

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ELIZABETH CHING LING FUNG, KEE YEAN NG,
and HONG HUST YEOH

Appeal 2009-002776
Application 10/779,116
Technology Center 2800

Decided:¹ June 30, 2009

Before EDWARD C. KIMLIN, CHARLES F. WARREN, and
TERRY J. OWENS, *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 1-4, 6, 7, 11-13, 17-19, 21, and 24. Claims 8, 10, 15, and 22, which are all of the other pending claims, stand withdrawn from consideration by the Examiner. We have jurisdiction under 35 U.S.C. § 6(b).

¹ The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, begins to run from the Decided Date shown on this page of the decision. The time period does not run from the Mail Date (paper delivery) or Notification Date (electronic delivery).

The Invention

The Appellants claim a light emitting diode display and a method for making it. Claim 1 is illustrative:

1. A light emitting diode display device, comprising:

a substrate comprising a first conductive portion and a second conductive portion;

a light emitting diode die coupled to said first conductive portion;

a wire bond coupled to said light emitting diode die and coupled to said second conductive portion;

a non-gaseous encapsulant coating said light emitting diode die and surrounding said wire bond and extending above said substrate such that said light emitting diode die and said wire bond are encapsulated between said substrate and said non-gaseous encapsulant coating; and

an overlay bonded to said light emitting diode display device above said non-gaseous encapsulant coating, said overlay comprising an opaque area and a transparent area, said transparent area and said opaque area both being illuminated by said light emitting diode, while only light from said transparent region leaves said light emitting display device, said overlay having a glass transition temperature of at least 260 degrees Celsius.

The References

Usui	3,869,637	Mar. 4, 1975
Appeldorn	4,146,883	Mar. 27, 1979
Stein	4,853,593	Aug. 1, 1989
Aitken	6,998,776 B2	Feb. 14, 2006 (filed Apr. 16, 2003)

The Rejections

The claims stand rejected under 35 U.S.C. § 103 as follows: claims 1, 4, 6, 7, and 11 over Stein in view of Aitken and Usui, and claims 1-4, 6, 7, 11-13, 17-19, 21, and 24 over Appeldorn in view of Aitken and Usui.

OPINION

The rejection over Stein in view of Aitken and Usui is affirmed as to claims 1, 4, 7, and 11, and reversed as to claim 6. The rejection over Appeldorn in view of Aitken and Usui is affirmed as to claims 1-4, 6, 7, 11-13, 17, 18, 21, and 24, and reversed as to claim 19.

*Rejection of claims 1, 4, 6, 7, and 11 over
Stein in view of Aitken and Usui*

Claims 1, 4, 7, and 11

Issue

Have the Appellants shown reversible error in the Examiner's determination that Stein discloses a substrate comprising a first conductive portion and a second conductive portion?

Findings of Fact

Stein discloses a light emitting diode (LED) display comprising a conductor tape (7) formed as a lead frame (col. 3, ll. 37-38). Conductor tape 7 has two portions, one of which (right side portion in Figure 2) is coupled to an LED (3), and the other of which (left side portion in Figure 2) is coupled to one end of a wire, the other end of the wire being coupled to LED 3 (Fig. 2).

Analysis

The Appellants argue (Br. 11):

Neither Stein, Aitken, nor Usui either in combination or individually disclose a substrate having a first conduction [sic, conductive] portion and a second conductive portion. Stein shows conductor tape 7 formed as a so-called lead frame, not as a substrate (Fig. 2, column 3, lines 36-38).

“[D]uring examination proceedings, claims are given their broadest reasonable interpretation consistent with the specification.” *In re Translogic Tech. Inc.*, 504 F.3d 1249, 1256 (Fed. Cir. 2007), quoting *In re Hyatt*, 211 F.3d 1367, 1372 (Fed. Cir. 2000).

The Appellants’ Specification states that the substrate can be a lead frame (Spec. 6:14-15; claim 11). Hence, Stein’s lead frame is a substrate as the term “substrate” reasonably would have been most broadly construed consistently with the Appellants’ Specification.

The Appellants argue that “[i]t appears that the Examiner’s proposed combination of Stein, Aitken, and Usui is based solely on hindsight derived from the Appellants’ specification” (Br. 17).

The Appellants, however, have provided no explanation in support of that argument.

Conclusion of Law

The Appellants have not shown reversible error in the Examiner’s determination that Stein discloses a substrate comprising a first conductive portion and a second conductive portion.

Claim 6

Issue

Have the Appellants shown reversible error in the Examiner’s determination that Stein discloses an epoxy encapsulant coating?

Findings of Fact

Stein discloses “a transparent synthetic resin” light guide (1) (col. 2, ll. 51-52; col. 3, l. 21-22; Fig. 2) which corresponds to the Appellants’ encapsulant coating (250, Fig. 2A).

Analysis

The Appellants argue that Stein discloses a synthetic resin, and that not all synthetic resins are epoxies (Br. 17).

The Examiner argues (Ans. 10):

As is understood in the art, epoxies are adhesives that are at least partially made from a resin. Stein teaches a “synthetic resin” that forms the non-gaseous encapsulant (light guide 4; *see* col. 2, lines 50-53), and further states that the light guide material preferably has an adhesive property in order to hold the LED package together *see* col. 2, lines 57-61). Thus, Stein teaches an adhesive resin used as the non-gaseous encapsulant, as claimed.

The Examiner’s argument that Stein’s transparent synthetic resin has an adhesive property and, therefore, is an epoxy is not persuasive because the Examiner has not established that all adhesive resins are epoxies. An epoxy has “an –O– bridge in a molecule attached to different C atoms, which are otherwise united.”² The Examiner has not established that Stein’s transparent synthetic resin includes such a structure or explained how Stein would have rendered *prima facie* obvious, to one of ordinary skill in the art, the use of an epoxy as the transparent synthetic resin light guide material.

Conclusion of Law

The Appellants have shown reversible error in the Examiner’s determination that Stein discloses an epoxy encapsulant coating.

² *Hackh’s Chemical Dictionary* 244 (McGraw-Hill 1972).

*Rejection of claims 1-4, 6, 7, 11-13, 17-19, 21, and 24
over Appeldorn in view of Aitken and Usui*

Claims 1-4, 6, 7, 11-13, 17-18, 21, and 24

Issue

Have the Appellants shown reversible error in the Examiner's determination that Appeldorn discloses wire bonds coupling the LED and the substrate's second conductive portion?

Findings of Fact

Appeldorn discloses a display comprising a substrate (26) having one or more recesses (33) for receiving an LED chip (27) having a plurality of electrodes (34) connected to conductors (43) on a lead conductor tape assembly (28) (col. 5, ll. 17-22, 29-30, 56-61).

Analysis

The Appellants argue (Br. 21-22):

Neither Appeldorn, Aitken, nor Usui either in combination or individually disclose wire bonds coupling each LED die to the second conductive portion. The Examiner indicates that wire bonds 43 are disclosed in Appeldorn (Final Office Action, pg. 5). Appeldorn does not disclose wire bonds 43. Rather, Appeldorn discloses tape assembly conductors 43 (See col. 6, lines 55-57).

Appeldorn's conductors 43 are called "tape assembly conductors" (col. 6, ll. 56-57) because they are on lead conductor tape assembly 28 (col. 5, ll. 58-61). The disclosed dimensions of conductors 43 (about 0.03-0.06 mm thick and as little as 0.05 mm wide (col. 5, ll. 66-68)) indicate that they reasonably can be considered to be wires.

The Appellants argue that the Examiner's combination of Appeldorn, Aitken and Usui is based solely upon hindsight (Br. 23).

The Appellants, however, have provided no explanation in support of that argument.

Conclusion of Law

The Appellants have not shown reversible error in the Examiner's determination that Appeldorn discloses wire bonds coupling the LED and the substrate's second conductive portion.

Claim 19

Issue

Have the Appellants shown reversible error in the Examiner's determination that Appeldorn discloses an overlay attached to a top housing surface by a layer of double-sided tape?

Findings of Fact

Appeldorn discloses that the display includes an inner cover (32) that mounts an outer cover (31) and is affixed to tape assembly 28 and/or substrate 26 (col. 6, ll. 8-10). Outer cover 31 has downwardly extending ribs (52) that fit into slots or notches (53) in recesses (54) of inner cover (32) (col. 6, ll. 28-31).

Analysis

The Appellants argue (Br. 31-32):

Appeldorn teaches (Column 5, lines 10-12) the use of "a beam lead tape assembly 28 for connecting the chips to a source of electrical signals to activate the LED's for emitting light." Claim 19 requires the presence of double-sided tape that attaches the overlay to the top surface of the housing. The Examiner has not pointed to any teaching that the tape in Appeldorn satisfies this requirement.

The Examiner argues that Appeldorn's substrate 26 forms a housing (Ans. 6) or part of a housing (Ans. 12).

The Appellants' claim 17, from which claim 19 depends, requires a housing coupled to a substrate. Because Appeldorn's substrate 26 cannot reasonably be considered to be coupled to itself, it cannot correspond to all or part of the Appellants' housing.

The Examiner argues that Appeldorn's outer (31) and inner (32) covers together correspond to the Appellants' overlay and are attached to substrate 26 by double-sided tape 28 (Ans. 12).

If Appeldorn's outer (31) and inner (32) covers together correspond to the Appellants' overlay, then Appeldorn has no structure corresponding to the Appellants' housing. Appeldorn's inner (32) and outer (31) covers may be considered to correspond, respectively, to the Appellants' housing and overlay, but if so, Appeldorn lacks a disclosure that outer cover 31 is attached to inner cover 32 by double-sided tape.

Conclusion of Law

The Appellants have shown reversible error in the Examiner's determination that Appeldorn discloses an overlay attached to a top housing surface by a layer of double-sided tape.

DECISION/ORDER

The rejection under 35 U.S.C. § 103 over Stein in view of Aitken and Usui is affirmed as to claims 1, 4, 7, and 11, and reversed as to claim 6. The rejection under 35 U.S.C. § 103 over Appeldorn in view of Aitken and Usui is affirmed as to claims 1-4, 6, 7, 11-13, 17, 18, 21, and 24, and reversed as to claim 19.

It is ordered that the Examiner's decision is affirmed-in-part.

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

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AFFIRMED-IN-PART

PL Initial:
sld

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