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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte LINDA S. BAKER and FREDERIC CHRISTIAN WAGNER

Appeal 2015-007748
Application 13/418,599
Technology Center 1700

Before TERRY J. OWENS, JULIA HEANEY, and BRIAN D. RANGE, *Administrative Patent Judges*.

OWENS, *Administrative Patent Judge.*

DECISION ON APPEAL

STATEMENT OF THE CASE

The Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's rejection of claims 1–19. We have jurisdiction under 35 U.S.C. § 6(b).

The Invention

The Appellants claim a process for correcting defects in a glass optical fiber's primary coating. Claim 1 is illustrative:

> 1. A process for correcting defects in a primary coating on a glass optical fiber comprising:
>
> (a) providing an optical fiber configured for propagation of an optical signal;

(b) coating the optical fiber with a composition comprising a thermoplastic polyurethane and at least one acrylate monomer;

(c) curing the composition to form a primary coating covering an outer surface of the optical fiber, the primary coating comprising a thermoplastic product of the polyurethane and the at least one acrylate monomer;

(d) coating the optical fiber with at least one secondary coating layer disposed over the primary coating;

(e) heating the coated fiber to a temperature above the melting temperature of the thermoplastic product to cause the primary coating to flow and correct defects; and

(f) cooling the coated fiber to a temperature below the melting temperature of the thermoplastic product to provide a substantially defect free primary coating.

The References

Moriyama	US 5,484,560	Jan. 16, 1996
Fabian	US 2003/0053782 A1	Mar. 20, 2003
Fewkes	US 2003/0095770 A1	May 22, 2003

The Rejections

The claims stand rejected under 35 U.S.C. § 103 as follows: claims 1–16, 18 and 19 over Fewkes in view of Moriyama and claim 17 over Fewkes in view of Moriyama and Fabian.

OPINION

We reverse the rejections. We need address only claim 1, which is the sole independent claim.[1] That claim requires heating a glass optical fiber

[1] The Examiner does not rely upon Fabian for any disclosure that remedies the deficiency in the references applied to the independent claim (Final Act. 6).

coated with a primary coating to a temperature which causes the primary coating to flow and thereby correct primary coating defects.[2]

Fewkes discloses a coated optical fiber made by "fabricating glass fiber **10** (core **12** and cladding layer **14**), coating the glass fiber with the primary coating composition of the present invention, and polymerizing the composition to form the primary coating material **16**. Optionally, secondary coating composition **18** can be applied to the coated fiber either before or after polymerizing the primary coating" (¶ 125). "The coating compositions are then cured to produce the coated optical fiber. The method of curing can be thermal, chemical, or radiation induced, such as by exposing the un-cured coating composition on the glass fiber to heat or ultraviolet light or electron beam, depending upon the nature of the coating composition(s) and polymerization initiator being employed" (¶ 126). The primary coating material (16) preferably includes a (meth)acrylate monomer and can include a polymer which can be a multiblock copolymer having more than 3 blocks and including a thermoplastic polyurethane (¶¶ 39, 52, 53). The thermoplastic polymer softens and can flow when heated and, on cooling, hardens and retains the shape imposed at elevated temperature (¶ 53).

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[2] The Appellants state that "[t]he compositions used for preparing the primary coatings of the various embodiments described herein are substantially free of cross linkers and chemical cross links. Rather, the compositions provide virtual cross links that make it possible to heal the coating defects by application of heat. The virtual cross links involve hydrogen bonding and/or other non-covalent and/or non-ionic bonding after curing and solidification, with the resulting cured composition being a thermoplastic material that can be reheated, melted or caused to reflow, and be reshaped to facilitate self-healing and correction of coating defects." (Spec. ¶ 22).

Moriyama discloses "a surface-treating method for improving coating performance, printability, adhesiveness and the like, when a molded article having a three-dimensional shape, made by injection molding and the like, or a sheet type article, made by extrusion molding and the like, is subjected to a coating process, a printing process, or a process of adhering it to another article" (col. 1, ll. 11–17). The method comprises "heating only a surface layer of the resin article up to a melting point of the thermoplastic resin or a higher temperature followed by cooling the surface layer" (col. 3, ll. 42–45). "Even if there exist fine flaws or unevenness, when a surface layer of the resin article is heated to melt, the fine flaws or unevenness becomes homogeneous and a relatively smooth surface is formed" (col. 7, ll. 31–35).

The Examiner finds that "it is clear that [Moriyama's] process is useful for any thermoplastic product, including coating 16 of Fewkes, due to its ability to flow then heated and harden when cooled" (Ans. 3) and that "one of ordinary skill in the art would not have needed an explicit statement in either of the references to appreciate that defects necessarily exist (i.e., in the sense that no process is perfect) in the coating layer of Fewkes and been motivated to correct those defects" (Ans. 2). In support of that finding, the Examiner points out that Fewkes's primary coating material (16) can include an antioxidant (¶ 78) and that Moriyama discloses that "when a resin article is molded, an antioxidant, a plasticizer or the like contained in the resin article bleeds out on the resin article surface to deteriorate conditions of the resin article surface" (col. 1, ll. 33–36).

Establishing a prima facie case of obviousness requires an apparent reason to modify the prior art as proposed by the Examiner. *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007).

The Examiner does not establish that optical fiber primary coating surface defects was a known problem in the art. The Examiner's finding that one of ordinary skill in the art would have appreciated "that defects necessarily exist (i.e., in the sense that no process is perfect) in the coating layer of Fewkes and been motivated to correct those defects" (Ans. 2) is mere speculation. Also, the Examiner has not established that Moriyama's disclosure that a resin article, when molded, can be deteriorated by an antioxidant bleeding out onto its surface (col. 1, ll. 33–36) would have indicated to one of ordinary skill in the art that an antioxidant in an optical fiber primary coating layer would cause such deterioration.[3]

Thus, the Examiner has not provided adequate factual support for the conclusion that "it would have been obvious to one having ordinary skill in the art at the time the invention was made to practice the method of Fewkes and heat and cool the primary coating layer in order to correct defects because Fewkes teaches that the primary coating layer is capable of this behavior and Moriyama teaches that this behavior can be utilized to fix defects in thermoplastic" (Final Act. 4). *See In re Warner*, 379 F.2d 1011, 1017 (CCPA 1967) ("A rejection based on section 103 clearly must rest on a factual basis, and these facts must be interpreted without hindsight

[3] The Appellants acknowledge that "a frequent problem with low modulus primary coatings is that they are prone to defects introduced by fiber processing and/or use in the field. These defects appear as rips in the coatings or delaminations from the glass, resulting in comprised [sic] fiber performance, e.g., significant undesirable attenuation" (Spec. ¶ 4). The Examiner does not rely upon that acknowledgement and establish that the problem was known in the art rather than being known only to the Appellants.

reconstruction of the invention from the prior art"). Accordingly, we reverse the rejections.

DECISION/ORDER

The rejections under 35 U.S.C. § 103 of claims 1–16, 18, and 19 over Fewkes in view of Moriyama and claim 17 over Fewkes in view of Moriyama and Fabian are reversed.

It is ordered that the Examiner's decision is reversed.

REVERSED