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File Number: T 373/87 - 3.2.4

Application No.: 81 200 972.8

Publication No.: 0 048 052

Title of invention: A method of cutting a polymer film and a device for  
web-cutting

Classification: B26D 1/14

D E C I S I O N  
of 21 January 1992

Proprietor of the patent: Looser, Gottlieb

Opponent: Windmüller & Hölscher

Headword:

EPC Articles 56, 113, 114(1)

Keyword: "inventive step (yes, after amendment)"

Headnote



Case Number : T 373/87 - 3.2.4

**D E C I S I O N**  
of the Technical Board of Appeal 3.2.4  
of 21 January 1992

Appellant :  
(Proprietor of the patent)

Looser, Gottlieb  
Rigistrasse 28  
CH-8006 Zurich (CH)

Representative :

Ritscher, Thomas, Dr. et al  
Ritscher & Seifert  
Kreuzstrasse 82  
CH-8032 Zurich (CH)

Respondent :  
(Opponent)

Windmüller & Hölscher  
Munsterstrasse 50  
W-4540 Lengerich/West (DE)

Representative :

Lorenz, Eduard  
Rechtsanwälte  
Eduard Lorenz - Bernhard Seidler  
Margrit Seidler - Dipl.-Ing. Hans-K. Gossel  
Dr. Ina Philipps - Dr. Paul B. Schäuble  
Dr. Siegfried Jackermeier  
Widenmayerstrasse 23  
W-8000 München 22

Decision under appeal :

Decision of the Opposition Division of the  
European Patent Office dated 8 July 1987 posted  
on 18 August 1987 revoking European patent  
No. 0 048 052 pursuant to Article 102(1) EPC.

Composition of the Board :

Chairman : C. Andries  
Members : H. Ostertag  
          W. Moser

## Summary of Facts and Submissions

- I. European patent No. 0 048 052 was granted on 10 April 1985 on the basis of European patent application No. 81 200 972.8 filed on 1 September 1981.
- II. A notice of opposition was filed on 10 January 1986 requesting that the patent be revoked in its entirety. The opposition was based on the documents
  - DE-A-1 479 529 (D1), and
  - CH-A-234 121 (D7).
- III. In a communication pursuant to Article 101(2) and Rule 58(1) to (3) EPC dated 11 February 1987 and accompanying summons to oral proceedings, the Opposition Division informed the parties that the matter of issue to be discussed during the oral proceedings would be either the relevancy of documents D1 and D7, and the combination of their teachings (points 4.1 and 4.2) or the inventive step in general (point 4.3).
- IV. At the end of the oral proceedings held on 8 July 1987 the Opposition Division gave the decision to revoke the patent.
- V. In the written decision, posted 18 August 1987, the revocation was founded on the grounds that the subject-matter of the patent in suit lacked an inventive step in view of the teaching of document D1 when taken in combination with the prior art acknowledged in the description of the patent in connection with Figure 1c thereof.

- VI. The Appellant (Proprietor of the patent in suit) lodged an appeal against this decision on 12 October 1987, paid the appeal fee on the same day and filed the statement of grounds on 21 December 1987.
- VII. In communications pursuant to Article 110(2) EPC the Board also referred to the following documents:
- DE-A-1 454 957 (D4);  
Information sheet "Kampf Maschinenfabrik" by Erwin Kampf, D 5286 Bielstein (DE) pages 39 to 41 (D8); and  
US-A-731 902 (D9).
- VIII. By letter dated 13 February 1989 the Respondent (Opponent) withdrew his opposition.
- IX. In response to the communications of the Board, the Appellant filed with letter dated 6 July 1990, a new set of Claims 1 to 10, independent Claims 1 and 4 thereof reading as follows:
- "1. A method of slit-cutting a fast moving polymer film having a thickness in the range of from 10 to 500 micrometers by means of an easily replaceable knife provided with a razor-type cutting edge and held in a cutting position where the film is not in contact with a support, characterized in that
- (i) the cutting edge is a substantially continuous edge (22) at the periphery (21) of a circular or polygonal steel sheet disc (20) having a thickness in the range of from 10 micrometers to 500 micrometers and a diameter in the range of from 10 millimeters to 100 millimeters;

- (ii) maintaining disc (20) for a first length of cutting operation in a first position where a predetermined first incremental portion of the cutting edge (22) is in film-cutting position (A);
- (iii) automatically indexing disc (20) for removing the first incremental portion of cutting edge (22) from film-cutting position (A) and for moving a subsequent incremental portion (23) of cutting edge (22) into film-cutting position (A) and maintaining the subsequent portion (23) in said position for another length of cutting operation, and
- (iv) repeating step (iii) until a predominant portion, at least, of the continuous edge (22) of disc (20) has been indexed but discontinuing indexing before an incremental portion previously maintained in said cutting position (A) is again moved into said cutting position (A)."

"4. A device for carrying out the method of Claim 1, characterized by an indexing blade consisting essentially of a circular or polygonal steel sheet disc (20, 60) having

- (a) a substantially uniform thickness in the range of from 10 micrometers to 500 micrometers,
- (b) a diameter in the range of from 10 millimeters to 100 millimeters and
- (c) a substantially continuous razor-type cutting edge (22) extending around the periphery (21) of steel sheet disc (20, 60); and by an indexing

drive (25, 65) in operative connection with the disc (20, 60) for automatically indexing said disc by not more than one full turn."

X. The Appellant argued essentially as follows:

- (i) The appealed decision to revoke the patent is based on prior art which was already considered by the Examining Division. This means that the Opposition Division adopted a different standard with respect to inventive step than the Examining Division. Since the opposition itself was based on new prior art (document (7)) which, however, was not considered in the appealed decision, the patent was revoked for the mere fact that an opposition was filed but not because the opposition showed up new and pertinent evidence against maintenance of the opposed patent. Such a practice would enhance risks and uncertainty on the side of applicants under the EPC.
- (ii) The appealed decision to revoke the patent is based on prior art other than the one relied upon by the Respondent and the Opposition Division in the written and oral proceedings. The Appellant was not given an opportunity to present his comments on the new approach adopted by the Opposition Division in the appealed decision, contrary to the requirements of Article 113(1) EPC.
- (iii) Two major aspects of the present invention are, on the one hand, the provision of an entirely new type of cutting tool in the form of a "round razor blade" and, on the other hand, automatically indexing this blade when slit-cutting a polymer film. Neither of these features is taught or

suggested by the available prior art. As far as the citations refer to circular cutting knives, they are of the commonly known regrindable type, i.e. of substantial thickness. Only with the benefit of hindsight a person skilled in the art would consider to choose the dimensions and cutting edge of such blades so as to suit those of conventional razor blades previously used in slit-cutting polymer films.

XI. The Appellant requests

- (i) to cancel the appealed decision;
- (ii) to maintain the patent on the basis of the following documents:
  - Claims 1-10 filed with letter dated 6 July 1990
  - the description as granted but with the following amendments:
    - column 2, line 32: "Claims 2-3" instead of "Claims 2-4"
    - lines 34 and 38: "Claim 4" instead of "Claim 5"
    - line 36: "Claims 5-10" instead of "Claims 6-11"
    - column 5, line 42: "50  $\mu\text{m}$ " instead of "5  $\mu\text{m}$ " (printing error)
- (iii) to refund the appeal fee;
- (iv) that the Board of Appeal or the Enlarged Board of Appeal should consider the principle whether or not the EPO's Opposition Division is at liberty to rule contrary to the EPO's Examining Division without new facts;

- (v) auxiliarily, oral proceedings in the event that request (i) is not allowed.

### Reasons for the Decision

1. The appeal is admissible.

2. Procedural questions

The fact that the Respondent has withdrawn his opposition during the Appeal proceedings (cf. paragraph VIII above) is of no immediate procedural effect in the present case in which the Opposition Division has revoked the patent.

3. Amendments

During the examination proceedings, the application has been limited to the slit-cutting mode, which was disclosed in the application as filed as the preferred embodiment.

The amendments to Claims 1 and 4 requested by the Appellant during the Appeal proceedings concern the introduction of the features

- automatic indexing, which is disclosed in Claim 4 of the application as filed; and
- indexing the disc by not more than one full turn, which is disclosed on page 7, lines 13-15 of the application as filed.

Hence, the provisions of Article 123(2) and (3) EPC are met.



The Board is also satisfied that the patent in its present amended form meets the remaining formal requirements of the EPC.

4. Novelty

None of the cited documents discloses a method or a device having all the features recited in Claims 1 or 4 respectively. In particular, none of the cited documents discloses a cutting tool in the form of a steel sheet disc as defined in Claims 1 or 4, nor automatically indexing the disc by not more than one full turn.

Hence, the subject-matter of Claims 1 and 4 is novel within the meaning of Article 54 EPC.

5. Prior art

In the Board's view, the closest prior art is the one referred to in the specification of the patent in suit in connection with Figure 1c (column 2, lines 4 to 10; column 7, line 48 to column 8, line 21), i.e., a method of slit-cutting a polymer film in accordance with the preamble of Claim 1, wherein the cutting tool is formed by a conventional razor blade. The specification states that devices for carrying out this method had been available for commercial machines. This is in line with the teaching of document D8 which provides a general survey of the different cutting modes commonly used in practice and which mentions slit-cutting by using razor blades (referred to therein as "Rasierklingenschnitt") as particularly suitable for cutting polymer films.

The specification of the patent in suit continues to state that when cutting polymer films that contain abrasive additives, the cutting life of such throw-away razor

blades is limited and controlled placement of fresh edge portions of such razor blades into cutting position presents problems in any prolonged (e.g. 10 hours or more) continuous operation. Reversing a blade or exchanging one blade for another requires an interruption of the operation (column 2, lines 11 to 19).

6. Problem and solution

In view of this prior art, the actual problem underlying the invention is the one indicated in the specification of the patent, namely that of preserving the advantages of the extremely sharp edge provided by such throw-away blades while minimizing or avoiding the problems caused by knife-dulling in prolonged continuous operation (e.g. 100 hours or more) notably when cutting polymer films that contain highly abrasive components, such as antiblocking agents (column 2, lines 20 to 27).

This problem is solved by the measures set out in the characterising part of Claims 1 and 4, respectively.

As already set out in paragraph 4 above, a cutting tool as defined in Claims 1 and 4 is to be regarded as being novel per se. Thus, the inventive concept includes the creation of an entirely new cutting tool which preserves, on the one hand, the advantages of the known razor blades and which, on the other hand, overcomes the disadvantages encountered with indexing such blades in continuous operation and thus allowing automatic indexing.

7. Inventive step

- 7.1 Document D9 relates to cutting a web of paper, cloth or the like by using a circular knife penetrating into a groove (14) of a stationary web-supporting roll (13)

without touching the roll either at the side or at the bottom of the groove (page 1, lines 1 to 4 and 38 to 56). In this way, the knife does not dull as rapidly as in the case of shear cutting so that the required amount of sharpening is reduced (page 1, lines 9/10 and 56 to 59). The circular knife may either rotate freely or be driven at high speed so as to perform a rotating cutting mode or, according to a third embodiment, be kept stationary so as to perform a slit-cutting mode. For this latter embodiment it is disclosed to index the circular knife manually in order to periodically bring a fresh cutting edge portion into operation. Obviously, this manual indexing action requires interruption of the cutting operation.

Apart from the indication that the cutting edge should be "very sharp", there is no indication as to the specific design of the circular knife. The fact that document D9 is concerned with reducing sharpening work implies that a circular knife having a thickness substantially higher than 500  $\mu$  is envisaged, all the more so because a rotational cutting mode anyway requires circular knives of substantial thickness anyway. There is no indication that the slit-cutting mode would require a circular knife of a different design than that commonly used for the rotational cutting mode.

Thus, all a person skilled in the art can learn from document D9 is that a manually indexable circular knife of substantial thickness may be used for slit-cutting webs of paper or the like.

However, a person skilled in the art, confronted with the problems encountered with slit-cutting a polymer film by using an indexable razor blade, is unable to derive any teaching or suggestion from document D9 in the sense that such problems may be solved by replacing the razor blade

by an automatically indexed cutting knife designed as defined in Claims 1 and 4 of the patent in suit respectively, i.e. by a circular knife which is novel per se and thus has no model in prior art.

- 7.2 Document D4 describes a slit-cutting method and a device to cut a fast moving (page 8, first paragraph: 50 m/min) polymer film by means of a razor blade or a slowly rotating circular knife (51) cooperating with a grooved support-roller (53), the method comprising the steps of drawing the polymer film between the knife and the support-roller and against said support-roller; oscillating said knife and said support-roller relative to each other in out of phase pendulum oscillation to cause the knife edge to enter the groove and cut the polymer film so that the point of cutting contact of the cutting edge with the polymer film is continually changing thereby evenly distributing the wear along the cutting edge. Thereby, extreme wearing action on the knife by a coatex film is reduced in comparison with shear-cutting.

Although document D4 deals with a similar problem as the contested patent (slit-cutting of highly abrasive polymer films), it leads away from the invention as claimed, since it teaches to strictly avoid any punctual contact between the cutting edge and the film (page 6, first paragraph). Moreover, document D4 is silent with respect to the design of the circular knife. The indication that the groove of the support-roller (53) should have a width of at least 0,5 mm, a depth of at least 4 mm with the outer edges rounded with a radius of 1 mm (page 2, last paragraph) and that the knife should penetrate into the groove by about 3 mm (page 14, lines 6/7) does not imply that when using a circular knife the thickness thereof must be less than 0,5 mm (= 500  $\mu$ m) since a circular knife of conventional design may equally penetrate by 3 mm into a groove of a

width substantially less than the thickness of a conventional circular knife. Thus, document D4 does not suggest a design other than the one commonly used in shear-cutting in comparison with which an improvement is envisaged (page 1, second paragraph).

Hence, document D4 suggests per se neither the use of an indexable but otherwise stationary circular knife nor that of a circular knife of the design set out in Claims 1 and 4 of the patent in suit.

7.3 Document D1 is not concerned with slit-cutting a moving film but with press-cutting or cropping a film wound on a coil.

Notwithstanding the fact that a skilled person looking for solutions overcoming the problems encountered with slit-cutting would normally not only refer to the specific field of slit-cutting, but also to the general field of cutting (cf. decision T 176/84, OJ EPO 1986, 50), the Board nevertheless comes to the conclusion that in the present case the skilled person would not be led to the solution as claimed by the teaching of document D1.

According to this teaching a stationary circular knife of substantial thickness is pressed against the rotating coil in order to penetrate into the coil by a substantial amount (Figures 2 and 3). The knife can be manually indexed by unscrewing it from its support and re-attaching it thereto in a fresh angular position. Clearly, this indexing operation requires an interruption of the cutting process.

Thus, document D1 suggests neither automatic indexing nor the specific circular knife as defined in Claims 1 and 4 of the patent in suit.

7.4 Document D7 describes a method for press-cutting a coil of paper, similar to the one referred to in document D1, whereby however the cutting tool is formed by a razor blade which is pressed against the rotating coil. The blade is held by a pivotable support in order to be periodically brought into a fresh cutting position. This indexing is performed manually without interrupting the cutting process, whereby the blade adopts a different angle with respect to the material to be cut after each indexing step. Thus, all the relevant teaching derivable from document D7 is the indication of a possibility to index the razor blade without interrupting the cutting operation.

7.5 To sum up it can be stated that, an overall consideration of the prior art as reflected by the documents referred to above makes clear that circular knives and razor blades are to be considered as equivalent cutting tools for the case of slit-cutting (viz. documents D8, D9 and D4) as well as in the case of press-cutting (viz. documents D1 and D7). As pointed out above, the documents teach explicitly or implicitly to use circular knives of the commonly known regrindable type, i.e. knives having a thickness well in excess of 500  $\mu\text{m}$  and with a cutting edge angle substantially greater than the one of a razor type cutting edge. Since no hint is given to depart from this design, the Board cannot accept the view that a person skilled in the art, considering to replace the razor blade of the method and device according to the closest prior art by a circular knife, would obviously recognise that the dimensions and type of cutting edge of the circular knife would have to be commensurate with the razor blade and that a knife of such a design would overcome the problems encountered with indexing razor blades in a continuous slit-cutting operation.

- 7.6 The Board also considered the remaining documents referred to in the first instance proceedings and found that the teaching thereof is less relevant with respect to the claimed subject-matter than the teaching of the documents referred to above.
- 7.7 Consequently, the subject-matter of valid Claims 1 and 4 of the patent in suit involves an inventive step within the meaning of Article 56 EPC.

These claims, together with the dependent claims and the revised description, can, therefore, form the basis for maintaining the patent in suit in amended form.

8. Opposition procedure is an independent procedure following the procedure up to grant (cf. decision T 198/88; OJ EPO 1991, 254). In addition, by reason of Article 114(1) EPC, an Opposition Division is competent to examine the facts of its own motion without being restricted in this examination to the facts, evidence and arguments provided by the parties. Thus, it is absolutely possible that an Opposition Division may come to a conclusion as regards inventive step which is contrary to the decision of an Examining Division although the facts and evidence taken into consideration are the same in both cases. Therefore, the arguments put forward by the Appellant in this respect are not correct.

The Board believes that the answer to the Appellant's question (cf. paragraph XI (iv) above) raised in request for referral for the Enlarged Board of Appeal (Article 112(1)(a) EPC) can be deduced directly and unequivocally (as explained above) from the EPC. Nor does it know of any contrary decisions which would justify a ruling by the Enlarged Board of Appeal with a view to

ensuring uniform application of the law (Article 112(1) EPC). Accordingly, no such ruling is needed (Article 112(1)(a) EPC) and the request is therefore rejected.

9. The impugned decision is based upon prior art, i.e. document D1 and the passage referring to the commonly known method (closest prior art) contained in the description of the patent in suit, column 2, lines 4 to 10, which was known to the Appellant and which has already been considered by the Examining Division. During oral proceedings before the Opposition Division this particular state of the art as well as the teaching of document D7 were discussed by the parties. Consequently, the Appellant had to expect under these circumstances the possibility that his patent be revoked for lack of inventive step of the subject-matter claimed therein in consideration of said commonly known method in combination with the teaching of documents D1 and/or D7. Thus, the approach adopted by the Opposition Division in the present case does not constitute a substantial procedural violation within the meaning of Rule 67 EPC which could have possibly led to a reimbursement of the appeal fee. The request to refund the appeal fee is therefore rejected.
10. Since the patent in suit is maintained in amended form (see paragraph 7 above) no oral proceedings had to take place.



**Order**

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the first instance with the order to maintain the patent on the basis of the following documents:
  - (a) Claims 1-10 filed with letter dated 6 July 1990
  - (b) the description as granted but with the following amendments:
    - column 2, line 32: "Claims 2-3" instead of "Claims 2-4"
    - lines 34 and 38: "Claim 4" instead of "Claim 5"
    - line 36: "Claims 5-10" instead of "Claims 6-11"
    - column 5, line 42: "50  $\mu\text{m}$ " instead of "5  $\mu\text{m}$ "
  - (c) Figures as granted.
3. The request to refund the appeal fee and the request to refer to the Enlarged Board are rejected.

The Registrar:



N. Maslin

The Chairman:



C. Andries