

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

---

*Ex parte* PIERATTILIO DI GREGORIO

---

Appeal 2008-4306  
Application 10/811,604  
Technology Center 1700

---

Decided: November 7, 2008

---

Before EDWARD C. KIMLIN, ADRIENE LEPIANE HANLON, and  
CATHERINE Q. TIMM, *Administrative Patent Judges*.

HANLON, *Administrative Patent Judge*.

DECISION ON APPEAL

A. STATEMENT OF THE CASE

This is an appeal under 35 U.S.C. § 134 from an Examiner's final rejection of claims 1-8, 12, and 13, all of the claims pending in the application. We have jurisdiction under 35 U.S.C. § 6(b). We AFFIRM.

The Examiner finally rejected claims 1-4, 7, 12, and 13 under 35 U.S.C. § 103(a) as unpatentable over the combination of Benson,<sup>1</sup> Hunter,<sup>2</sup> Späth,<sup>3</sup> and the Appellant's admission.<sup>4</sup> Final 2-5.<sup>5</sup>

The Examiner finally rejected claims 5 and 6 under 35 U.S.C. § 103(a) as unpatentable over the combination of Benson, Hunter, Späth, the Appellant's admission, and Nishimoto.<sup>6</sup> Final 5-6.

The Examiner finally rejected claim 8 under 35 U.S.C. § 103(a) as unpatentable over the combination of Benson, Hunter, Späth, the Appellant's admission, and Haase.<sup>7</sup> Final 6-7.

## B. ISSUES

Whether the Appellant has shown that the Examiner reversibly erred in rejecting claims 1-4, 7, 12, and 13 under 35 U.S.C. § 103(a) as unpatentable over the combination of Benson, Hunter, Späth, and the Appellant's admission.

Whether the Appellant has shown that the Examiner reversibly erred in rejecting claims 5 and 6 under 35 U.S.C. § 103(a) as unpatentable over the combination of Benson, Hunter, Späth, the Appellant's admission, and Nishimoto.

Whether the Appellant has shown that the Examiner reversibly erred in rejecting claim 8 under 35 U.S.C. § 103(a) as unpatentable over the

---

<sup>1</sup> US 5,107,649 issued to Benson et al. on April 28, 1992 ("Benson").

<sup>2</sup> US 5,792,539 issued to Hunter on August 11, 1998 ("Hunter").

<sup>3</sup> US 6,189,354 B1 issued to Späth on February 20, 2001 ("Späth").

<sup>4</sup> Page 1, lines 17-26 of the Appellant's Specification ("Appellant's admission").

<sup>5</sup> Final Office Action mailed February 13, 2007.

<sup>6</sup> US 6,336,693 B2 issued to Nishimoto on January 8, 2002 ("Nishimoto").

<sup>7</sup> US 4,011,357 issued to Haase on March 8, 1977 ("Haase").

combination of Benson, Hunter, Späth, the Appellant's admission, and Haase.

C. FINDINGS OF FACT

The following findings of fact are supported by a preponderance of the evidence. Additional findings of fact as necessary appear in the Analysis portion of the opinion.

1. Appellant's Specification

The Appellant discloses that a vacuum panel is known to be formed of an envelope that contains a filling material. Spec. 1:15-16.

The envelope is made with so-called "barrier" sheets having a thickness generally not greater than 100  $\mu\text{m}$ . Spec. 1:19-21.

The filling material has the function of spacing apart the two opposite faces of the envelope when a vacuum is created in the panel. Spec. 1:27-28.

The filling material can be inorganic, such as silica powder, glass fibers, aerogels, and diatomaceous earth, or organic, such as rigid foams of polyurethane or polystyrene, both in the form of boards and powders. Materials more commonly used are open cell polyurethane foams, and in the case of panels which must resist temperatures higher than about 150°C, silica powder. Spec. 1:28-2:3.

The Appellant's invention relates to a method for producing thermo-insulating cylindrical vacuum panels comprising the steps of: manufacturing a planar vacuum panel according to any known procedure and curving the panel through calendering. Spec. 3:21-26.

The Appellant discloses that panels subjected to calendering can be of any known type, obtained through any combination of envelope and filling material. Spec. 4:15-17.

According to the Appellant, the operation of calendering is well known and is applied in the mechanical field for curving metallic plates. Spec. 3:27-29.

2. Claimed subject matter

Claim 1 is the only independent claim on appeal, and it reads as follows:

A method for producing cylindrical vacuum panels comprising the steps of:  
producing a planar, thermo-insulating vacuum panel having two facing sheets each comprising a barrier sheet having a thickness not greater than 100µm, the two facing sheets sealed at their edges to form an envelope, at least one porous or discontinuous filling material selected from the group consisting of inorganic powders and porous organic foams filling the envelope formed by the facing sheets, and a vacuum created in the panel, wherein pores and interstices in the filling materials are evacuated and the filling material functions to space the facing sheets apart; and  
curving the panel by a calendering operation.

App. Br. 19,<sup>8</sup> Claims Appendix.

3. Benson

Benson discloses vacuum insulation panels that are thin and bendable to form curved insulation panels. Benson 1:19-24.

Benson discloses that it is known in the art to use glass fiber mats and perlite powders as filling materials in vacuum insulation panels. Benson 3:11-15.

---

<sup>8</sup> Appeal Brief dated September 14, 2007.

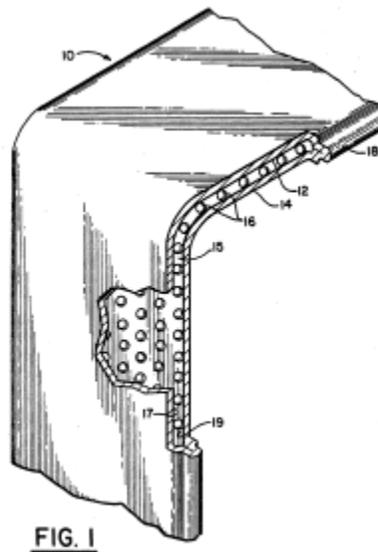
However, according to Benson, bending these prior art panels may result in certain disadvantages. Benson 2:66-3:10, 3:22-29.

Benson discloses an ultra-thin, vacuum insulation panel comprising two outer sheets that are sealed at their edges, preferably by welding, to form an envelope. Benson 6:27-36.

The envelope may be filled with discrete glass spacers in the form of spherical beads. Benson 6:44-48.

The outer sheets of the panel may be formed of a low thermal conductivity metal, such as stainless steel or titanium, and are sufficiently hard or rigid so they do not form around the spherical spacers, but are bendable enough so the panel can be formed in curves. Benson 6:48-54.

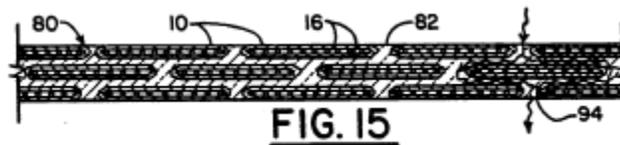
This embodiment of the invention is illustrated in Benson Figure 1. Benson 4:61-64. Figure 1 is reproduced below:



Benson Figure 1 illustrates a portion of an insulation panel.

Benson discloses that the insulation panel may also be bent into a cylinder or other enclosing configuration. Benson 9:22-26; Benson Figure 18.

Benson Figure 15 illustrates another embodiment of the invention. Benson 5:43-46. Figure 15 is reproduced below:



Benson Figure 15 illustrates a portion of an insulation panel.

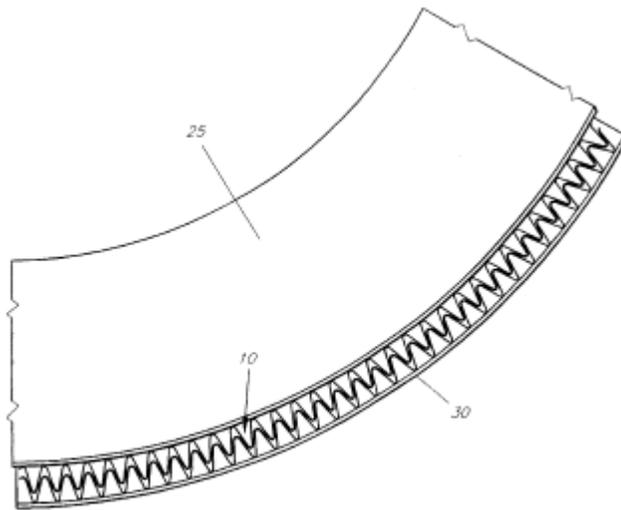
In this embodiment of the invention, a number of smaller vacuum insulation panels as described above may be stacked or laminated together in a composite panel by embedding them in, or adhering them to, a more conventional insulation material, such as either rigid or flexible foam insulation or a consolidated powder insulation material. Benson 8:53-58.

Benson discloses that this insulation panel can be easily formed around curves or used in any desired shape. Benson 8:66-68.

#### 4. Hunter

Hunter discloses a multi-layer thermal insulation barrier that supports the outer skin of a vacuum panel. Hunter 1:5-8.

Hunter Figure 8 illustrates one embodiment of the thermal insulation barrier. Hunter 3:41-44. Figure 8 is reproduced below:

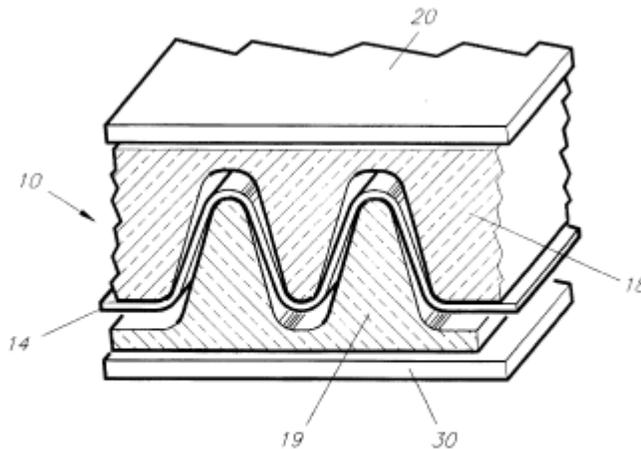


*FIG. 8*

Hunter Figure 8 illustrates a portion of a thermal insulation barrier.

The thermal insulation barrier **10** has a beam-like design that is capable of bending. The thermal insulation barrier **10** may be used to insulate a curved surface **25** such as a tank or a pipe. Hunter 8:64-67.

Hunter Figure 10 illustrates a second embodiment of the thermal insulation barrier **10**. Hunter 9:16-17. Figure 10 is reproduced below:



*FIG. 10*

Hunter Figure 10 illustrates a portion of a thermal insulation barrier.

The thermal insulation elements **18** and **19** are made of a solid, formable, open structured material, such that entrapped gases may be evacuated. Exemplary materials include open celled polyurethane, open celled ceramic foams, xerogels, glass/ceramic fiber composites, compacted powders such as silica with appropriate binders, and formed stainless steel wire mesh. Hunter 9:21-29.

5. Späth

Späth discloses a bending machine that is suited for bending closed hollow metal sections. Späth 1:53-56.

Späth discloses that the bending machine is constructed to allow adjustment. In this way, sections with large radii and large cross-sections as well as sections with smaller radii and smaller cross-sections can be bent as required. Späth 6:28-35.

D. PRINCIPLES OF LAW

A claimed invention is not patentable if the subject matter of the invention would have been obvious to a person having ordinary skill in the art at the time the invention was made. 35 U.S.C. § 103(a); *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1734 (2007); *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 13 (1966).

Facts relevant to a determination of obviousness include (1) the scope and content of the prior art, (2) any differences between the claimed invention and the prior art, (3) the level of skill in the art, and (4) any relevant objective evidence of obviousness or non-obviousness. *KSR*, 127 S. Ct. at 1734; *Graham*, 383 U.S. at 17-18.

A person of ordinary skill is not an automaton but is a person of ordinary creativity. *KSR*, 127 S. Ct. at 1742. One of ordinary skill in the art

is presumed to have skills apart from what the prior art references expressly disclose. *In re Sovish*, 769 F.2d 738, 742 (Fed. Cir. 1985).

The question under 35 U.S.C. § 103 is not merely what the references teach but what they would have suggested to one of ordinary skill in the art at the time the invention was made. All disclosures of the prior art, including unpreferred embodiments, must be considered. *In re Lamberti*, 545 F.2d 747, 750 (CCPA 1976).

Where a rejection is based on a combination of references, one cannot show non-obviousness by attacking the references individually. *In re Keller*, 642 F.2d 413, 426 (CCPA 1981).

#### E. ANALYSIS

##### 1. Claims 1-4, 7, 12, and 13

The Examiner found that Benson does not expressly disclose that powders and foams may be used as fillers inside the bendable vacuum envelope. Nonetheless, the Examiner found that Hunter teaches a bendable vacuum panel that contains at least one filler selected from the group consisting of inorganic powders and porous organic foams. The Examiner concluded that it would have been obvious to one of ordinary skill in the art to use a powder or foam as taught by Hunter inside the vacuum envelope disclosed in Benson to increase the R-value of the panel. Ans. 3-4<sup>9</sup>; Hunter 6:40-43.

The Appellant does not point to any error in the Examiner's factual findings. Rather, the Appellant argues that Benson "teaches away" from powder and foam fillers because these materials negatively affect the quality

---

<sup>9</sup> Examiner's Answer mailed January 18, 2008.

of the vacuum seal of an insulation panel. App. Br. 8. In particular, the Appellant argues:

Benson explains that metal envelopes with welded seams will hold a vacuum, but that leak-free welds are difficult to achieve in the presence of conventional spacers . . . , such as glass fiber mats and perlite powders, because such fillers contain “billions of microscopically fine glass fibers and perlite particles,” and a single particle or fiber intruding into a weld could create a microscopic leak (col. 3, line 62 – col. 3, line 6).

App. Br. 9.

The Appellant’s argument is not persuasive of reversible error. The passage in Benson relied on by the Appellant relates to glass fiber mats and perlite powders, not open celled polyurethane as disclosed in Hunter. *See* Benson 2:66-3:20. The Examiner explains that the polyurethane foam disclosed in Hunter would not have been expected to affect the weld between the two metal sheets in Benson because “the material is a foam and not a powder or fiber at the time of sealing” and “there is now [sic, no] powder or fiber to interrupt the seal.” Ans. 9.

The Appellant relies on a Declaration of Paolo Manini<sup>10</sup> to establish that “porous organic foams likewise have the tendency to generate powders, and hence would be excluded by the teachings of Benson for at least that reason.” Manini Declaration, para. 11; App. Br. 10, n.1.

To the extent that the polyurethane foams disclosed in Hunter may have a *tendency* to generate powders that may intrude into a weld, any microscopic leak would not render the vacuum panel inoperable for its intended purpose. *Contra In re Gordon*, 733 F.2d 900, 902 (Fed. Cir. 1984) (if the French apparatus were turned upside down, it would be rendered

---

<sup>10</sup> Declaration of Paolo Manini dated March 8, 2006 (“Manini Declaration”).

inoperable for its intended purpose; in effect, French teaches away from the proposed modification). Indeed, Hunter discloses that the polyurethane foam is suitable for vacuum insulation panels. *See* Hunter 9:21-29; *see also* Ans. 9 (“even if long-term seal integrity were compromised, a vacuum panel would be sufficient for use even if only usable for several years before seal degradation”). Furthermore, we note that the Appellant has failed to demonstrate that the alleged disadvantages of the Hunter polyurethane foam have been solved by the polyurethane foam employed by the Appellant. *See* Appellant’s claim 4 (“the planar vacuum panel comprises, as filling material, a rigid polyurethane foam”).

The Appellant also argues that the Examiner’s motivation to combine Benson and Hunter is misguided. According to the Appellant:

[T]he Examiner’s position that one would be motivated to combine Benson and Hunter to increase R value, because Hunter teaches that stabilizing air gas pockets increases R-value, is misguided. . . . In actual practice, whatever thermal resistance is gained by trapping air pockets in an imperfect vacuum by using filler is at best canceled out and at worst diminished as a result of the increased number of direct heat conduction paths formed by the structure proposed by the Examiner.

App. Br. 10. The Appellant relies on column 3, lines 15-20 of Benson and paragraph 15 of the Manini Declaration for support.

The portion of Benson relied on by the Appellant does not discuss polyurethane foams, but rather discusses the direct heat conduction paths of tightly compacted glass fiber mats and perlite powders. Benson 3:15-20. As for the Manini Declaration, Mr. Manini indicates that “the conductive contribution would increase in Benson by adding a filler according to Hunter, due to the thermal conduction of the solid filler material.” Manini

Declaration, para. 15. However, this same “conductive contribution” also appears to be present in the vacuum panels produced by the Appellant’s claimed method:

[P]anels prepared at SAES according to this invention typically contain as filler either polyurethane or silica powder. With polyurethane, an R-value of 24 is typically obtained at a vacuum inside the panel of 0.1 mbar, while with silica typical values are  $R \approx 32$  at a vacuum degree of 10 mbar.

*Id.*

Thus, to the extent that the polyurethane foam disclosed in Hunter may increase the direct heat conduction path in the panel of Benson, the Examiner’s error is harmless. The record establishes that various materials, such as polyurethane foam, perlite powder, glass beads, and glass fiber mats, were known to be used as filling materials in vacuum insulation panels. We find that it would have been within the skill of the ordinary artisan to choose a particular filling material, such as the polyurethane foam disclosed in Hunter, based on the end use requirements of the vacuum insulation panel. *See In re Fout*, 675 F.2d 297, 301 (CCPA 1982) (“Express suggestion to substitute one equivalent for another need not be present to render such substitution obvious.”); *In re Bozek*, 416 F.2d 1385, 1390 (CCPA 1969) (conclusion of obviousness may be based on the common knowledge and common sense of the person of ordinary skill in the art without any specific hint or suggestion in a particular reference).

Next, the Examiner found that the sheets forming the envelope in the vacuum panel of Benson do not have a thickness within the claimed range, i.e., a thickness not greater than 100  $\mu\text{m}$ . Nonetheless, the Examiner found that the Appellant admitted in the Specification that barrier sheets having a

thickness generally not greater than 100  $\mu\text{m}$  are known in the art. The Examiner concluded that it would have been obvious to one of ordinary skill in the art to decrease the thickness of the sheets in Benson to reduce the volume of the vacuum panel. Ans. 4-5.

The Appellant does not point to any error in the Examiner's factual findings. Rather, the Appellant argues that Benson expressly discloses that the ideal operating thickness of the barrier sheets is at least 200  $\mu\text{m}$ . The Appellant argues that substituting a sheet that is 100  $\mu\text{m}$  thick for a sheet that is 200  $\mu\text{m}$  thick would "achieve nothing more than an insignificant return on space reduction." The Appellant also argues that Benson discloses that the sheets "must be sufficiently hard or rigid so they do not form around the spherical spacers." Thus, the Appellant contends that one of ordinary skill in the art would not have risked the structural integrity of the panel for a negligible space reduction. App. Br. 10-11; Manini Declaration, para. 20.

The Appellant's arguments are not persuasive of reversible error. First, as pointed out by the Examiner, the thicknesses disclosed in Benson are merely illustrative. *See* Ans. 9 (Benson teaches that the minimum thickness is optional, i.e., "for purposes of illustration"); Benson 11:49-55. Second, the Appellant's argument is based solely on the teachings of Benson. The rejection before us is based on a combination of references wherein the polyurethane foam of Hunter is substituted for the glass beads of Benson. *Keller*, 642 F.2d at 426. Significantly, the evidence of record appears to establish that such a panel would not display structural problems. *See* Manini Declaration, para. 20 ("Such pressure stress is not a problem with the presently claimed invention, since the filling material fully supports and spaces the sheets of the panel after creation of the vacuum.").

Thus, absent a showing of unexpected results, we find that reducing the thickness of the barrier sheets in Benson would have been within the skill of the ordinary artisan, especially where, as here, thinner barrier sheets were known in the art. *In re Woodruff*, 919 F.2d 1575, 1578 (Fed. Cir. 1990).

Finally, the Examiner found that Benson does not disclose the method by which the vacuum panel is curved. The Examiner found that Späth discloses a method for curving hollow metal sheets using a calendering operation. The Examiner concluded that it would have been obvious to one of ordinary skill in the art to curve the vacuum panel disclosed in Benson using the calendering operation disclosed in Späth. Ans. 4.

The Appellant does not point to any error in the Examiner's factual findings. Rather, the Appellant argues that the apparatus disclosed in Späth exerts a large force during the bending operation, and there would have been no reason to use equipment designed for applying a large force on the thin panel disclosed in Benson having fragile glass beads as spacers. App. Br. 12.

The Appellant's argument is not persuasive of reversible error. As pointed out above, the rejection before us is based on a combination of references wherein the polyurethane foam of Hunter is substituted for the spacers or glass beads of Benson. *Keller*, 642 F.2d at 426.

The Appellant also argues that the Examiner's motivation statement misconstrues the teachings of Späth. App. Br. 13. In particular, relying on column 1, lines 15-18 of Späth, the Examiner states that the motivation to curve the panels of Benson using the method taught by Späth is to produce a curved hollow metal sheet that is protected against bulges, nicks, or any

other kind of deformation. Final 3. The Appellant argues that the passage relied on by the Examiner indicates that the guided rollers, not the entire bending operation disclosed in Späth, are intended to prevent bulges and nicks in the section to be bent. App. Br. 13.

It is irrelevant whether the guided rollers or the entire bending operation disclosed in Späth protect against deformation. The record establishes that curved metal insulation panels were known in the art. *See, e.g.,* Benson Figures 1, 18; Hunter Figure 8. Späth discloses that a calendering operation is suitable for bending metal sections. Späth 1:53-56. Thus, we find that one of ordinary skill in the art would have recognized that a calendering operation, such as the calendering operation disclosed in Späth, is useful for curving the metal insulation panel disclosed in Benson.

To the extent that the apparatus disclosed in Späth does exert a large force during the bending operation, the Examiner found that it would have been within the skill of the ordinary artisan to employ smaller rollers or smaller forces for smaller or more easily bendable objects. Ans. 10. The Appellant has failed to direct us to any evidence to the contrary.

The Appellant also argues that Hunter does not disclose that the panel illustrated in Figure 10 is bendable or flexible. Moreover, the Appellant relies on paragraph 22 of the Manini Declaration to establish that the polyurethane foam used as the filler material in Hunter is in fact rigid. App. Br. 14.

To the extent that the polyurethane foam employed by Hunter is rigid, Hunter does not expressly disclose that the panel cannot be curved to some degree. Indeed, the teachings of Späth establish that rigid materials may be curved using the disclosed calendering operation. Furthermore, we find that

it would have been within the skill of the ordinary artisan to adjust the flexibility of the foam to facilitate bending. *See* Benson 8:53-58 (disclosing that conventional insulation materials include rigid and flexible foams).

The Appellant argues that if the polyurethane foam were flexible, the walls **20** and **30** would compress the polyurethane foam (elements **18** and **19**) against element **14** under the action of external pressure, and the vacuum spaces between the stacked elements would be lost. App. Br. 14.

The Appellant's argument is not persuasive of reversible error. The Examiner merely relied on Hunter to show that polyurethane foam is a conventional insulation material and was known to be used in vacuum insulation panels. *Keller*, 642 F.2d at 426.

In sum, the Appellant has failed to show that the Examiner reversibly erred in rejecting claims 1-4, 7, 12, and 13 under 35 U.S.C. § 103(a) as unpatentable over the combination of Benson, Hunter, Späth, and the Appellant's admission.

## 2. Claims 5 and 6

The Examiner found that the combination of Benson, Hunter, Späth, and the Appellant's admission does not teach a vacuum panel having a thickness between 5 and 20 mm. The Examiner found that Nishimoto discloses that it is known to construct vacuum panels using polyurethane foam having a thickness in a range of 10 to 20 mm (Nishimoto 3:47-58). The Examiner concluded that it would have been obvious to one of ordinary skill in the art to increase the thickness of the panel taught by the combined teachings of Benson, Hunter, Späth, and the Appellant's admission in view of the teachings of Nishimoto. The Examiner found that the motivation to

increase the thickness of the panel would have been to increase the insulating properties of the panel. Ans. 6-7.

The Appellant does not point to any error in the Examiner's findings with respect to Nishimoto. Rather, the Appellant argues that the Examiner's motivation contradicts the Examiner's motivation in support of combining Benson and the Appellant's admission, i.e., that one would decrease the thickness of the panel walls or barrier sheets of Benson to reduce the volume of the panel. The Appellant also argues that Benson discloses an insulation panel having an "ideal panel thickness range" of about 2.5 mm. Thus, the Appellant contends there would have been no reason to increase the thickness of the panel disclosed in Benson. App. Br. 15.

The Appellant's arguments are not persuasive of reversible error. As discussed above, the thicknesses disclosed in Benson are merely illustrative. *See* Benson 11:49-55. Moreover, we do not find that the motivation proposed by the Examiner in the rejection of claims 5 and 6 contradicts the motivation proposed by the Examiner in support of combining Benson and the Appellant's admission. Absent a showing of unexpected results, we find that it would have been within the skill of the ordinary artisan to adjust the thickness of the panel, including the thickness of the panel walls and/or the filler material, based on the end use requirements of the panel. *Woodruff*, 919 F.2d at 1578.

For the reasons set forth above, the Appellant has failed to show that the Examiner reversibly erred in rejecting claims 5 and 6 under 35 U.S.C. § 103(a) as unpatentable over the combination of Benson, Hunter, Späth, the Appellant's admission, and Nishimoto.

3. Claim 8

The Examiner found that Benson teaches that the spacer beads are coated with polystyrene or a similar adhesive material and are affixed to the wall sheets of the insulation panel (Benson 7:9-14). The Examiner found that Benson does not expressly disclose that the polystyrene layer is foamed but found that Haase discloses that polystyrene can be foamed (Haase 2:47-56). The Examiner found that one of ordinary skill in the art would have recognized that polystyrene and foamed polystyrene are similar adhesive materials. Thus, the Examiner concluded that it would have been obvious to one of ordinary skill in the art to use foamed polystyrene in the insulation panel of Benson. The Examiner also concluded that it would have been obvious to one of ordinary skill in the art to curve the panel using a calendaring operation for reasons discussed previously. Ans. 7-8.

The Appellant does not point to any error in the Examiner's factual findings with respect to Haase. Rather, the Appellant argues that the Examiner has provided no reason for performing a calendaring operation on a planar panel having a layer of adhesive foam on at least one *face* of the panel. The Appellant argues that Benson does not teach that a face of the insulating panel is coated with an adhesive polymeric foam. Instead, the Appellant argues that Benson teaches that spacer beads *inside* the panel are coated with an adhesive. App. Br. 16.

The Appellant's argument is not persuasive of reversible error. We find that one of ordinary skill in the art would have understood that adhesive is a known expedient for attaching an article to a surface. *See, e.g.*, Benson 7:9-14. We find that it would have been within the skill of the ordinary artisan to include a layer of polystyrene or polystyrene foam on the face of

the curved insulation panel of Benson to secure the panel to the surface of an article requiring insulation. *See, e.g.*, Nishimoto 3:64-4:4 (vacuum insulation panel fixed to a surface with an adhesive agent). Finally, for the reasons discussed above, we find that the calendaring operation disclosed in Späth would have also been useful for curving such an insulation panel.

For the reasons set forth above, the Appellant has failed to show that the Examiner reversibly erred in rejecting claim 8 under 35 U.S.C. § 103(a) as unpatentable over the combination of Benson, Hunter, Späth, the Appellant's admission, and Haase.

F. DECISION

The rejection of claims 1-4, 7, 12, and 13 under 35 U.S.C. § 103(a) as unpatentable over the combination of Benson, Hunter, Späth, and the Appellant's admission is affirmed.

The rejection of claims 5 and 6 under 35 U.S.C. § 103(a) as unpatentable over the combination of Benson, Hunter, Späth, the Appellant's admission, and Nishimoto is affirmed.

The rejection of claim 8 under 35 U.S.C. § 103(a) as unpatentable over the combination of Benson, Hunter, Späth, the Appellant's admission, and Haase 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) (2008).

AFFIRMED

Appeal 2008-4306  
Application 10/811,604

PL Initial:

sld

PANITCH SCHWARZE BELISARIO & NADEL LLP  
ONE COMMERCE SQUARE  
2005 MARKET STREET, SUITE 2200  
PHILADELPHIA, PA 19103