

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JAMES D. CLEARY, DAVID K. CINADER, and
OLIVER L. PUTTLER

Appeal 2008-1173
Application 10/678,841
Technology Center 3700

Decided: March 12, 2008

Before DEMETRA J. MILLS, LORA M. GREEN, and
RICHARD M. LEBOVITZ, *Administrative Patent Judges*.

GREEN, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the Examiner's final rejection of claims 43-52. We have jurisdiction under 35 U.S.C. § 6(b). Claim 43 is representative of the claims on appeal, and reads as follows:

43. A method of bonding orthodontic appliances to a patient's teeth comprising:
- providing orthodontic appliances for at least two teeth of the patient's dental arch;
 - providing a quantity of photocurable material for each appliance;
 - placing each orthodontic appliance on a corresponding tooth of the patient's dental arch such that the photocurable material is between the appliance and the tooth;
 - providing a substrate and an array of solid state light emitters mounted on the substrate,
 - placing the substrate and the array of light emitters in the oral cavity adjacent the orthodontic appliances such that the array of light emitters lie along a path that is located in an occlusal direction from the outer tips of the patient's teeth; and
 - activating the light emitters in order to direct light from the light emitters in a gingival direction across the surfaces of the teeth and toward the photocurable material.

The Examiner relies on the following references:

Cohen	US 3,949,477	Apr. 13, 1976
Hare	US 5,316,473	May 31, 1994

We affirm, but as our reasoning differs from that of the Examiner, we designate our affirmance as a new ground of rejection.

DISCUSSION

Claims 43-52 stand rejected under 35 U.S.C. § 103(a) as being obvious over the combination of Cohen and Hare.

Cohen is relied upon by the Examiner for teaching "a method of bonding orthodontic appliances to a patient's teeth comprising providing orthodontic appliances 14 for at least two teeth 20; providing a quantity of photocurable material for each appliance (column 3 line 23); placing each orthodontic appliance on a corresponding tooth such that the material is

between the appliance and the tooth (column 3 lines 25, 35); providing a substrate and an array of light emitters . . . in the oral cavity adjacent the orthodontic appliances (column 2 line 37, column 3 line 37).” (Ans.¹ 3.) Cohen is also relied upon for teaching “that the light emitters lie along a path that is located in an occlusal direction from the outer tip’s of the patient’s teeth,” and “activating the light emitters in order to direct light in a gingival direction across the surfaces of the teeth.” (*Id.*). According to the Examiner, Cohen does not teach the use of solid state light emitters as required by claim 1.

Hare is relied upon for teaching “a method of transmitting light in the oral cavity to cure dental material and the step of providing a substrate 10a and an array of solid state light emitters.” (*Id.* at 3-4.) Thus, according to the Examiner, it “would have been obvious to one of ordinary skill in the art at the time the invention was made to modify (replace) the light emitters of Cohen . . . with the solid state light emitters as in Hare (figure 2) in order to provide uniform emission and distribution of light to the intended area in view of Hare (column 2 line 18), and in turn lead to a more efficient process such as eliminating the need to maintain the substrate in the oral cavity over a long period of time.” (*Id.*)

“In rejecting claims under 35 U.S.C. § 103, the examiner bears the initial burden of presenting a *prima facie* case of obviousness. Only if that burden is met, does the burden of coming forward with evidence or argument shift to the applicant.” *In re Rijckaert*, 9 F.3d 1531, 1532 (Fed. Cir. 1993) (citations omitted). The question of obviousness is resolved on

¹ All references to the Answer are to the Examiner’s Answer mailed May 23, 2007.

the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) the level of ordinary skill in the art; (3) the differences between the claimed invention and the prior art; and (4) secondary considerations of nonobviousness, if any. *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966). The Supreme Court has recently emphasized that “the [obviousness] analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *KSR Int’l v. Teleflex Inc.*, 127 S. Ct. 1727, 1741 (2007). “The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *Id.* at 1739. Moreover, an “[e]xpress suggestion to substitute one equivalent for another need not be present to render such substitution obvious.” *In re Fout*, 675 F.2d 297, 301 (CCPA 1982).

Appellants argue that

there is no teaching or suggestion in any document, considered alone or in any combination, that would provide a method of bonding orthodontic appliances by (a) placing an array of solid state light emitters mounted on a substrate in the oral cavity adjacent the orthodontic appliances such that the solid state light emitters lie along a path that is located in an occlusal direction from the outer tips of the patient's teeth, or (b) activating solid state light emitters in order to direct light from the emitters in a gingival direction across the surfaces of the teeth and toward photocurable material that is between the appliances and the teeth.

(Br. 4.) More specifically, Appellants argue that Cohen does not disclose “a method of orthodontic bonding wherein the light is directed from the solid state emitters in a gingival direction across the surfaces of the teeth and

toward photocurable material;” rather, Cohen teaches an “apparatus that directs light or heat in a lingual direction toward orthodontic appliances.” (*Id.* at 5.)

We find, as did the Examiner (Ans. 3-4; *see supra*), that Cohen teaches a method of bonding orthodontic appliances to a patient's teeth comprising (1) providing orthodontic appliances for at least two teeth of the patient's dental arch; (2) providing a quantity of photocurable material for each appliance; and (3) placing each orthodontic appliance on a corresponding tooth of the patient's dental arch such that the photocurable material is between the appliance and the tooth as required by the method of claim 1. Cohen also teaches the claimed steps of (4) providing a substrate and an array of light emitters mounted on the substrate, (5) placing the substrate and the array of light emitters in the oral cavity adjacent the orthodontic appliances; and (6) activating the light emitters. Cohen, however, does not teach the use of solid state light emitters, does not teach placing the substrate and the light emitters *such that the array of light emitters lie along a path that is located in an occlusal direction from the outer tips of the patient's teeth*, and also fails to teach activating the lights emitters *in order to direct light from the light emitters in a gingival direction across the surfaces of the teeth and toward the photocurable material*, each of which is necessary to meet the limitations of claim 1. Hare, however, makes up those deficiencies.

Hare teaches a substrate with an array of solid state light emitters mounted on the substrate (Hare, Fig. 2, col. 4, ll. 33-36). The substrate is of a generally curved shape that is adapted to fit in the mouth (*id.* at col. 2, ll. 25-34), and provides substantially uniform light intensity over the entire

lower and side surfaces of the teeth (*id.* at col. 3, ll. 45-55). Finally, Hare teaches that although being primarily described as an apparatus and method for taking a dental impression, “those skilled in the art will recognize that the same procedures can be used for curing materials . . . associated with orthodontic appliances and other dental materials known to those skilled in the art.” (*Id.* at col. 9, ll. 16-21.)

Thus, Hare teaches a substrate that has an array of solid state light emitters that lie along a path that is located in an occlusal direction from the outer tips of the patient’s teeth. Note that the claims do not exclude the use of light emitters in addition to the light emitters that lie along a path that is located in an occlusal direction from the outer tips of the patient’s teeth. We note, however, that Hare also teaches that the light may be transmitted from a single plane that is adapted to be parallel to the alveolar ridge, which is found at the base of the gum (Hare, col. 2, ll. 34-37), thus Hare also suggests a substrate wherein the light emitters lie in a plane that is located in an occlusal direction from the outer tips of the patient’s teeth. Such light emitters, once activated, would direct light from the light emitters in a gingival direction across the surfaces of the teeth and toward the photocurable material. Thus, the combination of Cohen and Hare teaches the method of claim 43, and the rejection is affirmed. As Appellants do not argue claims 44, 45, 48, and 50-52 separately, they fall with claim 43. 37 C.F.R. § 41.37(c)(1)(vii). But as our reasoning differs from that of the Examiner, and in order to give Appellants a full and fair opportunity to respond, we designate our affirmance as a new ground of rejection.

Appellants argue further that Hare “is not directed toward orthodontic methods of bonding orthodontic appliances to teeth.” (Br. 6.) According to

Appellants, “[i]mpression trays of the type shown in the Hare patent are not normally used with patients that have orthodontic brackets since the impression material would tend to be torn and consequently distorted by the brackets when the impression material is pulled away from the teeth.” (*Id.*) Appellants argue further that “there is no suggestion or motivation, either in the documents or in the knowledge generally available to one of ordinary skill in the art, to modify the methods taught by these references,” asserting that the Examiner is engaging in impermissible hindsight (*id.* at 7-8).

As noted above, however, Hare specifically teaches that the ordinary artisan would recognize that the same procedures can be used for curing materials associated with orthodontic appliances. Thus, the ordinary artisan would understand that the substrate and array of solid state lights could be adapted for use to cure other materials, such as the photoadhesive of Cohen. As noted by the Court in *KSR*, “[a] person of ordinary skill is also a person of ordinary creativity, not an automaton.” 127 S. Ct. at 1742.

As to claims 46 and 47, Appellants argue that the “cited references do not disclose an indirect bonding placement device with solid state light emitters adjacent a channel that corresponds to the shape of at least a portion of the patient’s dental arch.” (Reply Br. 3.) According to Appellants, while Cohen teaches “the use of light sources for a tray with a channel,” the patent “does not teach the use of solid state light sources that lie along a path in an occlusal direction from [the] outer tips of the teeth and [that] are also located adjacent the channel.” (*Id.*)

This argument is also not convincing, because, as noted by Appellants, Cohen teaches the use of light sources in a tray with a channel. Hare then makes up the deficiency by teaching a tray with a channel having

a generally U-shape, in which the tray, or substrate, that has solid state light sources that lie along a path in an occlusal direction from the outer tips of the teeth and that are also located adjacent the channel.

Appellants argue as to claim 49, that the combination does not teach or suggest holding a mold, positioner, or tray by clamping it between the upper and lower teeth of the patient, and that such clamping would result in distortion of the trays of Cohen and Hare (Reply Br. 4). That argument is not convincing, however, as the Specification teaches that the substrate be lightly clamped “between the occlusal tips of the adjacent upper and lower teeth,” (Spec. p. 9, ll. 6-9), and the ordinary artisan would understand that the use of such light clamping to keep a dental substrate in place is well known and routine in the art. In addition, the use of light clamping as described in the Specification would not distort the tray of either Cohen or Hare. As noted by the United States Supreme Court,

If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.

KSR, 127 S. Ct. at 1740.

CONCLUSION

In summary, we agree with the Examiner that the combination of Cohen and Hare renders obvious the claimed method. But as our reasoning

differs from that of the Examiner, we designate our affirmance as a new ground of rejection.

TIME PERIOD FOR RESPONSE

This decision contains a new ground of rejection pursuant to 37 CFR § 41.50(b) (effective September 13, 2004, 69 Fed. Reg. 49960 (August 12, 2004), 1286 Off. Gaz. Pat. Office 21 (September 7, 2004)). 37 CFR § 41.50(b) provides "[a] new ground of rejection pursuant to this paragraph shall not be considered final for judicial review."

37 CFR § 41.50(b) also provides that the Appellants, WITHIN TWO MONTHS FROM THE DATE OF THE DECISION, must exercise one of the following two options with respect to the new ground of rejection to avoid termination of the appeal as to the rejected claims:

(1) *Reopen prosecution*. Submit an appropriate amendment of the claims so rejected or new evidence relating to the claims so rejected, or both, and have the matter reconsidered by the Examiner, in which event the proceeding will be remanded to the Examiner

(2) *Request rehearing*. Request that the proceeding be reheard under § 41.52 by the Board upon the same record

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED; 37 C.F.R. § 41.50(b)

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