

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte DAE-HO CHOO
and SANG-UK JUNG

Appeal 2008-5272
Application 11/028,642
Technology Center 2800

Decided: December 10, 2008

Before BRADLEY R. GARRIS, ROMULO H. DELMENDO, and
JEFFREY B. ROBERTSON, *Administrative Patent Judges*.

ROBERTSON, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellants appeal under 35 U.S.C. § 134(a) (2002) from the Examiner’s final rejection of pending claims 56, 57, and 59-65.¹ (Examiner’s Answer entered January 17, 2007, hereinafter “Ans”). We have jurisdiction pursuant to 35 U.S.C. § 6(b) (2002).

We REVERSE and ENTER A NEW GROUND OF REJECTION under 37 C.F.R. § 41.50(b) (2007).

Appellants’ claimed invention is directed to a method for manufacturing liquid crystal displays (LCD) including forming a spacer on a first substrate or a second substrate and depositing a sealant on the first substrate. (Spec. 5, ll. 5-16; 7, l. 22 – 8, l. 4). The sealant is exposed to a first hardening process to partially harden the sealant. (Spec. 9, ll. 2-5). The method further includes depositing liquid crystal material on the first substrate and conjoining the first and second substrate in a vacuum state. (Spec. 9, ll. 13-18; 11, ll. 3-6). The method then includes fully hardening the sealant. (Spec. 9, ll. 17-20). The steps of forming the spacer, depositing the sealant, depositing the liquid crystal, conjoining the first and second substrate, and fully hardening the sealant are performed as an in-line process. (Spec. 3, ll. 6-13). Appellants’ Specification states that by partially hardening the sealant, no reaction takes place between the liquid crystal layer and the sealant. (Spec. 8, l. 20 - 9, l. 1).

Claim 56, the only independent claim on appeal, recites:

56. A method for manufacturing liquid crystal displays, comprising steps of:

¹ Claims 1-55 and 58 have been canceled. (Appeal Brief filed October 6, 2006, hereinafter “Br.,” 15).

forming a spacer on a first substrate or a second substrate;

depositing a sealant on the first substrate;

exposing the sealant to an ultraviolet ray to partially harden the sealant;

depositing liquid crystal on the first substrate;

conjoining the first substrate and the second substrate in a vacuum state; and

fully hardening the sealant,

wherein the steps of forming the spacer, depositing the sealant, depositing the liquid crystal, conjoining the first substrate and the second substrate, and fully hardening the sealant are performed as in-line processes.

The prior art relied upon by the Examiner in rejecting the claims on appeal is:

Chiklis	4,647,157	Mar. 3, 1987
von Gutfeld	6,055,035	Apr. 25, 2000

The Examiner rejected claims 56, 57, and 59-65 under 35 U.S.C. § 103(a) as being obvious over von Gutfeld in view of Chiklis.

The Examiner found that von Gutfeld describes the claimed process except for partially hardening the sealant and performing the claimed steps as part of an in-line process. (Ans. 4 and 5). The Examiner found that Chiklis describes drying a sealant prior to adding a liquid crystal material to prepare an LCD assembly where leakage and current characteristics of the cell were not degraded. (Ans. 5). The Examiner concluded that it would have been obvious to add a partial hardening process to the process of von

Gutfeld in view of Chiklis in order to form an LCD assembly where leakage and current characteristics of the cell were not degraded. (Ans. 5). The Examiner also concluded that it would have been obvious to have performed the process as an in-line process in order to make the process more efficient. (Ans. 6).

Appellants contend that von Gutfeld in combination with Chiklis fails to disclose that the sealant is partially hardened through exposure to an ultraviolet ray. (Br. 5 and 6). Appellants argue that “drying” in Chiklis means polymerizing, which is not hardening. (Br. 6-9). Appellants also argue that ultraviolet ray is not equivalent to heating because heat polymerizes the sealant and ultraviolet ray hardens the sealant. (Br. 11). Appellants contend that Chiklis teaches away from partially hardening the sealant because Chiklis teaches preventing interaction between the sealant and the liquid crystal material by selecting the sealant material and does not teach or suggest achieving the same result by partially hardening the sealant. (Br. 10).

ISSUE

Based on the contentions of the Examiner and the Appellants, the issue is: Did the Examiner err in determining that it would it have been obvious to modify von Gutfeld’s LCD manufacturing process by partially hardening the sealant prior to depositing the liquid crystal material in view of Chiklis’ sealant drying step?

FINDINGS OF FACT

The record supports the following Findings of Fact (FF) by a preponderance of the evidence.

1. von Gutfeld describes a method for manufacturing LCDs in which a light polymerizing sealant affixes a first substrate to a second substrate where the adhesive remains flexible until a final cure. (Abstract; Col. 7, ll. 23-28)
2. von Gutfeld describes that ultraviolet light cures the sealant by a process well-known in the art. (Col. 7, ll. 35).
3. Chiklis describes a fluoroelastomeric terpolymer sealant for use in liquid crystal cells that resists attack from the liquid crystal material. (Col. 1, ll. 56-68).
4. Chiklis' Example 1 states:

A liquid crystal display device having a perimeter seal of fluoroelastomeric terpolymer was prepared in the following manner. *A 25% by weight solution of Fluorel FT-2481 (a 44/32/19 by weight fluoroelastomeric terpolymer of vinylidene fluoride, hexafluoropropylene and tetrafluoroethylene) in methyl propyl ketone was employed for the application of sealant to each of the elements to be joined in the construction of the display.* Adhesive stripes of the sealant solution were applied by extrusion at about 0.5 to 1.5 mil thickness (0.013 to 0.038 mm.) along the edges of a web of a first element comprising a polyethylene terephthalate support, polarizing layer, a line-pattern electrode layer and an alignment layer . . . *The extruded sealant stripes were dried at 66° C . . . Liquid crystal material was applied at the nip of the interfacing web sections and squeegeed by roll to uniformly spread the liquid crystal material between the web sections.* Simultaneously with the application of liquid crystal material, the elements were sealed by a heated laminator (about 20 to 40 seconds at a temperature of 149° to 163° C. (300° -325° F.). The resulting perimeter seal was not degraded by the liquid crystal material confined thereby and did not undergo softening on storage.

Leakage and current characteristics of the cell were not degraded.

(Col. 8, ll. 30-63) (emphases added).

5. Appellants' Specification states that the sealant is exposed to a first hardening process in which a portion of the sealant forms a hardened reaction prevention layer and a portion that has not been hardened. (Spec. 9, ll. 1-5, Fig. 6A).
6. Appellants' Specification states that in a second hardening process, the sealant is fully hardened completing the attachment of a first and second substrate. (Spec. 9, ll. 9-12).

PRINCIPLES OF LAW

As the Court in *KSR* stated, “[o]ften, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue. To facilitate review, this analysis should be made explicit. *See In re Kahn*, 441 F.3d 977, 988 (CA Fed. 2006) (“[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”).” *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1740-41 (2007).

It is well settled that all the claim limitations must be taught or suggested by the prior art to establish a prima facie case of obviousness. *In re Royka*, 490 F.2d 981, 985 (CCPA 1974).

ANALYSIS

The Examiner found that the drying step performed at 66° C in Example 1 of Chiklis is responsible for the leakage and current characteristics of Chiklis' LCD assembly. (Ans. 5 and 10). However, the Examiner fails to provide a sufficient basis for this finding. In addition to the drying step, Chiklis also describes that a heat laminator that operates at a temperature of 149° to 163° C is used to seal the LCD assembly upon simultaneously depositing the liquid crystal material. Chiklis does not attribute the leakage and current characteristics of the LCD assembly to the drying or sealing steps. Indeed, Chiklis states that the fluoroelastomeric terpolymer sealant is employed for preventing the liquid crystal material from attacking the sealant. Therefore, Chiklis does not provide support for the Examiner's position that the drying step performed at 66° C in Example 1 prevents attack of the liquid crystal material on the sealant.

Chiklis does not disclose any special definition of "dried" as used in Example 1. Thus, Chiklis uses the word "dried" to mean "to rid of moisture or liquid."² In Example 1, Chiklis describes removing methyl propyl ketone solvent from the extruded sealant stripes through drying at 66° C. One of

² Webster's Third New International Dictionary Unabridged 696 (1971). "Dried" is not limited to removing water as argued by Appellants, but may constitute removing other liquids per the Dictionary definition. In addition, since Chiklis starts with a fluoroelastomeric terpolymer, "dried" in Example 1 does not mean "polymerized." (See Br. 7; Ans. 9 and 10).

ordinary skill in the art would not have equated von Gutfeld's ultraviolet light curing process with drying extruded sealant stripes at 66° C. von Gutfeld uses ultraviolet light to perform the final cure of the sealant material, and not to remove solvent from a sealant solution after extruding the sealant solution onto a substrate. One of ordinary skill in the art would have recognized that the heating performed in Chiklis' drying step at 66° C serves a different function than the ultraviolet light curing process disclosed in von Gutfeld. The Examiner has provided no other sufficient reason as to why one of ordinary skill in the art would have modified von Gutfeld's process to include partially hardening the sealant through exposure to an ultraviolet ray as claimed. As a result, von Gutfeld in view of Chiklis fails to teach or suggest exposing the sealant to an ultraviolet ray to partially harden the sealant prior to depositing liquid crystal on the first substrate.

NEW GROUNDS OF REJECTION

The following new ground of rejection is entered pursuant to 37 C.F.R. § 41.50(b) (2007).

Claims 56, 57, and 59-65 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the Specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The evidence relied upon in rejecting the claims on appeal is:

Choo 6,657,701 Dec. 2, 2003

Amendment filed June 29, 2004 in parent application 10/602,053

Appeal 2008-5272
Application 11/028,642

Application Transmittal filed April 20, 2001 in parent application 09/838,385

Findings of Fact Pertaining to the New Ground of Rejection

7. The present application is a Continuation of Application No. 10/602,053, filed June 24, 2003, now abandoned, which is a Continuation of Application No. 09/838,385, filed April 20, 2001, now U.S. Patent 6,657,701. (Br. 1).
8. Appellants' Specification states that the sealant "may [be] formed of a heat-hardening material or an infrared ray-hardening material...." (Spec. 8, ll. 2-4).
9. Appellants introduced the limitation "exposing the sealant to an ultraviolet ray to partially harden the sealant" as part of new independent claim 56 in a Preliminary Amendment filed on January 5, 2005. (Preliminary Amendment, 3).
10. Appellants did not point to any support for the recitation of "ultraviolet ray" in the Specification. (Preliminary Amendment filed on January 5, 2005).
11. Appellants amended the Specification to incorporate by reference the content of Korean Priority Document 2000-21079. (Preliminary Amendment filed on January 5, 2005, 2).
12. In Parent Application 10/602,053, Appellants amended page 8 of the Specification to change "infrared ray-hardening material" to "ultraviolet ray-hardening material." (Amendment filed June 29, 2004, 6).

13. Appellants stated that “[t]he specification has been amended to correct an error occurred during the translation.” (Amendment filed June 29, 2004 in Parent Application 10/602,053, 11).
14. Appellants did not provide a certified translation of the priority document or a declaration with the amendment. (Amendment filed June 29, 2004 in Parent Application 10/602,053).
15. The Application Transmittal of Parent Application 09/838,385 fails to incorporate Korean Priority Document 2000-21079 by reference. (Application Transmittal filed April 20, 2001).
16. Parent Application 09/838,385 contains no statement that the Korean Priority Document is incorporated by reference. (U.S. Patent 6,657,701).
17. Parent Application 09/838,385 was not amended to state “ultraviolet ray-hardening material” as in the 10/602,053. (U.S. Patent 6,657,701, Col. 4, ll. 62-64).

Claim 56 recites that the sealant is partially hardened by exposing it to an ultraviolet ray. However, the Specification only discloses sealants that harden by exposure to heat or infrared rays. Appellants have failed to point to any support for the claimed limitation in the Specification. In Parent Application 10/602,053, Appellants amended the Specification, changing “infrared” to “ultraviolet,” in order to correct an error in translation. However, there is nothing in the original Specification which would lead one skilled in the art to conclude that the original disclosure of infrared is in error. *See Ex parte Bondiou*, 132 USPQ 356 (Bd. App. 1961). Appellants also amended the present Specification to incorporate the Korean Priority

Document by reference. However, Application No. 09/838,385, the original application, fails to incorporate the Korean Priority Document by reference. Therefore, the recitation of an ultraviolet ray constitutes new matter, which is not supported by the original disclosure. *See MPEP § 201.06(c)(IV) [R-5], 37 C.F.R. § 1.57 (2007).*

CONCLUSION

The Examiner erred in determining that it would have been obvious to modify von Gutfeld's LCD manufacturing process by partially hardening the sealant prior to depositing the liquid crystal material in view of Chiklis' sealant drying step.

Claims 56, 57, and 59-65 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement.

ORDER

We reverse the Examiner's decision rejecting claims 56, 57, and 59-65 under 35 U.S.C. § 103(a) as being unpatentable over von Gutfeld in view of Chiklis.

This decision contains a new ground of rejection pursuant to 37 C.F.R. § 41.50(b). 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 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

Appeal 2008-5272
Application 11/028,642

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 appeal may be extending under 37 C.F.R. § 1.136(a)(1)(iv).

REVERSED

NEW GROUND OF REJECTION (37 C.F.R. §41.50(b))

PL initial:
sld

F. CHAU & ASSOCIATES, LLC
130 WOODBURY ROAD
WOODBURY, NY 11797