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**D E C I S I O N**  
of 23 August 1995

**Case Number:** T 0034/93 - 3.2.1

**Application Number:** 87114124.8

**Publication Number:** 0291568

**IPC:** B60C 21/02

**Language of the proceedings:** EN

**Title of invention:**

Method to improve the endurance and reliability of patch-rubbers and of tires repaired or retreaded by means of the same patch-rubbers

**Applicant:**

R.F.P. S.r.l. Ricostruzione Fascia Prestampata

**Opponent:**

-

**Headword:**

-

**Relevant legal provisions:**

EPC Art. 56

**Keyword:**

"Inventive step (yes)"

**Decisions cited:**

-

**Catchword:**

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Case Number: T 0034/93-3.2.1

**D E C I S I O N**  
of the Technical Board of Appeal 3.2.1  
of 23 August 1995

**Appellant:** R.F.P. S.r.l. Ricostruzione Fascia  
Prestampata  
S.S. 96 km. 118  
I-70026 Modugno (Bari) (IT)

**Representative:** Russo, Saverio, Dott. Ing.  
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**Decision under appeal:** Decision of the Examining Division of the European  
Patent Office dated 15 September 1992 refusing  
European patent application No. 87 114 124.8  
pursuant to Article 97(1) EPC.

**Composition of the Board:**

**Chairman:** F. Gumbel  
**Members:** M. Ceyte  
J. C. Saisset

## Summary of Facts and Submissions

- I. European patent application No. 87 114 124.8 (publication number: 0 291 568) was refused by a decision of the Examining Division dated 15 September 1992.

The main reason for the refusal was that Claim 1 then on file lacked clarity. Moreover an objection raised in a previous communication, according to which the claimed subject-matter was not patentable in view of

D1: US-A-4 333 508

D2: FR-A-2 015 190

was referred to.

- II. On 20 November 1992 the Appellant (Applicant) lodged an appeal against this decision and paid the appeal fee at the same time. The Statement of Grounds of Appeal in Italian was also filed at this date.

An English translation of the Statement of the Grounds of Appeal was filed on 3 December 1992.

A new set of claims drafted in order to meet the lack of clarity objection raised by the Examining Division was filed together with the Statement of Grounds of Appeal, followed by further proposals for amendments.

The Appellant submitted that the new claims were clear and that the claimed subject-matter was new and inventive over the cited prior art documents.

III. On the Board's initiative, the Appellant filed with letter dated 27 October 1994 a complete revised description together with an amended set of claims and requested that the decision under appeal be set aside and the patent be granted with these documents together with the drawings as originally filed, Figures 1 to 5.

Claim 1 reads as follows:

"1. Patch for repairing or retreading radial-ply tires, comprising superposed cord plies formed by rubber-coated fabrics of cords made of synthetic or natural fibres, the cords of each ply being mutually parallel and rectilinear, the axis of symmetry of each ply being superposed on the axis of symmetry (A) of the patch and an additional ply (2) having parallel metallic cords embedded in rubber, characterized in that the plies are assembled by vulcanization and that the cords of at least two plies (1a) and (1b), form, in turn with the symmetry axis (A) of the patch, an angle greater than  $0^\circ$  and less than  $20^\circ$  in a clockwise direction in one of the plies and in a counter-clockwise direction in the other superposed ply, the patch being applied in such a way that the axis of symmetry is parallel to, or superposed on, the radial cords of the tire, the parallel metallic cords of the additional ply (2) being oriented either like those radially arranged in the sidewalls of the tire when the patch is destined to be applied on the sidewalls or like those diagonally arranged in the tire belt when the patch is destined to be applied in the area of the tire belt or in the area of the corners that the belt forms with the sidewalls."

**Reasons for the Decision**

1. The appeal complies with Article 106 to 108 and Rules 1(1) and 64 EPC; it is admissible.
2. The amendments to Claim 1 are adequately supported by the illustrated embodiments of the description (Figures 1, 3 and 4) as filed.

Therefore the subject-matter of Claim 1 does not extend beyond the content of the application as filed (Article 123(2) EPC).

The Board is also satisfied that the current Claim 1 meets the requirements of clarity and conciseness (Article 84 EPC).

3. In the pre-characterising portion of Claim 1, the Appellant has recited all those features of the repair patch which are in combination disclosed in FR-A-1 548 676 (document D4) representing the closest prior art. Claim 1 thus likewise meets the formal requirements of Rule 29(1) EPC.

4. *Novelty*

As appears from paragraph 3 above, the repair patch according to Claim 1 differs from that disclosed in the closest prior art document D4 by the features stated in the characterising part of the claim.

The repair patch according to document D1 does not disclose in addition to superimposed plies containing cords made of synthetic or natural fibres, where the

axis of symmetry of each ply coincides with the axis of symmetry of the patch, a ply containing metallic cords as defined in the pre-characterising portion of Claim 1.

The repair patch according to Claim 1 is likewise novel with respect to document D2, since the repair patch according to this citation in particular does not comprise an additional ply containing metallic cords.

Hence the novelty of the subject-matter of Claim 1 is clearly given.

5. It still remains to be examined whether the repair patch according to Claim 1 involves an inventive step. The following points emerge in this respect.

5.1 The repair patch according to the closest prior art disclosed in document D4 comprises one ply with mutually parallel metallic cords and two or more superimposed plies with fibre cords. The plies containing fibre cords may have the cords parallel to those of the ply having metallic cords or inclined at an angle of 45°. The patches disclosed therein may be used for repairing the tread of a radial ply tire, the patch being positioned so that the metallic cords extend parallel to the radial cords of the sidewalls and not to the diagonal metallic cords of the tire belt.

Starting from this closest prior art, the object of the invention is in essence the same as that stated in the patent application in suit, that is to increase the flexibility of repaired patches for radial tires without diminishing the strength or mechanical resistance thereof, the repaired zone of the tire having an endurance and reliability comparable to those of the other uninjured parts of the tire.

5.2 This object is in essence achieved by the following features stated in the characterising part of Claim 1 and not disclosed by document D4:

- (i) the cords of the plies extend at an angle to the symmetry axis which is greater than  $0^\circ$  and less than  $20^\circ$  in a clockwise direction in one of the plies and in counter-clockwise direction in the superposed ply.
- (ii) the patch is applied in such a manner that the axis of symmetry is parallel to, or superposed on, the radial cords of the tire, the metallic cords of the additional ply being oriented like the radially extending cords of the side walls when the patch is applied on the side walls of the tire or like the diagonally extending cords of the tire belt when the patch is applied in the area of the tire belt.

5.3 As stated in paragraph 4 above, the repair patch of document D2 has no additional ply containing metallic cords, so that the characterising feature (ii) is neither disclosed nor suggested by this citation.

It is true that the cords of one ply extend at "an acute angle" to the cords of the remaining cord plies although there is no explicit disclosure in this citation of the claimed angle range (feature (i)).

However the arrangement of the plies at an acute angle with a repair patch according to the preamble of Claim 1, related to document D4, cannot be considered as obvious solely on the grounds that such a feature is disclosed per se by a publication in the same technical field. It is also necessary to examine whether there was any incentive or suggestion for the skilled person to make use of this measure in the present case. Such a

suggestion does not have to be given *expresses verbis*, it can reside in the fact that the purpose of the disclosed feature is the same as in the case to be decided (cf. eg. decision T 39/82 OJ EPO 1982, 419). In the present case there is no conformity of problems or purposes, since the arrangement at an acute angle is in document D2 intended to solve the problem of avoiding the cords of different plies from interengaging and rubbing against each other. Thus document D2 does not deal with the problem underlying the patent application in suit related to the increase of the flexibility of repair patches without diminishing the strength thereof and to the improvement of the endurance and reliability of the repaired zone.

- 5.4 Document D1 concerns a tire sidewall repair patch having overlapping plies which are in a criss-cross relationship, so as to reduce the number of plies at the side portions of the patch and thus to increase flexibility thereof. The cords of the plies may be nylon, polyester or wire. In a bias ply tire, the cords of the plies extend at an angle of about 45° to the axis of symmetry. In the case of a radial tire, the cords of the plies extend in the direction of the symmetry axis.

There is thus no disclosure of the above characterising feature (i). Furthermore, since the repair patch of this document has no ply having metallic cords in addition to the other remaining plies containing cords of synthetic or natural fibres, there is no suggestion of the further characterising feature (ii) which relates to the orientation of the metallic cords of the additional ply. Hence, documents D1, D2 and D4 cannot render the claimed subject-matter obvious.

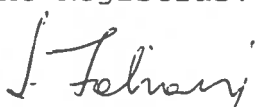
- 5.5 The Board has also considered the further prior art documents cited in the search report and found them not prejudicial to the patentability of the subject-matter of Claim 1, neither alone nor in combination with the documents D1, D2 and D4 cited above.
- 5.6 Therefore, in the Board's judgement, the subject-matter of Claim 1 involves an inventive step (Article 56 EPC).
6. Dependent Claim 2 concerns a particular embodiment of the invention and is likewise allowable.
7. The description and the drawings also meet the requirements of the convention.

**Order**

**For these reasons it is decided that:**

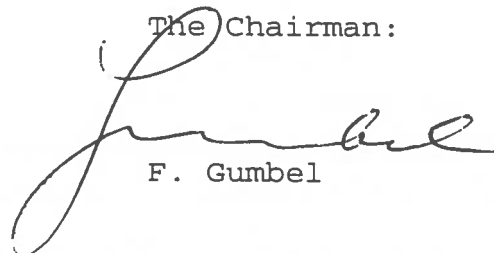
1. The decision under appeal is set aside.
2. The case is remitted to the first instance with the order to grant a patent in the following version:
  - pages 1 to 14 of the description and Claims 1 and 2 received on 31 October 1994 with letter of 27 October 1994,
  - drawings: Figures 1 to 5 as originally filed.

The Registrar:



S. Fabiani

The Chairman:



F. Gumbel

