br. 8-10.) Appellants also assert there is no reasonable expectation of success for the combination of Porter and Bruce. (Br. 10.)

Accordingly, the issue presented is: Has the Examiner provided a reasonable basis for combining the teachings of Porter and Bruce in the manner claimed? We answer this question in the affirmative.

The record supports the following findings of fact (FF) by a preponderance of the evidence:

1. Porter relates generally to reinforced products, and more particularly to reinforced cementitious boards for building construction. (Porter, [0001].)
2. Porter discloses a composite fabric comprising a first component and a second component. (Porter, [0021].)

3. The first component of Porter is disclosed as being a woven knit or a laid scrim open mesh material having “mesh openings of a size suitable to permit interfacing between the skin and core cementitious matrix material **16** of board **10.**” (*Id.*)

4. The second component of Porter is disclosed as being a “thin, porous, nonwoven material preferably fabricated from randomly oriented fibers of water and alkali resistant, preferably thermoplastic, material.” (Porter, [0028].)

5. Preferred thermoplastics for the second component of Porter “include spunbonded or carded webs of olefins, polyolefins, and olefin copolymers such as polypropylene and polyethylene” (*Id.*).

6. The first and second components of Porter, “when united and embedded in a cementitious board promote penetration of cement slurry yet resist pin-holes or roughness which would mar the board faces” (Porter, [0033]).

7. Bruce relates to a fungus resistant gypsum-based substrate “faced with a synthetic polymeric sheet material that is suited for use as a construction material such as wallboard or ceiling panels.” (Bruce, col. 1, ll. 12-15.)

8. The polymeric sheet of Bruce “may be nonwoven sheets comprised of meltspun substantially continuous fibers, carded staple fiber webs, needle punched staple fiber webs, hydroentangled fibrous webs, or other porous nonwoven synthetic structures.” (Bruce, col. 9, ll. 43-47.)

9. Preferably, the polymeric sheet of Bruce has a mean flow pore size of at least 8.0 microns, and even more preferably in a range of 8.7 to 40 microns. (Bruce, col. 9, ll. 32-38.) The range of 8.7 to 40 microns allows

gypsum to intertwine with the fibers of the polymeric sheet, and provides good wet adhesion, without allowing gypsum slurry to penetrate completely through the polymeric sheet. (Bruce, col. 9, ll. 38-42.)

10. The Specification states that “gypsum, concrete, mineral wool, rock wool, and any suitable combination thereof” may be used as cementitious core materials. (Spec. 6.)

11. The Specification also states that “although the nonwoven mat is preferably carded, it may also be needlepunched, spunlaced, spunbonded, meltblown, airlaid, hydroentangled, or formed using any suitable combination thereof.” (Spec. 7.)

A claimed invention is unpatentable if the differences between it and the prior art “are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art.” 35 U.S.C. § 103. During examination, the examiner bears the initial burden of establishing a prima facie case of obviousness. *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992). The prima facie case is a procedural tool, and requires that the examiner initially produce evidence sufficient to support a ruling of obviousness; thereafter the burden shifts to the applicant to come forward with evidence or argument in rebuttal. *In re Piasecki*, 745 F.2d 1468, 1475 (Fed. Cir. 1984).

Contrary to Appellants’ contentions, we find that the Examiner’s conclusion of obviousness is properly based on a finding that the generically stated nonwoven sheets of Porter and the hydroentangled nonwoven sheets of Bruce are art-recognized functional equivalents (*see* Ans. 4-5). *See KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1740 (2007) (In an obviousness determination, the question to be asked is “whether the improvement is more

than the predictable use of prior-art elements according to their established functions.”). Our analysis follows.

Appellants do not contest the Examiner’s finding that Porter discloses the invention as claimed “except for the specific teaching that the nonwoven mat is airlaid or hydroentangled.” (Ans. 3.) We find that Porter does indeed disclose a nonwoven mat (or “web”) to reinforce a wallboard (*see FF 1-5*), but fails to expressly disclose that the nonwoven mat is hydroentangled. Bruce also uses a nonwoven mat (or “sheet”) to reinforce a wallboard, and teaches that both carded webs and hydroentangled webs can be used for such reinforcement (*see FF 7-8*). We also summarily accept as fact the Examiner’s statement that “it is well known to one having ordinary skill in the art that hydroentangled fabrics provide increased strength and durability when used alone or in laminates” (Ans. 4), as the accuracy of this statement is not contested by Appellants, and because Bruce supports it (*see FF 8*).²

We further find that Bruce as a whole does not teach away from the claimed invention. Contrary to Appellants’ contention, the hydroentangled sheet of Bruce is open to sheets having “a mean pore size of at least 8.0 microns” (*see FF 9*), and is not limited to the “range of pore sizes” which are sufficiently small to prevent gypsum slurry from penetrating through the

² Additionally, we note that the Specification acknowledges that hydroentangled webs and carded webs are functional equivalents (*see FF 11*), although we are mindful of the fact that such a teaching cannot be the basis for establishing the equivalency of the components. *See In re Ruff*, 256 F.2d 590, 597-99 (CCPA 1958) (The mere fact that components are grouped in an application cannot be relied upon to establish the equivalency of these components. However, an applicant’s expressed recognition of an art-recognized or obvious equivalent may be used to refute an argument that such equivalency does not exist.)

nonwoven liner (Br. 7). We also concur in the Examiner’s finding that the cement wallboards of Porter and the gypsum wallboards of Bruce are analogous art (Ans. 4); both patents relate to building construction materials similar in structure and function to Appellants’ claimed product³ (*compare FF 1 with FF 7*). *In re Bigio*, 381 F.3d 1320, 1326 (Fed. Cir. 2004)(“The Board thus correctly set the field of the invention by consulting the structure and function of the claimed invention as perceived by one of ordinary skill in the art.”).

In light of the foregoing, we find a reasonable basis for the Examiner’s determination that it would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to have substituted a hydroentangled web as taught by Bruce for the generically stated nonwoven web of Porter, for the purpose of improving or optimizing the strength of a reinforcing web. Furthermore, Appellants fail to present persuasive arguments or evidence to rebut this *prima facie* showing of obviousness.

Accordingly, we affirm the decision of the Examiner to reject claims 1-5, 7, 9, and 12-16 under 35 U.S.C. § 103 as unpatentable over Porter in view of Bruce.

³ In this regard, we note that Appellants’ own Specification indicates that “gypsum, concrete, mineral wool, rock wool, and any suitable combination thereof” may be used as cementitious core materials (*see FF 10*).

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ORDER

The decision of the Examiner rejecting claims 1-5, 7, 9, and 12-16 under 35 U.S.C. § 103(a) as unpatentable over Porter in view of Bruce 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)(iv).

AFFIRMED

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