

**Internal distribution code:**

- (A) [ ] Publication in OJ  
(B) [ ] To Chairmen and Members  
(C) [X] To Chairmen

**D E C I S I O N**  
**of 23 August 1994**

**Case Number:** T 1032/92 - 3.4.1

**Application Number:** 86304512.6

**Publication Number:** 0206661

**IPC:** H01S 3/08

**Language of the proceedings:** EN

**Title of invention:**  
A semiconductor laser apparatus

**Applicant:**

**Opponent:**

-

**Headword:**

-

**Relevant legal norms:**

EPC Art. 111(1)

EPC R. 86(3)

**Keyword:**

"Substantially modified claims filed with the Statement of  
Grounds of Appeal"

"Remittal to the Examining Division"

**Decisions cited:**

T 0063/86, T 0300/89

**Headnote/Catchword:**

-



Europäisches  
Patëntamt

European  
Patent Office

Office européen  
des brevets

Beschwerdekammern

Boards of Appeal

Chambres de recours

Case Number: T 1032/92 - 3.4.1

**D E C I S I O N**  
of the Technical Board of Appeal 3.4.1  
of 23 August 1994

**Appellant:**

Sharp K.K.  
22-22 Nagaike-cho, Abemo-ku  
Osaka 545 (JP)

**Representative:**

Manley N.M.  
W.P. Thompson & Co.  
Coopers Building  
Church Street  
Liverpool L1 3AB (GB)

**Decision under appeal:**

Decision of the Examining Division 047 of the  
European Patent Office dated 25 June 1992 refusing  
European patent application No. 86 304 512.6  
pursuant to Article 97(1) EPC.

**Composition of the Board:**

**Chairman:** G. D. Paterson  
**Members:** Y. van Henden  
U. Himmler

Summary of Facts and Submissions

- I. European patent application No. 86 304 512.6 (published under No. 0 206 661) was refused by Decision of the Examining Division.
- II. The refusal was based on the application's claims as originally filed.

Claim 1 of the refused set reads:

"A semiconductor laser apparatus comprising a semiconductor laser device (1) and a semiconductor device (7), both of which are fixed on a single mounting base (2), said semiconductor device (7) having a side face (24) which is a facet and which faces a laser-emitting facet of said semiconductor laser device (1) and is substantially parallel thereto, characterised in that at least a part of the facet (24) of the semiconductor device (7) is coated with a reflecting dielectric film (25) functioning so as to reflect laser light from said semiconductor laser device (1) to said semiconductor laser device."

Further Claims 2 and 3 were appended to Claim 1.

- III. The Examining Division grounded its decision substantially as follows:

The subject-matter of Claim 1 differs from the semiconductor laser apparatus described in document

D1: EP-A-O 090 485

only in that the facet of the semiconductor device (7) facing the laser-emitting facet of the semiconductor

laser device (1) is coated with a reflecting dielectric film. The use and advantages of dielectric facet reflectors in semiconductor lasers are, however, known from document

D2: M. Ettenberg, "A new dielectric facet reflector for semiconductor lasers", Applied Physics Letters, 32(11), 1 June 1978, pages 724-725.

Furthermore, the teachings of document (D2) are not applicable exclusively to emitting facets of semiconductor lasers. Therefore, starting from the achievement of prior art described in (D1), it would be obvious to the skilled person to coat the facet (36) of the photodetector with a reflective dielectric film. Thereby, however, he would arrive at the semiconductor laser apparatus defined by Claim 1 without having to display inventive talent.

IV. The Applicant lodged an appeal against the decision of the Examining Division.

With its Statement of Grounds of Appeal, the Appellant submitted new claims differing from those initially filed in that the adverbial phrase "at least" was deleted in Claim 1, and in the presence of an additional dependent Claim 4 reading:

"A semiconductor laser device as claimed in any of the preceding claims, wherein the area of the facet (24) which is not covered by the reflecting dielectric film (25) is coated with another reflecting film having a low reflectivity or with a transmitting film".

V. The Appellant requests that the decision of the Examining Division be set aside and that a European

patent be granted on the basis of the claims filed with its Statement of Grounds of Appeal.

VI. In support of its request, the Appellant argued in substance as follows:

The characterising part of Claim 1 now states that only a part of the facet (24) of the photodetector (7) is coated with a reflective dielectric film (25). The detection of laser light is thus improved. Reflective dielectric films have indeed a high reflectivity, whereby the oscillation efficiency of laser light is improved and the threshold current is lowered, but this is on a par with a low transmission of laser light to the photodetector.

The above feature of Claim 1 is not described in any of the prior art documents, nor is it suggested by a combination of these documents. As a matter of fact, a combination of (D1) and (D2) would result most probably in a semiconductor laser device (30) with a facet (37) entirely covered with a reflective dielectric film or, if the teaching of (D2) is interpreted broadly, in a semiconductor laser apparatus with a semiconductor device (35) having its entire facet (36) covered with a reflective dielectric film.

#### Reasons for the Decision

1. According to the wording of Claim 1 as filed with the Statement of Grounds of Appeal, it is excluded that the highly reflective dielectric film (25) might cover the totality of the facet (24) of the semiconductor device (7). Furthermore, the additional Claim 4 obviously does not cover any embodiment in which this might be the case.

2. In contrast thereto, stating that "at least part of the facet (25)... is coated with a reflecting dielectric film" implies that the totality of the facet (25) may be coated with such a film.

In the Board's judgment, therefore, the amendment performed in Claim 1 excludes from the scope of the protection which is sought semiconductor laser apparatus in which the totality of the facet (25) is coated with a reflecting dielectric film.

3. Document (D1) relates to semiconductor laser apparatus comprising a semiconductor laser device and an external reflector spaced from the semiconductive material of said laser device - see page 1, lines 22 to 26. In a particular embodiment of the invention disclosed there, a photodetector is provided for monitoring the laser output, which photodetector is also used as a reflector - see page 11, lines 17 to 20. This photodetector is so arranged that a lateral facet (36) of its substrate is struck by light emitted from the active layer (39) of the semiconductor laser chip (30), and reflects part thereof towards a substantially parallel facet (37) of said laser chip (30). Furthermore, it is stated that the substrate of the photodetector has a higher band gap than that of the active layer (39) of the semiconductor laser chip (30) - see: Figure 4; page 11, lines 21 to 29. The photodetector is thus a "semiconductor device".

4. During the proceedings before the Examining Division, the question of knowing whether, in a laser apparatus according to document (D1), the whole or only part of the facet (36) is reflective was not at issue. Therefore, the Examining Division was right not to decide this point, and actually the more so as no explicit disclosure in (D1) makes this possible.

Nevertheless, the object of the invention disclosed in (D1) is to achieve temperature compensation in semiconductor laser devices having an external cavity located between a facet of the active laser device and an external reflector - see: page 1, lines 16 to 21; pre-characterising part of the independent claims. Therefore, that the reflector (35) might also serve other purposes, in particular photodetection, does not represent an essential feature in the context of (D1). Furthermore, where the reflector (35) is provided for merely reflecting laser light back to the facet (37) of the laser's active device, it would be irrelevant to limit reflection to only a part of the surface disposed in front of said facet (37). Besides, a person skilled in the art knows that, in case of non-specular reflection, some of the incident light is reflected whereas a complementary fraction of the radiated energy is transmitted. Therefore, when reading in (D1) that "some of the light is reflected at the facet (36), but some is transmitted into the body of the photodetector" - c.f. page 11, lines 25 to 26 - said skilled person is rather led away from the idea that part of the facet (36) might be non-reflective.

For these reasons, as long as the feature of a facet (24) having only a part of its surface coated with a reflecting dielectric film was not explicitly claimed, it was not purposeful to lay stress thereon. A further consequence thereof is that no argument set forth by the Examining Division apply to this feature.

5. In the Board's judgment, therefore, the amendments to Claim 1 which the Appellant has proposed in the appeal proceedings require a substantial further examination in relation to both the formal and substantive requirements of the EPC. As stated in Decision T 63/86 (OJ EPO 1988, 224), such further examination should be carried out by

the Examining Division as the first instance after the Examining Division has itself exercised its discretion under Rule 86(3) EPC. The reasons for this are discussed fully in paragraph 2 of the Decision.

6. In the present case, since the Appellant no longer seeks grant of a patent including Claim 1 with text and subject-matter as rejected by the Examining Division, but has filed a main request containing a substantially amended text for Claim 1, it is clearly appropriate that the case should be remitted to the Examining Division in accordance with Decision T 63/86.

The Board also refers to Decision T 300/89 (OJ EPO 1990,9), where it was stated in particular that "the burden lies upon an applicant (if he so wishes) to propose amendments (including by way of auxiliary requests) which overcome the objections raised by the Examining Division, in his observations in reply to the first communication in which such objections are raised". Clearly, the filing of a new request for the first time in the Statement of Grounds of Appeal, as in the present case, inevitably leads to undesirable procedural delay.



Order

For these reasons it is decided that:

1. The contested decision is set aside.
2. The case is remitted to the first instance for further examination of the application having regard to the request set out in the Statement of Grounds of Appeal.

The Registrar:



M. Beer

The Chairman:



G. D. Paterson

*Jan 22/08/94*  
*[Handwritten initials]*

