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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte MASAYOSHI HOSOI and RIICHIRO TAKESHITA

Appeal 2011-008517
Application 11/565,145
Technology Center 3700

Before DEMETRA J. MILLS, ERIC GRIMES, and LORA M. GREEN,
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 rejection of claims 1-3, 6, and 9. We have jurisdiction under 35 U.S.C. § 6(b).

STATEMENT OF THE CASE

Claim 1 is representative of the claims on appeal, and reads as follows:

1. A insertion section flexible tube, comprising:
 - a flexible tube portion which includes a first core member and a first outer cover which covers the first core member, the flexible tube portion having a tip end and the first outer cover having a tip end part;
 - a bendable portion which includes a second core member and a second outer cover which covers the second core member, the second outer cover having a base end part, the bendable portion having a base end which is coupled to the tip end of the flexible tube portion;
 - a tightening string for tightening the tip end part of the first outer cover and the base end part of the second outer cover from the outer surfaces thereof;
 - and an adhesive agent for covering and securing the tightening string, wherein at least an outer surface and its vicinity of the first outer cover is formed of a constituent material having low adhesiveness with the adhesive agent, and a region of the outer cover which is covered by the adhesive agent has been subjected to a primary treatment with a primary treatment agent for enhancing the adhesiveness of the outer cover with respect to the adhesive agent;
 - wherein the low adhesiveness constituent material contains polyolefin as its main component, the primary treatment agent contains chlorinated polyolefin as its main component, and the adhesive agent is one or more selected from the group consisting of an epoxy-based adhesive agent, an acryl-based adhesive agent and a silicone-based adhesive agent.

The following grounds of rejection are before us for review:

- I. Claims 1, 6, and 9 stand rejected under 35 U.S.C. § 103(a) as being rendered obvious by the combination of Inoue,¹ Hosoi,² Whitbourne,³ and Konstorum⁴ (Ans. 4).
- II. Claims 2 and 3 stand rejected under 35 U.S.C. § 103(a) as being rendered obvious by the combination of Inoue, Hosoi, Whitbourne, and Konstorum, as further combined with Sato⁵ (Ans. 7).

We affirm, but designate our affirmance of claims 2 and 3 as a new ground of rejection.

ANALYSIS

Claims 1, 6, and 9 stand rejected under 35 U.S.C. § 103(a) as being rendered obvious by the combination of Inoue, Hosoi, Whitbourne, and Konstorum (*see* Ans. 4-6).

Inoue, as found by the Examiner discloses an endoscope that has an insertion section flexible tube (Ans. 4-5). The Examiner finds that Inoue teaches the use of “a tightening string ... for tightening the tip end part of the first outer cover and the base end part of the second outer cover from the outer surfaces thereof; and an adhesive agent ... for covering and securing the tightening string” (*id.* at 5).

¹ Inoue et al., US 5,386,816, issued Feb. 7, 1995.

² Hosoi et al., US 2005/0061381 A1, published Mar. 24, 2005.

³ Whitbourne, US 6,306,176 B1, issued Oct. 23, 2001.

⁴ Konstorum et al., US 6,475,140 B1, issued Nov. 5, 2002.

⁵ Sato et al., US 4,841,952, issued Jun. 27, 1989.

The Examiner notes:

Inoue does not expressly teach of ... an adhesive agent for covering and securing the tightening string, wherein at least an outer surface and its vicinity of the first outer cover is formed of a constituent material having low adhesiveness with the adhesive agent, and a region of the outer cover which is covered by the adhesive agent has been subjected to a primary treatment with a primary treatment agent for enhancing the adhesiveness of the outer cover with respect to the adhesive agent, wherein the low adhesiveness constituent material contains polyolefin as its main component, the primary treatment agent contains chlorinated polyolefin as its main component, and the adhesive agent is one or more selected from the group consisting of an epoxy-based adhesive agent, an acryl-based adhesive agent and a silicone-based adhesive agent.

(Id.)

The Examiner relies on Hosoi for teaching an endoscope, wherein the outermost layer of the insertion tube “is comprised of polyolefin to provide sufficient flexibility as well as heat and chemical resistance” *(id.)*.

The Examiner concludes that it would have been obvious to use a polyolefin outer cover as taught by Hosoi, which is a low adhesiveness constituent material, on the endoscope of Inoue, “to provide sufficient flexibility as well as heat and chemical resistance” *(id.)*.

The Examiner relies on Whitbourne for teaching “that it’s known in the art that polyethylene [a polyolefin] suffers from adherence issues and therefore needs to be treated by a coating agent” *(id. at 5-6)*. The Examiner finds further that Whitbourne discloses prior art methods of using chlorinated polyolefin coatings on polyethylene tubing in order to improve adhesiveness *(id. at 6)*.

The Examiner thus concludes further that it would be obvious to use the chlorinated polyolefin as taught by Whitbourne as a coating agent on the polyolefin outer cover of the endoscope as taught by the combination of Inoue with Hosoi in order to improve the bonding strength between the adhesive agent and the outer cover (*id.*).

The Examiner finds that Konstorum teaches an endoscope with a deflection cover, wherein wrapped thread may be used to help bind the deflection cover to the endoscope (*id.*). The Examiner finds further that Konstorum teaches that bands of epoxy may be disposed over the wrapped thread to seal and reinforce the binding (*id.*).

The Examiner thus concludes that it would have been obvious to use the epoxy based bands of Konstorum to bond the tightening string to the outer cover as taught by Inoue as Konstorum teaches that epoxy based bands may be disposed over the wrapped thread to seal and reinforce the binding (Ans. 6).

Appellants argue that each of Whitbourne, Hosoi, Inoue, and Konstorum teaches away from the combination (App. Br. 10). Appellants argue that Inoue teaches a monolayer outer cover (*id.* at 11). Appellants argue further that Konstorum teaches “that there are several disadvantages to a multiple layer construction” (*id.* at 12). Thus, Appellants assert, Konstorum is drawn to “a single-layer (i.e., monolayer) construction” (*id.* at 13).

Appellants assert that, in contrast, Hosoi “expressly teaches that a multilayer cover construction is required” (*id.*). Thus, Appellants assert that Hosoi “teaches that a multilayer cover construction is required, and teaches

away from a single layer cover construction” (*id.* at 14). Appellants thus argue that “there is no suggestion or motivation to make the proposed modification, and the Examiner has failed to set for[th] a prima facie case of obviousness” (*id.* at 16).

“The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007).

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 in the art 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.

Id. at 417. In determining whether obviousness is established by combining the teachings of the prior art, “the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art.” *In re Keller*, 642 F.2d 413, 425 (CCPA 1981). In addition, a reference disclosure is not limited only to its preferred embodiments, but is available for all that it discloses and suggests to one of ordinary skill in the art. *In re Lamberti*, 545 F.2d 747, 750 (CCPA 1976).

A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant. The degree of teaching away will of course depend on the particular facts; in general, a reference will teach away if it suggests that the line of development flowing from the reference’s disclosure is unlikely to be productive of the result sought by the applicant.

In re Gurley, 27 F.3d 551, 553 (Fed. Cir. 1994).

“The fact that the motivating benefit comes at the expense of another benefit ... should not nullify its use as a basis to modify the disclosure of one reference with the teachings of another. Instead, the benefits, both lost and gained, should be weighed against one another.” *Medichem S.A. v. Rolabo S.L.*, 437 F.3d 1157, 1165 (Fed. Cir. 2006).

Appellants’ arguments have been carefully considered, but are not found to be convincing. The Examiner’s combination suggests a multiple layer construction (*see, e.g.*, Ans. 8-9), thus the issue becomes whether Konstorum, as argued by Appellants, teaches away from the combination.

Konstorum teaches:

There are several disadvantages to a deflection cover according to a multiple layer construction. A multiple layer construction adds thickness to the endoscope; thickness is undesirable in minimally invasive surgical procedures. The added thickness may compromise the flex characteristics of the overall structure. An inflexible structure will impede the articulation of the endoscope's tip, rendering it more difficult for a surgeon to view the surgical site.

A multiple layer construction is also more prone to problems such as breakage and delamination during repeated bending cycles of the endoscope tip. Additionally, if the outer layer is damaged, contaminants may become encapsulated between it and an inner layer. Contamination of this nature is difficult to remove. The risk that one of these drawbacks will materialize is heightened by the relatively harsh and demanding nature of the surgical and sterilization environments for the endoscope.

It should be added that the use of a braided material in a deflection cover tube is undesirable because such material not only reinforces by restricting radial flex, but it also restricts longitudinal flex. Longitudinal flex is, in fact, desirable in a

deflection cover because it facilitates bending. It is also worth noting that construction of a deflection cover will be simpler and less expensive the fewer layers it has.

(Konstorum, col. 1, l. 60-col. 2, l. 16.)

Thus, while Konstorum teaches that there are disadvantages to a multiple layer construction of a flexible endoscope or related instrument, it does not state that a multiple layer construction will not work. And as evidenced by Hosoi and Konstorum, multilayer constructions of endoscopes are known in the art. In fact, the use of an outer cover comprised of polyolefin to provide sufficient flexibility as well as heat and chemical resistance as taught by Hosoi addresses some of the issues raised by Konstorum as to the use of a multiple layer endoscope construction. It would have been well within the level of skill of the ordinary artisan to balance the pros and cons of a multiple layer endoscope construction to arrive at the claimed invention.

Appellants argue further that Whitbourne teaches away from the Examiner's combination of references (App. Br. 17). Specifically, Appellants argue that while Whitbourne "discusses a chlorinated polyolefin coating on a polyethylene tubing," Whitbourne "specifically teaches away from using a chlorinated polyolefin coated on a polyethylene tubing" (*id.*). That is, according to Appellants, "the entirety of WHITBOURNE is directed to overcoming the shortcomings and disadvantages of a chlorinated polyolefin coating on a polyethylene tubing" (*id.*).

Again, Appellants' arguments are not convincing. Whitbourne teaches that there are disadvantages to a chlorinated polyolefin coating on a polyethylene tubing, such as the need to penetrate the coating into the

substrate, and thus “teaches away from use of such coatings on metals and inert non-penetrable surfaces” (Whitbourne, col. 8, ll. 38-40). Whitbourne teaches further that the coatings it discloses are “an improvement over coatings such as chlorinated polyolefin coatings on polyethylene tubing” (*id.* at col. 9, ll. 18-20). Specifically, according to Whitbourne:

The present coatings have unexpectedly superior adhesion and abrasion resistance as compared to the prior art coatings. Thus, while the prior art chlorinated polyolefin coating is suitable for less stringent applications such as on polyurethanes and polyesters that do not require high specific adhesion, the improved coatings of the present invention allow for use in a much broader range of applications. These additional applications include use on substrates such as metals, including nickel titanium alloy, nickel, gold, chrome, platinum and stainless steel, and plastics, including polyolefins such as polyethylene and polypropylene, silicones, latex rubbers, polyisocyanates, and others, for which the prior art coatings are not sufficiently adherent nor sufficiently abrasion resistant.

(*Id.* at col. 9, ll. 20-34.)

Thus, while Whitbourne does teach that the medical device coatings of its invention may have some superior properties, especially when it comes to use with substrates such as metal, it does not teach that chlorinated polyolefins will not work on a polyolefin substrate, such as polyethylene. Moreover, it would have been well within the level of skill of the ordinary artisan to balance the pros and cons of the different available coatings to arrive at the claimed invention.

As to claim 6, Appellants argue that the Examiner did not address any of the features of this claim (App. Br. 20). Appellants also reiterate the arguments made above with respect to claim 1 as to claims 6 and 9 (*id.* at

21-22). Specifically, Appellants reiterate their arguments that Whitbourne teaches away from the proposed combination (Reply Br. 2-3).

As to Appellants' arguments as to claim 1, and specifically as to Whitbourne, those arguments are not convincing for the reasons set forth above.

As to not addressing claim 6, the Examiner notes that claim 6 is drawn to the "insertion section flexible tube as claimed in claim 1, wherein the primary treatment is a treatment for modifying the outer surface of the first outer cover" (Ans. 10). The Examiner notes that as stated in the rejection, "Whitbourne teaches of providing a chlorinated polyolefin coating on a polyethylene tubing (outer cover), wherein providing a coating on the outer surface of the tubing is considered modifying the outer surface" (*id.*). We thus agree with the Examiner that the limitations were addressed and are rendered obvious by the combination of references relied upon by the Examiner.

We therefore conclude that the Examiner has set forth a prima facie case of obviousness as to claims 1, 6, and 9.

NEW GROUND OF REJECTION

The Examiner rejects claims 2 and 3 as being rendered obvious by the combination of Inoue, Hosoi, Whitbourne, and Konstorum, as further combined with Sato (Ans. 7).

Claim 2 is drawn to the "insertion section flexible tube as claimed in claim 1, wherein the primary treatment is a treatment for penetrating the primary treatment agent into the first outer cover from the outer peripheral

surface thereof to a predetermined depth in a thickness direction of the outer cover.” Claim 3 further defines the depth to “greater than 30% of the thickness of the first outer cover.”

The Examiner notes that the combination of Inoue, Hosoi, Whitbourne, and Konstorum does not “expressly teach of the primary treatment agent penetrating the first outer cover to a predetermined depth in the thickness direction” (Ans. 7).

The Examiner finds that Sato teaches an endoscope that has an outer cover, wherein the recess is formed to a depth equivalent to the thickness of the fastening string and adhesive (*id.*). The Examiner thus concludes that “[i]t would have been obvious to one of ordinary skill in the art at the time of the invention to provide the endoscope of Inoue with the recess of Sato to create a substantially flush surface along the insertion tube [to] prevent the endoscope from becoming caught on tissue within the body during insertion” (*id.*).

As to the rejection of claims 2 and 3, Appellants argue that the Examiner did not address any of the features of these claims (App. Br. 23-24). We agree, and reverse the rejection. We do conclude, however, that the combination of Inoue, Hosoi, Whitbourne, and Konstorum renders claims 2 and 3 obvious. As our reasoning differs from that of the Examiner, we designate the rejection of claims 2 and 3 as a new ground of rejection.

Whitbourne specifically teaches that chlorinated polyolefin treatment agents (i.e., coatings) “are preferably penetrated into the substrate,” that is, the polyethylene tubing (Whitbourne, col. 8, ll. 36-39). Thus, it would have been obvious to the ordinary artisan to penetrate the chlorinated polyolefin

treatment agent as taught by Whitbourne into the polyethylene tubing of Hosoi because Whitbourne teaches that such agents are preferably penetrated into the substrate. In addition, as to claim 3, in the absence of unexpected results, it would have been well within the level of skill of the ordinary artisan to determine the correct level of penetration in the substrate to have the desired amount of adhesion. *See In re Aller*, 220 F.2d 454, 456 (CCPA 1955) (“[W]here general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.”).

As to claim 2, Appellants argue that Whitbourne “provides no teaching or suggestion (nor has the Examiner identified any teaching) that the treatment agent of WHITBOURNE is capable of penetrating into the first outer cover” (Reply Br. 4).

Appellants’ argument is not convincing, because as noted above, Whitbourne does address penetrating the treatment agent into the substrate.

SUMMARY

We affirm the rejection of claims 1, 6, and 9 under 35 U.S.C. § 103(a) as being rendered obvious by the combination of Inoue, Hosoi, Whitbourne, and Konstorum. In addition, claims 2 and 3 are newly rejected under 35 U.S.C. § 103(a) as being rendered obvious by the combination of Inoue, Hosoi, Whitbourne, and Konstorum.

TIME PERIOD FOR RESPONSE

Regarding the affirmed rejection(s) that have not been denominated as new grounds of rejection, 37 C.F.R. § 41.52(a)(1) provides “Appellant[s] may file a single request for rehearing within two months of the date of the original decision of the Board.”

This decision contains new grounds of rejection pursuant to 37 C.F.R. § 41.50(b). 37 C.F.R. § 41.50(b) provides “[a] new ground of rejection pursuant to this paragraph shall not be considered final for judicial review.”

37 C.F.R. § 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 grounds 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). *See* 37 C.F.R. §1.136(a)(1)(iv)(2007).

Should the Appellant elect to prosecute further before the Examiner pursuant to 37 C.F.R. § 41.50(b)(1), in order to preserve the right to seek review under 35 U.S.C. §§ 141 or 145 with respect to the affirmed rejection, the effective date of the affirmance is deferred until conclusion of the

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prosecution before the Examiner unless, as a mere incident to the limited prosecution, the affirmed rejection is overcome.

If the Appellant elects prosecution before the Examiner and this does not result in allowance of the application, abandonment or a second appeal, this case should be returned to the Patent Trial and Appeal Board for final action on the affirmed rejection, including any timely request for rehearing thereof.

AFFIRMED; 37 C.F.R. § 41.50(b)

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