

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 18 March 1999

Case Number: T 0086/97 - 3.2.5

Application Number: 92906058.0

Publication Number: 0572507

IPC: B41B 19/00

Language of the proceedings: EN

Title of invention:
Laser image setter

Patentee:
Purup-Eskofot A/S

Opponent:
Scitex Corporation Ltd

Headword:
-

Relevant legal provisions:
EPC Art. 56

Keyword:
"Inventive step (yes)"

Decisions cited:
-

Catchword:
-



Europäisches
Patentamt

European
Patent Office

Office européen
des brevets

Beschwerdekammern

Boards of Appeal

Chambres de recours

Case Number: T 0086/97 - 3.2.5

D E C I S I O N
of the Technical Board of Appeal 3.2.5
of 18 March 1999

Appellant:
(Opponent)

Scitex Corporation Ltd
P.O. Box 330
Herzliya Bet
ITALIE

Representative:

Meister, Wolfhard, Dipl.-Ing.
Patentanwälte
Grünecker, Kinkeldey,
Stockmair & Schwanhäusser
Anwaltssozietät
Maximilianstrasse 58
80538 München
ALLEMAGNE

Respondent:
(Proprietor of the patent)

Purup-Eskofot A/S
Industriparken 35-27
2750 Ballerup
DANEMARK

Representative:

Boesen, Johnny Peder
Hofman-Bang & Boutard
Lehmann & Ree A/S
Hans Bekkevolds Allé 7
2900 Hellerup
DANEMARK

Decision under appeal:

Decision of the Opposition Division of the
European Patent Office posted 22 November 1996
rejecting the opposition filed against European
patent No. 0 572 507 pursuant to Article 102(2)
EPC.

Composition of the Board:

Chairman: H. P. Ostertag
Members: C. G. F. Biggio
J. van Moer

Summary of Facts and Submissions

- I. The appellant (opponent) lodged an appeal against the decision of the opposition division rejecting the opposition filed against European patent No. 572 507.

Opposition was filed against the patent as a whole and based on Article 100(a) and (b) EPC, in conjunction with Article 56 EPC (lack of an inventive step) and Article 83 EPC (lack of an enabling disclosure).

The opposition division held that the grounds for opposition mentioned in Article 100(a) and (b) EPC did not prejudice the maintenance of the patent as granted, having essentially considered prior art documents

D2: US-A-4 801 950, and

D12: US-A-4 595 957.

- II. According to the feature analysis carried out by the opposition division in item X of the decision under appeal, Claim 1, as granted, reads as follows:

- (a) An apparatus for exposing a film or plate comprising a light-sensitive material to a light beam, comprising:
- (b) an apparatus housing having an elongated cavity defining an inner support (100) for supporting the film or plate
- (c) in such a manner that the supported film or plate constitutes at least part of a substantially

circularly-cylindrical surface defining a central axis,

- (d) laser means (104,106,108) for generating the light beam,
- (e) a light-directing assembly (102) comprising
- (f) a light-directing assembly housing (182),
- (g) a laser light-emitter emitting laser light generated by the laser means,
- (h) a rotatable optically reflecting element and
- (i) an element-rotating motor (178),
- (j) the laser light-emitter being constituted by the second end of an optical fibre means (130) having a first light-receiving end and a second light-emitting end,
- (k) the first light receiving end being arranged in juxtaposition to the laser means for receiving the light beam therefrom, and
- (l) the second light-emitting end being arranged in and supported by the light-directing assembly housing (182) and
- (m) being in juxtaposition to the rotatable optically reflecting element at a substantially fixed distance therefrom for emitting the light beam to the rotatable optically reflecting element,

- (n) the rotatable optically reflecting element being arranged relative to the second light-emitting end of the optical fibre
- (o) so as to direct the light beam emitted to the optically reflecting element to the light sensitive film or plate,
- (p) the element-rotating motor being supported by the light-directing assembly housing and
- (q) having a rotatable output shaft,
- (r) the optically reflecting element being connected to the output shaft so as to be rotatably driven thereby, and
- (s) the light-directing assembly housing being supported by the apparatus housing and being movable relative thereto along the central axis,
- (t) motion means (198) for moving the light-directing assembly relative to the apparatus housing along the central axis, and
- (u) central control means (500)
- (v) for controlling the laser means for switching the laser beam on and off,
- (w) for controlling the operation of the element-rotating motor, and
- (x) for controlling the operation of the motion means

(y) so as to expose a predetermined area of the photographic film by switching on the laser beam while the light-directing assembly is in a predetermined position relative to the apparatus housing and

(z) while the rotatable optically reflecting element is in a predetermined rotational position.

III. With the statement of grounds of appeal, the appellant mentioned, for the first time and as a further prior art document, the article: "3-2 Laser Facsimile"; Takayuki Saito, Regular member, Facsimile Communication Division; Nippon Electric Co. Ltd; published in the Journal of the Institute of Image Electronics Engineers of Japan, vol. 8, No. 3, Serial 29 (october 1979).

An English translation of said article was also filed.

In the suite, this document will be referred to as D24.

IV. Oral proceedings before the Board of Appeal were held on 18 March 1999.

The appellant (opponent) requested that the decision under appeal be set aside and the European patent be revoked in its entirety.

The respondent (patentee) requested that the appeal be dismissed.

V. The appellant argued essentially as follows.

The feature analysis of Claim 1, as carried out by the

opposition division (see previous item II), was stated to be a correct and suitable basis for carrying out the examination and appreciation of the inventive step involved by the subject-matter claimed by said claim.

It was submitted that document D24 should be considered as representing the closest prior art on file. In order to support this submission, the following considerations were made.

Reference was made to a passage of the contested patent (see page 3, lines 36 to 38), where it is stated that none of the patent documents, mentioned as background art in the introductory portion of said patent, "disclose or infer the possibility of using optical fibers to direct the laser light to desired locations within the apparatus, and neither do they disclose or infer any advantages associated therewith" and it was, accordingly, submitted that the main and decisive feature of the alleged invention was to be seen in the fact that an optical fiber was used in order to transmit the laser light from the laser itself till the light-directing assembly, thereby avoiding, as far as possible, that said laser light be transmitted, from the laser itself till the light-directing assembly, along a long open path extending through the air.

In the apparatus disclosed by document D24 (Figure 4 and the associated discussion thereof on page 5), the laser light-emitter was constituted by the second end of an optical fiber means (self-focusing fiber) having a first light-receiving end and a second light-emitting end; the first light-receiving end was arranged in juxtaposition to the laser means for receiving the

light beam therefrom, and the second light-emitting end was arranged in juxtaposition to the rotatable optically reflecting element at a substantially fixed distance therefrom for emitting the light beam to the rotatable optically reflecting element. The laser light-emitter met, thus, the requirements set out by feature (j) of Claim 1 and the transmission path of the laser light was, thus, quite totally inside an optical self-focusing fiber, whose two extremities met the requirements defined by features (k) and (m) of Claim 1. In the apparatus according to Figure 4 of D24, an open light transmission path extending through the air was, accordingly, avoided as far as possible.

Analogous considerations were not true for the apparatus according to Figure 2 of document D2, where a long open light transmission path extending through the air was present between the second light-emitting end of the optical fiber 6 and the rotatable optically reflecting element; this demonstrating that document D2 was not the closest prior art on file.

It was admitted that Figure 4 of document D24 and the thereto associated discussion, did not disclose, at least expressis verbis, an apparatus comprising the feature (l) of Claim 1: "the second light-emitting end being **arranged in** and **supported by** the light-directing assembly housing".

Having, however, regard to the following statements on page 5 of document D24: "... FT-210R separately arranges the rotary optical system, laser tube and modulator, and therefore, employs a focusing fiber to transmit a beam" (second paragraph); "... FT-210R

connects the AOM to the rotary optical system through the self-focusing (selfoc) optical fiber" and "This fiber enables the laser optical system to be easily arranged and adjusted" (fifth paragraph, lines 1 to 3, and 12 to 13, respectively), it was submitted that in the apparatus according to Figure 4 of D24, the laser tube and the modulator had to be construed as being integrally connected together and to a first optical table, while the rotary optical system and the drum constituting support for the film had, similarly, to be construed as being integrally connected to form a second optical table, whereby the transmission of the light beam from the first to the second optical table was ensured uniquely by the self-focusing optical fiber; the later providing for a "mechanical" connection between the first and the second optical table.

Accordingly and compulsorily, the second light-emitting end of said self-focusing optical fiber had to be construed as being "mechanically" connected to the second optical table and supported by the same "in juxtaposition to the rotatable optically reflecting element at a substantially fixed distance therefrom for emitting the light beam to the rotatable optically reflecting element", as according to feature (m) of Claim 1.

It was, in fact, to be noted that, in the apparatus of Figure 4 of D24, the rotatable optically reflecting element was stationary, while the drum, constituting the inner support of the film and shaped as a substantially circularly-cylindrical surface, was movable along the direction of its central axis, as

defined by its elongated cavity.

In the apparatus according to Claim 1, the elongated cavity of the drum, constituting the inner support of the film, shaped as a substantially circularly-cylindrical surface and defining a central axis, was held stationary, while the rotatable optically reflecting element was movable along the direction of said central axis.

This difference, however, could not lead a person skilled in the art either to discard or to disregard the teaching of document D24, since

- it summed up to a mere cinematic inversion,
- these were the two only reasonable possibilities of implementing the relative movement between the inner support of the film and the optically reflecting element and, moreover,
- the possibility put into effect in the apparatus according to Claim 1 was known from the apparatus according to Figure 3 of document D2.

Finally, the person skilled in the art would have found, in the mere fact that the optically reflecting element was no longer stationary in the apparatus according to Figure 2 of document D2, neither a compulsory nor any conceivable technical reason

- for not implementing the apparatus according to Figure 4 of document D24 as there disclosed, i.e.

whereby the second optical table commonly supported both the second light-emitting end of the optical fiber and the optically reflecting element,

but, on the contrary,

- for adopting the very opposite implementation, i.e. render the second light-emitting end of the optical fiber no longer connected to and supported by said second optical table.

Said second optical table of the apparatus according to Figure 4 of document D24 had, consequently to be construed as being a mechanical arrangement housing inside both the second light-emitting end of the optical fiber and the optically reflecting element, as according to feature (1) of Claim 1, which, accordingly, could not provide for an inventive step, involved in the subject-matter of said claim.

It was, in fact to be noted that a mechanical arrangement housing inside the second light-emitting end of optical fibers and acting as an optically directing element to direct the laser light onto the external surface of a drum constituting the support of the film was known from Figure 3 of document D2. The evident similitudes in the technology of optical plotters having an external or an internal scanning of the surfaces of their drums would have incited the person skilled in the art to adopt such an housing and to connect inside said housing the second light-emitting end of the optical fiber according to Figure 2 of document D2, thereby arriving at the subject-matter

of Claim 1, without the need of an inventive step.

VI. The respondent argued essentially as follows.

The feature analysis of Claim 1, as carried out by the opposition division (see previous item II), was stated to be a correct and suitable basis for carrying out the examination and appreciation of the inventive step involved by the subject-matter claimed by said claim.

Referring to the contested patent (page 2, lines 7 to 14 of the description), it was pointed out that the apparatus defined by Claim 1 was used for high accuracy/high quality production of images and that a purpose of the invention was to achieve "an even higher absolute accuracy than that obtainable in the known apparatuses" (page 2, lines 23 to 24). Further, the use of such apparatus was for high speed applications (up to 15000 rpm, see e.g. document D2, column 3, line 39).

The apparatus according to Figure 4 of document D24 was, on the contrary, for low speed, press applications (about 1500 rpm, as it was derivable from the technical data mentioned in Table 3 of D24).

The apparatus according to Figure 4 of document D24 differed significantly from the type of apparatus to which Claim 1 related, i.e. an internal drum plotter of the kind referred to by Figure 2 of document D2 and having a light directing assembly being movable relative to the stationary apparatus housing, along the central axis thereof, and comprising a rotatable optically reflecting element (an internal drum scanner with a movable carriage).

The apparatus according to Figure 4 of document D24 had a movable drum defining an inner support for supporting the film or plate, so that the drum was not a part of the apparatus housing, as required by feature (b) of Claim 1.

The light-directing assembly defined by feature (e) of Claim 1 must be the rotary optical system. Features (e) and (g) had to be read together so that, according to the contested patent, the light-directing assembly comprised a laser light-emitter emitting laser light generated by the laser means. D24 did have a laser light-emitter, but it was not comprised by the light-directing assembly.

The appellant himself admitted that the apparatus according to Figure 4 of D24 did not comprise the features (l), (s) and (t). As there was no motion means according to feature (t), the central control means could not control such motion means, and thus said apparatus did not comprise feature (x) either.

Finally, feature (y) was at least irrelevant because the light-directing assembly was not movable (except for the rotation which was covered by feature (z)) relative to the apparatus housing and thus would always be in a predetermined position relative to said housing, without the use of any motion means.

In summary, the apparatus according to Figure 4 of D24 lacked to show features (b), (g), (l), (s), (t), (x) and (y) of Claim 1. Thus, document D24 - set aside that it was late filed - could not be considered as the closest prior art on file and was less relevant than the prior art already on file, in particular document D2.

In document D24 there was no clear and unambiguous statement allowing and, even less, addressing the person skilled in the art to reach the appellant's conclusion that, in the apparatus there schematically shown, the laser tube and the modulator had to be construed as being integrally connected together and to a first optical table, while the rotary optical system and the drum constituting support for the film had, similarly, to be construed as being integrally connected to form a second optical table, whereby the transmission of the light beam from the first to the second optical table was ensured uniquely by the self-focusing optical fiber; the latter providing for a "mechanical" connection between the first and the second optical table.

Accordingly, the person skilled in the art had no hint to compulsorily construe the second light-emitting end of said self-focusing optical fiber as being "mechanically" connected to the second optical table and supported by the same "in juxtaposition to the rotatable optically reflecting element at a substantially fixed distance therefrom for emitting the light beam to the rotatable optically reflecting element", as according to feature (m) of Claim 1. The person skilled in the art had even less any technical

reason for deriving from the teaching of document D24 the feature (1) of Claim 1, i.e. "the second light-emitting end being **arranged in** and supported by the light-directing assembly housing (182)".

The person skilled in the art could have construed the teaching of document D24 as according to the appellant's submissions, only if he would have had a previous and complete knowledge of the claimed invention. For the appreciation of the inventive step involved by the subject-matter of Claim 1, it was, thus, irrelevant which document - D24 or D2 - was considered to represent the closest prior art on file, since, starting from either of said documents, inventive step could be questioned only under the compulsory condition that the person skilled in the art had a previous and complete knowledge of the claimed invention.

It was further pointed out that neither document D2 nor document D24 dealt either with the object of the claimed invention, i.e. to achieve "an even higher absolute accuracy than that obtainable in the known apparatuses" (contested patent page 2, lines 23 to 24) or with the technical reasons which provided for a limited accuracy in said known apparatuses (contested patent page 3, lines 19 to 26).

Among all the prior art documents cited in the procedure, an accuracy problem was dealt with only by document D12 = US-A-4 595 957 which, however, proposed a solution totally different from that proposed by the contested patent.

Reasons for the Decision

1. The appeal is admissible.
2. *Document D24*

According to the established jurisprudence of the Boards of Appeal, this document could be considered as a "late filed" document, since it was cited by the appellant only during the present appeal proceedings, and could, accordingly, be disregarded by the Board, pursuant to Article 114 EPC, if it appears that said document is *prima facie* irrelevant for the appreciation of the patentability of the subject-matter claimed by the patent in suit.

The Board notes, however, that, in respect of document D24, the respondent essentially submitted arguments pleading

- that the person skilled in the art might well construe the teaching of document D24 as according to the appellant's submissions, but only under the compulsory condition that he has a previous and complete knowledge of the claimed invention;
- that for the appreciation of the inventive step involved by the subject-matter of Claim 1, it is fully irrelevant which document - D24 or D2 - is considered to represent the starting point of the claimed invention;

- that, starting from either of said documents, the inventive step involved by the subject-matter claimed might be questioned only under the compulsory condition of having a previous and complete knowledge of the claimed invention, hence in summary,
- that, even if document D24 is considered to be a prima facie relevant prior art and accordingly introduced into the procedure, its teaching alone, or even in combination with that of document D2, may not render obvious the subject-matter claimed by Claim 1.

The Board is, accordingly, of the opinion that the so called "late filing" of document D24 constitutes no bar for it be introduced into the procedure because the respondent himself considers such an introduction as irrelevant and would, thus, be unfair for the appellant to disregard document D24, merely on the ground that it is "late filed".

3. *Novelty*

Though the novelty, as such, of the subject-matter claimed by Claim 1 as granted is no longer in dispute, the Board considers useful to summarize the respective disclosures of the most relevant documents, i.e. D2, D12 and D24. Insofar as documents D2 and D12 are concerned, the Board concurs with the findings of the opposition division, as laid down in the decision under appeal, and notes that both the parties agree with such findings.

Since, moreover, both parties agree that the feature analysis carried out by the opposition division (see item II) is a correct and suitable basis for carrying out the examination and appreciation of said subject-matter, in the suite, reference will be made to said feature analysis.

3.1 *Document D2*

This document contains three relevant disclosures: the first two being the "prior art" disclosed in Figure 1 (column 1, lines 7 to 56) and Figure 2 (column 3, lines 29 to 51) respectively and the "roller phototracer" (Figure 3) forming the invention of D2.

Figure 1 discloses a conventional external drum plotter in which the laser and the folding optics are carried on the mobile carriage. This device is disclosed as having the disadvantage of being rather slow in operation (column 1, lines 29 to 31).

Figure 2 discloses an internal-drum plotter with a rotating reflective element 3, folding optics 17,9 and optical fiber 6 linking the laser 5 to the folding optics 17,9.

Thus, Figure 2 discloses features (a) to (k) and (n) to (z) of Claim 1, but does not disclose features (l) and (m) thereof, since the second light-emitting end of the optical fiber 6 is neither **arranged in** nor **supported by** the light-directing assembly housing, nor is it "in juxtaposition to the rotatable optically reflecting element at a substantially fixed distance therefrom".

Document D2 further states that although the machine shown by Figure 2 is particularly efficient, it has the disadvantage of being "extremely" expensive (column 3, lines 50 to 51).

The invention disclosed by document D2 is mainly shown in its Figure 3, which shows an external drum plotter with optical fiber linking the laser directly to the recording lens 16, without any intermediate rotating reflective element or folding optics. Thus the invention according to document D2 comprises features (a), (c) to (g), (j) to (l), (u), (v), (x), (y). The invention according to document D2, however, does not comprise features (h), (i), (m) to (r), (w) and (z). Moreover, since the device according to Figure 3 is an external drum plotter, features (b), (s) and (t) are not disclosed as such.

The teaching of document D2, as a whole, is thus

- that the known external drum plotter of Figure 1 is not fast enough,
- that the known internal drum plotter of Figure 2 is faster but more expensive and, finally,
- that the proposed solution (Figure 3) is a "multi-beam" external drum plotter which, by multiplying the number of tracing light beams, provides a faster operation than the known (single beam) external drum plotter of Figure 1, while being less expensive than the internal drum plotter of Figure 2 (column 1, line 65 to column 2, line 3).

The teaching of document D2, relating to the optical fibers, is that these allow a stationary part of the optical system (e.g. the laser) to be connected to the moving carriage of the external drum plotter, because of the "natural flexibility of the fibres" (column 2, lines 34 to 35, column 4, lines 57 to 62, column 5, lines 8 to 13). D2 further teaches that the optical fibers have to be of "high quality" and that these have to be adjusted carefully (column 6, lines 51 to 52).

Finally, document D2 states that the advantage obtained from the use of optical fibers is to be seen in that the "movable optical part of the phototracer is reduced, thus increasing reliability and reducing inertia" (column 2, lines 41 to 42). It is to be noted that this advantage mainly occurs in relation to the external drum plotter of Figure 1, in which the laser and all optical elements are arranged on the carriage, whereas, in the internal drum plotter of Figure 2, the carriage only appears to carry a lens and a deflecting mirror rotating at 15000 rpm (column 3, lines 37 to 40).

3.2 *Document D12*

This document discloses an internal drum plotter in which the laser and all optical elements including the rotating mirror are arranged on the carriage. It does not use any optical fibers, thereby disclosing features (a) to (i) and (o) to (z) of Claim 1, but none of features (j) to (n) thereof. It is, however, to be noted that, since the laser is also carried on the carriage, the light-emitting end of the laser may, accordingly, be construed as being "arranged in and

supported by the light-directing assembly housing" (compare feature (l) of Claim 1), "in juxtaposition to the rotatable optically reflecting element at a substantially fixed distance therefrom for emitting the light beam to the rotatable optically reflecting element" (compare feature (m) of Claim 1); "the rotatable optically reflecting element being arranged relative to the light-emitting end of the laser" (compare feature (n) of Claim 1).

The problem addressed by document D12 is to improve the known drum plotter so that "a sharp, problem free and accurate quality image of the laser light beam on the photosensitive material is ensured in a simple and uncomplicated manner, together with a compact construction" (column 1, lines 62 to 67).

The solution of this problem, as proposed by D12, is represented by the fact that "the laser should also be arranged on the carriage" (column 2, lines 4 to 6), i.e. should be made integral with said carriage, carrying also the light-directing assembly housing.

According to document D12, such an arrangement provides the advantages that:

- the optical geometry remains fixed,
- the length of the optical path remains constant,
- it allows a space saving construction,
- differential oscillations between the laser and the carriage cannot occur (column 2, lines 7 to 21)

and 22 to 34).

In summary, although document D12, similarly to the contested patent, substantially addresses the problem of achieving an higher accuracy than that obtainable in the known apparatuses, it does not deal with the same technical reasons which provide for a limited accuracy in said known apparatuses (contested patent page 3, lines 19 to 26) and, finally, proposes a solution in which it prescribes to use **no optical fiber at all**, since the latter is superfluous and would be unduly redundant, when used in the apparatus according to D12.

3.3 Document D24

Neither explicitly nor implicitly, this document addresses the problem of achieving an higher accuracy than that obtainable in the known apparatuses or deals with the technical reasons which provide for a limited accuracy in said known apparatuses (contested patent page 3, lines 19 to 26).

The Board agrees with the appellant that the apparatus of Figure 4 shows the features (a) to (k), (m) to (r) and (u) to (z) of Claim 1, in so far as the substance of said features is considered. Said apparatus, however, does not show, even implicitly, the features (l), (s) and (t) of said claim, i.e.

(l) the second light-emitting end being **arranged in** and **supported by** the light-directing assembly housing (182);

(s) the light-directing assembly housing being

supported by the apparatus housing and being movable relative thereto along the central axis,

(t) motion means (198) for moving the light-directing assembly relative to the apparatus housing along the central axis.

4. *Problem and Solution*

According to the contested patent (page 2, lines 23 to 24), the object of the claimed invention, i.e. the problem to be solved therewith, is to achieve "an even higher absolute accuracy than that obtainable in the known apparatuses", whereby the technical reasons which provide for limited accuracy in said known apparatuses are mentioned in page 3, lines 19 to 26, of the contested patent.

The Board notes that none of the prior art documents cited in the procedure - in particular neither D2 nor D24 - does expressly deal either with said problem or with said technical reasons. Among all these documents, an "accuracy problem" is dealt with only by document D12 = US-A-4 595 957 which, however, does not deal with the same technical reasons mentioned in the contested patent (page 3, lines 19 to 26).

The solution of said problem is represented by an apparatus comprising all the features (a) to (z) mentioned in Claim 1, thus, compulsorily comprising the feature (j) "the laser light-emitter being constituted by the second end of an optical fibre means (130) having a first light-receiving end and a second light-emitting end".

The Board notes that even document D12, although dealing with an "accuracy problem", proposes a solution which is totally different from and, moreover, fully incompatible with that proposed by the contested patent, because in said solution, which does prescribe to use **no optical fiber at all**, the latter, which is compulsorily required by feature (j) of Claim 1, is superfluous and would be unduly redundant. For this reason, document D12 may not be considered as the starting point of the invention.

A fortiori, neither document D2 nor document D24 may be considered as the starting point of the invention since none of them deals with any "accuracy problem".

Thus, the Board considers irrelevant which one of these two document is taken as starting point of the invention, when inventive step has to be appreciated, thereby concurring with the respondent's opinion on this matter.

According to the above considerations, the Board considers that the very objective problem to be solved by the claimed invention is how to modify an apparatus of the kind disclosed either by document D2 (Figure 2) or by document D24 (Figure 4) in such a manner that "an even higher absolute accuracy than that obtainable in the known apparatuses" might be achieved (contested patent page 2, lines 23 to 24).

The solution of this problem is represented by the features (l) and (m) of Claim 1, i.e.

(l) the second light-emitting end being **arranged in**

and **supported by** the light-directing assembly housing (182) and

- (m) being in juxtaposition to the rotatable optically reflecting element at a substantially fixed distance therefrom for emitting the light beam to the rotatable optically reflecting element.

Both parties, in fact, agree that it is decisive for the appreciation of the inventive step involved by said subject-matter whether or not the features (l) and (m), as quoted here above, are rendered obvious by the teaching of the prior art represented by documents D2 and/or D24, i.e. taken alone or in combination, and that, by carrying out this investigation, the teaching from document D12 may be left out of consideration.

5. *Inventive Step*

5.1 *Over document D2*

Having regard to the whole disclosure and teaching of this document, the Board is of the opinion that the person skilled in the art may not find in said disclosure and teaching any hint to modify the apparatus of Figure 2, by adding to it the features (l) and (m) of Claim 1. Decisive for this opinion are the following already stated considerations (see previous item 3.1).

The teaching of document D2, relating to the optical fibers, is that these allow a stationary part of the optical system (e.g. the laser) to be connected to the moving carriage of the external drum plotter - like as

in the apparatus of Figures 1 and 3 -, because of the "natural flexibility of the fibres" (column 2, lines 34 to 35, column 4, lines 57 to 62, column 5, lines 8 to 13).

Moreover, document D2 states that the advantage obtained from the use of optical fibers is to be seen in that the "movable optical part of the phototracer is reduced, thus increasing reliability and reducing inertia" (column 2 lines 41 to 42). It is to be noted that this advantage mainly occurs in relation to the external drum plotter of Figure 3, in which the laser and all optical elements are arranged on the carriage, whereas, in the internal drum plotter of Figure 2, the carriage only appears to carry a lens and a deflecting mirror rotating at 15000 rpm (column 3, lines 37 to 40).

The person skilled in the art, when trying to improve the apparatus of Figure 2 of D2, is, accordingly, neither addressed nor incited to modify it, by adding thereto features (l) and (m) of Claim 1, because the advantages obtained by connecting the optical fiber to and in the carriage, as illustrated on Figure 3, are only effective for the arrangement according to said figure and are not taught to be related to any improved accuracy.

5.2 *Over document D24*

The Board finds that in document D24 there is no clear and unambiguous statement allowing and, even less, addressing the person skilled in the art to reach the appellant's conclusion that, in the apparatus there

schematically shown, the laser tube and the modulator have to be construed as being integrally connected together and to a first optical table, while the rotary optical system and the drum constituting support for the film have, similarly, to be construed as being integrally connected to form a second optical table, whereby the transmission of the light beam from the first to the second optical table is ensured uniquely by the self-focusing optical fiber; the latter providing for a "mechanical" connection between the first and the second optical table.

Accordingly, the person skilled in the art has no hint to compulsorily construe the second light-emitting end of said self-focusing optical fiber as being "mechanically" connected to the second optical table and supported by the same "in juxtaposition to the rotatable optically reflecting element at a substantially fixed distance therefrom for emitting the light beam to the rotatable optically reflecting element", as according to feature (m) of Claim 1. The person skilled in the art has, even less, any technical reason for deriving from the teaching of document D24 the feature (l) of Claim 1, i.e. "the second light-emitting end being **arranged in** and **supported by** the light-directing assembly housing (182)".

The Board is, in fact, of the opinion that the person skilled in the art cannot construe the teaching of document D24 as according to the appellant's submissions, without having a previous and complete knowledge of the claimed invention.

5.3 *Over the combination of D2 and D24*

For the reasons already stated in previous items 5.1 and 5.2, the Board cannot find, in the combination of the respective teachings from said two documents, any hint addressing the person skilled in the art to modify either the apparatus according to Figure 2 of D2 or even that according to Figure 4 of D24, by adding the features (l) and (m) of Claim 1 to any one, irrespective which one, of said known apparatuses.

6. According to the above, the subject-matter of Claim 1, as granted, involves an inventive step pursuant to Article 56 EPC and constitutes, accordingly a patentable subject-matter pursuant to Article 52(1) EPC.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

A. Townend

H. Ostertag