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Datasheet for the decision of 29 March 2019

Case Number: T 1181/18 - 3.2.01

Application Number: 07864896.1

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IPC: F21S8/02, F21Y101/02

Language of the proceedings: EN

Title of invention:
SELF-BALLASTED SOLID STATE LIGHTING DEVICES

Applicant:
Cree, Inc.

Headword:

Relevant legal provisions:
EPC Art. 56
RPBA Art. 13(1)

Keyword:
Inventive step - (no) - main request
Late-filed auxiliary requests - admitted (no)

Decisions cited:

Catchword:

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Office européen des brevets

Beschwerdekammern

Boards of Appeal

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Case Number: T 1181/18 - 3.2.01

D E C I S I O N
of Technical Board of Appeal 3.2.01
of 29 March 2019

Appellant: (Applicant)	Cree, Inc. 4600 Silicon Drive Durham, NC 27703 (US)
Representative:	Dummett Copp LLP 25 The Square Martlesham Heath Ipswich IP5 3SL (GB)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 14 December 2017 refusing European patent application No. 07864896.1 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman	G. Pricolo
Members:	S. Mangin
	S. Fernández de Córdoba

Summary of Facts and Submissions

I. The appeal was filed by the appellant (applicant) against the decision of the examining division to refuse the patent application in suit (hereinafter "the application").

II. The examining division decided that claim 1 of the main request as well as auxiliary requests 1 and 2 did not involve an inventive step.

III. Oral proceedings were held before the Board on 29 March 2019.

IV. The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the main request, alternatively on the basis of the first or second auxiliary request, all requests as filed with the letter dated 26 February 2019, or on the basis of the third auxiliary request as filed during the oral proceedings.

V. Claim 1 of the main request reads as follows:

A lighting device (10), comprising:
a light engine housing (11);
a light engine (18); and
an energy forwarding clement (40),
said light engine housing (11) comprising an open end (19) and an electrical connection region (16), said electrical connection region (16) engageable with an electricity supply device (17),
said light engine housing (11) comprising a first compartment (30) and a second compartment (29),

said light engine housing (11) comprising a flange region (36) which extends around said open end (19) of the light engine housing (11),
said light engine (18) within said first compartment (30) of said light engine housing(11),
said light engine (18) comprising at least a first solid state light emitter (38),
said energy forwarding element (40) within said second compartment (29) of said light engine housing (11), at least a first region of said energy forwarding element (40) electrically connected to said electrical connection region (16), at least a second region of said energy forwarding element (40) electrically connected to said light engine (18), said energy forwarding element (40) comprising circuitry which, if power of an AC voltage is supplied to said first region of said energy forwarding element (40), supplies energy to said light engine (18) in a form such that said first solid state light emitter (38) will emit light, an entirety of said energy forwarding element (40) within a space whose boundaries would be defined by points through which a periphery of the open end (19) would pass if the periphery of the open end (19) were moved, in a direction parallel to an axis of the lighting device (10), from the open end (19) to a position where the periphery of the open end (19) would extend around the electrical connection region (16), and said first compartment (30) having an opening (20), whereby at least a portion of light emitted by said first solid state light emitter (38) which travels toward said opening (20) will pass through said open end (19) of said light engine housing (11) to exit from said light engine housing (11).

VI. Claim 1 of auxiliary request 1 reads as follows:

A lighting device (10), comprising:
a light engine housing (11) having a plurality of heat-dissipating fins (50);
a light engine (18);
an energy forwarding element (40);
a plate; and
at least a first mounting clip (12), a second mounting clip (13) and a third mounting clip (14);
a diffuser (49); and
a shock and flame barrier;
said light engine housing (11) comprising an open end (19) and an electrical connection region (16), said electrical connection region (16) engageable with an electricity supply device (17),
said light engine housing (11) comprising a first compartment (30) and a second compartment (29),
said light engine housing (11) comprising a flange region (36) which extends around said open end (19) of the light engine housing (11),
said light engine (18) within said first compartment (30) of said light engine housing (11),
said light engine (18) comprising at least a first solid state light emitter (38), and an LED circuit board,
said second compartment (29) defined by an upper housing, said energy forwarding element (40) within said second compartment (29) of said light engine housing (11), at least a first region of said energy forwarding element (40) electrically connected to said electrical connection region (16), at least a second region of said energy forwarding element (40) electrically connected to said light engine (18), said energy forwarding element (40) comprising a power supply circuit board and circuitry which, if power of an AC voltage is supplied to said first region of said energy forwarding element (40), supplies DC voltage to

said LED circuit board of said light engine (18) in a form such that said first solid state light emitter (38) will emit light;
said plate on an opposite side of said light engine housing (11) relative to the open end (19);
said plate, said upper housing, and said power supply circuit board forming an enclosure for AC line voltage, in which said enclosure minimizes or eliminates shock and fire hazards,
said shock and flame barrier either [1] part of said power supply circuit board, or [2] between said first solid state light emitter (38) and said LED circuit board,
said first mounting clip (12), said second mounting clip (13) and said third mounting clip (14) are attached to said plate,
an entirety of said energy forwarding element (40) within a space whose boundaries would be defined by points through which a periphery of the open end (19) would pass if the periphery of the open end (19) were moved, in a direction parallel to a shortest line segment connecting said electrical connection region and said diffuser, from the open end (19) to a position where the periphery of the open end (19) would extend around the electrical connection region (16),
said first compartment (30) having an opening (20) which is covered by said diffuser (49), whereby at least a portion of light emitted by said first solid state light emitter (38) which travels toward said opening (20) will pass through said diffuser (49) and then through said open end (19) of said light engine housing (11) to exit from said light engine housing (11),
whereby if said lighting device (10) is mounted in a hole (21) in a structure (22) such that said flange region (36) is on a first side (24) of said structure

(22) and at least a portion of a back side (23) of said flange region (36) is in contact with a region of said first side (24) of said structure (22) which extends around said hole (21), and a remainder of said light engine housing (11) is on an opposite side of said hole (21) relative to said flange region (36), the only elements which would be visible within a field defined by an outer periphery of said flange region (36) of said light engine housing (11) from a vantage point which is in a region which is to said first side (24) of said structure (22) would be a front side (25) of said flange region (36), a front side (26) of said diffuser (49) and any portion of said first compartment (30) which is between said opening (20) and said open end (19).

VII. Claim 1 of auxiliary request 2 differs from claim 1 of auxiliary request 1 in that the following underlined feature has been added:
said first compartment (30) having sidewalls between said at least a first solid state light emitter (38) and said diffuser (49) which are either coated with a high reflectivity paint or powder coat, or are covered with a high reflectivity film or material which could be diffuse or specular;

VIII. Claim 1 of auxiliary request 3 differs from claim 1 of the main request in that the following underlined features have been added:

- *an energy forwarding element (40)* comprising a Power Supply PCB

- said second compartment (29) comprising a top plate where retention clips (12,13,14) are mounted, an upper housing, and the power supply PCB for an enclosure for

AC line voltage to minimize or eliminate shock and fire hazards;

- *said energy forwarding element (40) comprising circuitry which (...) supplies energy to said light engine (18)* by passing DC voltage to an LED PCB via pins or wires through an opening in the bottom of the second compartment (29) *in a form such that said first solid state light emitter (38) will emit light*

IX. In the present decision, reference is made to the following documents:

D1: US 2005/0111234
D2: DE 29921156
D4: US 2006/0261359

X. The appellant's arguments can be summarised as follows:

(a) Main request

The subject-matter of claim 1 of the main request involves an inventive step starting from D4 and D2.

The second compartment according to the present invention is to be understood as a water tight enclosure like in a ship, where nothing gets in or out. This is confirmed by the passage on p.25, l. 16-18 of the international publication of the application (WO 2008/067447) which states that "The top plate (where retention clips are mounted), the upper housing, and the Power Supply PCB for an enclosure for the AC line voltage minimize or eliminate shock and fire hazards".

The subject-matter of claim 1 differs from D4 in the provision of a second compartment in the sense of a water tight enclosure, which minimizes or eliminates shock and fire hazards. D4 neither discloses nor suggests such a compartment. The subject-matter of claim 1 involves therefore an inventive step over D4.

D2 (p.2, l.17-27, p.5, l.7-12 and p.11, l.23-26) is directed to a light of low intensity requiring low voltage cables and reduced security measures comprising connecting cables going through the light housing. Unlike the present invention, D2 is not concerned with a retrofit light device that can be used to replace a light engine in a can light and is not concerned with the problems of high tension elements. Moreover D2 does not disclose an AC/DC converter. Finally the reasoning of the examining division is based on an ex post facto analysis.

(b) First and second auxiliary requests

The first and the second auxiliary requests should be admitted in the proceedings as they have been submitted in an attempt to overcome the objections raised by the Board in the summons to oral proceedings. Moreover the first and the second auxiliary requests do not extend over the application as originally filed.

The following passages introduced in claim 1:
- "Said plate, said upper housing, and said power supply circuit board forming an enclosure for AC line voltage, in which said enclosure minimizes or eliminates shock and fire hazards" and

- "said shock and flame barrier being either part of said power supply circuit board or between said first solid state light emitter (38) and said LED circuit board"
find their basis on p.25, l.16-l.26 of the international publication of the application.

The fact that "the DC voltage is then passed to the LED PCB via pins or wires, through an opening in the bottom of the upper compartment 29" has not been introduced into claim 1 does not constitute an unallowable intermediate generalisation as the skilled person would recognise that there are implicitly such pins or wires to pass the DC voltage to the LED PCB in the lighting device of claim 1.

(c) Third auxiliary request

The third auxiliary request should be admitted in the proceedings as it is an attempt to overcome the Article 123(2) EPC objections raised by the Board during oral proceedings.
Claim 1 of the third auxiliary request does not extend over the application as originally filed. Support for the amendments can be found on p.25, l. 16-21.

Reasons for the Decision

1. Main request - Inventive Step - Articles 52(1), 56 EPC

1.1 The present application does not meet the requirements of the Article 52(1) EPC because the subject-matter of

claim 1 does not involve an inventive step within the meaning of Article 56 EPC starting from D4 or D2.

1.2 The present main request differs from the main request filed with the statement of grounds of appeal in that the feature "an entirety of the light engine housing (11), except for the flange region (36) configured to fit within a lighting device housing (15)" has been excised from claim 1. According to the appellant's submissions in its statement of grounds of appeal, this feature supported the presence of an inventive step over D4 and thus claim 1 overcame the objection of lack of inventive step against claim 1 of the main request underlying the decision under appeal (see point 1.3) when starting from D4.
In order to overcome the objection under Article 84 EPC raised by the Board in its communication annexed to the summons to oral proceedings, the appellant replaced the main request filed with the statement of grounds of appeal with the main request underlying the decision under appeal, and argued the presence of an inventive step essentially only on the basis of how the term "compartment" should be understood.

1.3 According to the case law of the Boards of appeal, each claim must be read giving the words the meaning and scope which they normally have in the relevant art, unless in particular cases the description gives the words a special meaning, by explicit definition or otherwise. Moreover the claim must also be read with an attempt to make technical sense out of it. Such a reading may involve a departure from the strict literal meaning of the wording of the claims.

In the present case, the term "compartment" must be given its normal meaning: "a separate section or part of a structure or container".

The interpretation of the term "compartment" given by the appellant cannot be followed. The second compartment in claim 1 cannot be interpreted as a "water tight enclosure" like in the technical field of ships. The present invention deals with lights, a technical field far removed from ships, which usually requires no water tight divisions.
Moreover the passage on p.25, l.16-19 "The top plate (where the retention clips are mounted), the upper housing, and the Power Supply PCB for an enclosure for the AC line voltage minimize or eliminate shock and fire hazards" does neither give an explicit definition of the word compartment nor imply that the compartment should be water tight. Especially the following sentence "The DC voltage is then passed to the LED PCB via pins or wires, through an opening in the bottom of the upper compartment 29" seems to indicate that the compartment with its opening is not water tight.
Finally there is no reason to depart from the literal meaning of the word compartment, as such meaning makes technical sense in claim 1.

1.4 Starting from D4 (figure 1B), the area below the connector (160) and above the light engine (130, 132 and 134) and the heat sink module (110) defines a compartment comprising the AC/DC converter (150). This compartment corresponds to the second compartment of claim 1.

Thus the difference over D4 identified by the appellant cannot be acknowledged and the argument in support of inventive step based on this difference cannot be

followed. In the absence of any other argument against the examining division's reasoning on lack of inventive step starting from D4 (see point 1.2 above), the Board sees no reason to take a different view and adopts the latter reasoning as its own.

1.5 Starting from D2 (figure 2), the subject-matter of claim 1 indisputably differs therefrom in that the lighting device comprises an AC/DC converter.
The problem to be solved may be regarded as to convert the AC voltage to DC voltage within the lighting device.
As the examining division rightly pointed out (see point 1.4 of the impugned decision) it is well known to introduce AC/DC converters in such lighting devices as can be seen in D1, figure 3 (AC/DC converter 125/116) and paragraph [0025] as well as in D4, figure 1B (AC/DC converter 150). The skilled person would therefore regard it as a normal option to include the AC/DC converter within the lighting device described in D2 in order to solve the problem posed.

Although of all cited documents D2 may not be "the" closest prior art (i.e. in absolute terms) as pointed out by the appellant it is nevertheless a suitable starting point and as such can be used for the problem solution approach. Moreover the analysis of the examining division cannot be considered as an ex post facto analysis considering that AC/DC converters, their associated function and their location in lighting devices are well known.

Accordingly, also the reasoning of the examining division on inventive step starting from D2 (see point 1.4 of the impugned decision) must be confirmed.

2. Auxiliary requests 1 and 2 - Admissibility - Article 13(1) of the Rules of Procedure of the Boards of Appeal

2.1 According to Article 13(1) RPBA, any amendments to a party's case after it has filed its grounds of appeal may only be admitted and considered at the Board's discretion. This discretion is to be exercised in view of inter alia, the complexity of the new subject-matter submitted, the current state of the proceedings and the need for procedural economy. In line with established case law of the Boards of appeal, one of the criteria for admitting further amendment to a claim at a late stage of the appeal proceedings is whether or not the claim is clearly allowable.

2.2 Auxiliary requests 1 and 2 filed about a month before the oral proceedings give rise to objections under Article 123(2) EPC. In particular the following amendments a) and b) appear to extend over the content of the application as originally filed.
a) -"said plate, said upper housing, and said power supply circuit board forming an enclosure for AC line voltage, in which said enclosure minimizes or eliminates shock and fire hazards"
b)- "said shock and flame barrier either [1] part of said power supply circuit board, or [2] between said first solid state light emitter (38) and said LED circuit board"

2.3 Amendment a) is based on the passage p.25, l.16-19 of the international publication of the application. This passage does not recite that the plate, the upper housing and the power supply circuit board form an enclosure, but rather that these elements are for an enclosure for the AC line voltage and minimize or eliminate shock and fire hazards.

While there may be an error in the passage (the erroneous term "for" should read "form") as alleged by the appellant, it would have to be discussed whether there is indeed such an error, in particular considering that the above-mentioned passage seems to make sense also the way it stands, and thus it would have to be discussed whether the amendment introduces added-subject-matter.

2.4 Amendment b) is based on p.25, l.21-26 of the international publication of the application, where a shock and flame barrier can either be the LED PCB itself or a separate flame barrier between the LEDs and the LED PCB. Amendment b) raises the issue of whether it extends over the application as originally filed as the shock and flame barrier in the first case is not "part of the power supply circuit board" but the power supply circuit board itself as disclosed on p.25, l. 23-24 and it is not "between said first solid state light emitter (38) and said LED circuit board" in the second case but "between the LEDs and the LED PCB".

2.5 Moreover the fact that the feature on p.25, l.20-21, "The DC voltage is then passed to the LED PCB via pins or wires, through an opening in the bottom of the upper compartment 29" (disclosed in connection with the disclosure of features a) and b)) has not been introduced into claim 1 gives rise to the issue of whether this amendment results in an unallowable intermediate generalisation contrary to Article 123(2) EPC.

2.6 Therefore, auxiliary requests 1 and 2, submitted at a late stage of the proceedings, give rise to various issues under Article 123(2) EPC and as such do not

appear to be clearly allowable. Under these circumstances the Board decided not to admit auxiliary requests 1 and 2 into the appeal proceedings in the exercise of its discretion pursuant to Article 13(1) RPBA.

3. Auxiliary request 3 - Admissibility - Article 13(1) of the Rules of Procedure of the Boards of Appeal

3.1 In exercising its discretion pursuant Article 13(1) RPBA, the Board did not admit the auxiliary request 3 filed during oral proceedings.

3.2 Similarly to auxiliary requests 1 and 2, this request submitted at a late stage is not clearly allowable under Article 123(2) and 84 EPC.

3.3 The following amendment: "said second compartment (29) comprising a top plate where retention clips (12,13,14) are mounted, an upper housing, and the power supply PCB for an enclosure for AC line voltage to minimize or eliminate shock and fire hazards" gives rise to an issue of added subject-matter (Article 123(2) EPC) because in the application as originally filed the second compartment does not comprise a top plate, but the top plate is placed over the second compartment as can be clearly seen from the figures 1-3.

3.4 Moreover the following amendment: "*said energy forwarding element (40) comprising circuitry which (...) supplies energy to said light engine (18)* by passing DC voltage to an LED PCB via pins or wires through an opening in the bottom of the second compartment (29) *in a form such that said first solid state light emitter (38) will emit light*" also gives

rise to an issue of added subject-matter. The underlined passage finds basis on p. 25, l.20-21, dealing with a specific embodiment where the light emitter (38) is a plurality of LEDs (see p.25, l.12 and l.26, l.28, l.29 and l.30). The introduction of the above mentioned feature in isolation with the light emitter being a plurality of LEDs gives rise to an issue of unallowable intermediate generalisation (Article 123(2) EPC).

3.5 Additionally the introduction in claim 1 of "said second compartment (29) comprising a top plate where retention clips (12,13,14) are mounted, an upper housing and the power supply PCB for an enclosure for AC line voltage(..)" gives rise to an issue of clarity (Article 84 EPC) since it has to be discussed how to define the delineation of the second compartment and the upper housing and the relationship between the two; further it has to be discussed whether there is a contradiction between the feature concerning the position of the top plate comprised in the second housing 29 and the disclosure of figure 1 where the top plate is above the second compartment.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

S. Sánchez Chiquero G. Pricolo

Decision electronically authenticated