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**Datasheet for the decision
of 18 July 2007**

Case Number: T 0829/05 - 3.2.01

Application Number: 99306493.0

Publication Number: 0982158

IPC: B60C 15/024

Language of the proceedings: EN

Title of invention:
Heavy duty pneumatic radial tires

Applicant:
Bridgestone Corporation

Opponent:
-

Headword:
-

Relevant legal provisions:
EPC Art. 83, 123(2)
EPC R. 88

Keyword:
"Disclosure - sufficiency - yes"
"Amendments -agreed by examining division - added subject-
matter (yes) (main request)"

Decisions cited:
-

Catchword:
-



Case Number: T 0829/05 - 3.2.01

D E C I S I O N
of the Technical Board of Appeal 3.2.01
of 18 July 2007

Appellant: Bridgestone Corporation
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Chuo-ku
Tokyo (JP)

Representative: Whalley, Kevin
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Decision under appeal: Decision of the Examining Division of the
European Patent Office posted 7 February 2005
refusing European application No. 99306493.0
pursuant to Article 97(1) EPC.

Composition of the Board:

Chairman: S. Crane
Members: J. Osborne
S. Hoffmann

Summary of Facts and Submissions

- I. With the contested decision the examining division refused the application on the ground that it did not disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art (Article 83 EPC). It held, on the other hand, that an amendment made to claim 1 was allowable as a correction of an error within the meaning of Rule 88 EPC.
- II. In its statement of grounds of appeal the applicant requested that a patent be granted on the basis of claims 1 to 3 on which the contested decision was based.
- III. In a communication pursuant to Article 111(1) EPC the board indicated its provisional opinion that the application did satisfy the requirements of Article 83 EPC. It indicated its further provisional opinion that it disagreed with the examining division's conclusion that the amendment of claim 1 could be considered as correction of an error within the meaning of Rule 88 EPC. The board raised a further objection that the absence of a feature from that claim resulted in addition of subject-matter (Article 123(2) EPC).
- IV. At oral proceedings held on 18 July 2007 the applicant requested that the contested decision be set aside and a patent be granted on the basis of respective claims 1 to 3 according to main and auxiliary requests filed on 15 June 2007.

V. Claim 1 according to the main request reads:

"A pneumatic radial tire comprising a pair of bead portions each including a bead core (1) embedded therein, a radial carcass (2) of a rubberized cord ply extending between the pair of the bead portions and wound around each bead core (1) from the inside of the tire toward the outside thereof, a belt superimposed about a crown portion of the carcass and comprised of at least one belt layer, and a tread disposed on an outside of the belt in the radial direction, in which (I) a tapering angle θ_c of an inner side of the bead core (1) in the radial direction is within $\pm 2^\circ$ of a tapering angle θ_R of a bead seat part in an approved rim, and (II) as a tightening margin between the inner side of the bead core in the radial direction and the bead seat part of the approved rim when the tire is mounted onto the approved rim and inflated under a standard internal pressure, wherein

$$102\%C_b \leq C_a \leq 115\%C_b$$

in which

$$C = \text{compression ratio} = \frac{t_2}{t_1}$$

t_1 = thickness from inner side of bead core in radial direction to bottom face of bead seat part, excluding a thickness of a metal cord member

t_2 = thickness prior to mounting tire onto approved rim

C_a = compression ratio at widthwise inner end (a) of the inner side of the bead core (1)

C_b = compression ratio at widthwise outer end (b)."

Claim 1 according to the auxiliary request is identical except that C, the compression ratio, is defined as $\frac{t_1}{b}$.

VI. The applicant essentially submitted that:

The examining division states in its decision that it is essential for the skilled person to know the bead rubber hardness in order to manufacture a tyre which exhibits the specified tightening margin between the bead core and bead seat in the radial direction. This is not the case because the compression ratio is determined only by the dimension of the bead portion. The examining division states furthermore that tension of the tyre carcass during inflation results in rotation of the bead core which therefore affects the seating of the bead portions on the rim. This is incorrect. As regards the dimension of the bead core diameter and the total gauge of steel material beneath the bead core, these are determined on the basis of static strength of the tyre as a pressure vessel and durability of the bead portion respectively. The inner diameter of the bead core is determined on the basis of fit between the bead base and the bead seat on the rim.

As regards the correction of the definition of the compression ratio according to the main request, both original claim 1 and the description specify that C_a is greater than C_b but this is evidently not the case when the definitions of these terms in claim 1 as originally filed are considered in the context of the drawing. It therefore would be immediately evident to the skilled person that the definition in claim 1 as originally filed was incorrect. It would further be immediately evident that it was the inverted form which was

intended since that is consistent with the drawing. In patent applications relating to mechanical engineering the drawing is a particularly important part of the disclosure. The skilled person would then recognise that the claim was incorrect because the inversion of the ratio was a simple error. An incorrect presentation of the drawing, on the other hand, would have been a more complex matter. Although the drawing in this case is schematic, the inconsistency is visible without the need to resort to detailed measurement and according to decision T 748/91 such a drawing depicts all essential features.

Reasons for the Decision

1. The application relates to a pneumatic heavy duty radial ply tyre such as for use in construction vehicles. In particular it relates to the relative orientations of the bead core, the bead base of the tyre and the bead seat of a rim such that the risk of slippage between the tyre and the rim is minimised. A feature of particular importance in this decision is the compression of the rubber between the bead core and the bead base when the tyre is mounted onto a rim, expressed as a "compression ratio".

Main request - amendments

2. In claim 1 as originally filed the compression ratios at the widthwise inner and outer ends of the bead core were defined as "a value obtained by dividing a thickness from the inner side of the bead core in the radial direction to a bottom face of the bead seat part

excluding a thickness of metal cord member by a thickness prior to mounting". The consistory clause bridging pages 2, 3 contained identical wording. In the format of present claim 1 this wording defined the compression ratio as $\frac{t_1}{t_2}$. Present claim 1 therefore differs from claim 1 as originally filed in that the definition of the compression ratio has been inverted to $\frac{t_2}{t_1}$. It is not in dispute that the application as originally filed contained no explicit disclosure of the subject-matter of the claim as amended. However, in the opinion of the applicant the amendment is an obvious correction of a mistake within the meaning of Rule 88 EPC because it would have been immediately evident to the skilled person that the definition of the compression ratio had been mistakenly presented and that the inverted form was intended. The applicant accepts that the drawing is schematic. According to case law such drawings cannot be measured but the applicant takes the view that the inconsistency between the drawing and the claim is immediately visible.

- 2.1 The information presented in the drawing is fundamental to the applicant's case and it is therefore necessary to ascertain how representative of the subject-matter of the invention the drawing actually is. The drawing shows a significant misalignment between the base of the bead core and the bead seat of the rim on the one hand and the bead base in its free condition on the other. This misalignment is shown as a divergence towards the widthwise inner end. In accordance with the invention the base of the bead core is at an angle of within $\pm 2^\circ$ of the bead seat of the rim. The bead base in its free condition preferably diverges from the base

of the bead core by $0.5-3^\circ$ (claim 2). Extreme values of these angles in combination result in the bead base in its free condition and the bead seat on the rim not diverging as shown in the drawing but converging at an angle of 1.5° . This condition if shown in the drawing would provide a very different impression as regards the respective values of the compression ratios. Even if it might be argued that it is unrealistic to combine the extreme values of the angles, equality of the three angles shown in the drawing, which would result from values spaced from the end-points of the respective ranges, still would destroy the visible impression on which the applicant relies.

2.2 It also must be borne in mind that the dimensions from which the compression ratio is derived exclude the thickness in the radial direction of the cords. In the drawing, particularly at the widthwise inner end, the cords are spaced from the base of the bead core. This results in the need to combine dimensions falling on either side of the cords when determining the compression ratio so that it is impossible to make a simple visible comparison between two dimensions. Since the difference between the values C_a and C_b may be as little as 2%, the skilled person would be unable to derive any reliable conclusions from simply looking at the drawing.

2.3 Even if the skilled person were aware of an inconsistency between the claim and the drawing he would have no cause to believe that the claim was incorrect. The drawing is stated to be diagrammatic and in the absence of any evident technical reason to suspect that the claim was incorrect, and the applicant

has not presented any such reason, the skilled person would simply accept the inconsistency as being characteristic of a schematic drawing.

3. On the basis of the foregoing the board concludes that the definition of the compression ratio in claim 1 according to this request extends the content of the application beyond that as originally filed (Article 123(2) EPC) and the amendment does not satisfy the requirements for a correction in accordance with Rule 88 EPC. The request is therefore refused.

1st auxiliary request

4. The subject-matter of claim 1 differs from that on which the contested decision was based in that the respective thicknesses t_1 , t_2 are defined as excluding the thickness of metal cord members and the compression ratio is defined as $\frac{t_1}{t_2}$. By virtue of these amendments the subject-matter of present claim 1 is identical with that as originally filed. The subject-matter of claims 2, 3 also is identical with that as originally filed. The claims therefore do not contravene the requirement of Article 123(2) EPC.
5. The application was refused because the examining division considered that the application failed to disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art (Article 83 EPC). The examining division reasoned that it was necessary to disclose the following features essential to achieving the claimed tightening margin in respect of at least one way of carrying out the invention:

- bead core diameter and shape;
- bead seat diameter and shape;
- total material thickness beneath the bead core;
- hardness of the bead material.

5.1 Claim 1 specifies an "approved rim" which is defined in the application as "a standard rim in accordance with applied size and ply rating defined in 1998 YEAR BOOK published by TRA". The skilled person in this case is to be regarded as a technician experienced in the design of tyres of the type to which claim 1 relates for fitment onto standard rims specified by "TRA", the Tire and Rim Association Inc. He has the knowledge for producing a tyre having desired characteristics for a particular standard rim, including specifying all of the features listed by the examining division.

6. The matter at issue here is to what extent the skilled person requires instruction in how to modify the features listed by the examining division to achieve the claimed tightening margin. The application contains test results for four examples of tyres in accordance with the invention and one conventional tyre. All of the tyres are stated to be "substantially the same" with the exception of the parameters addressed in the claims. The teaching of the application therefore is that the invention may be put into effect by creating a tyre which with the exception of those parameters listed in the claims is conventional in all respects. Merely positioning the base of the bead core parallel to the bead seat of the rim without changing the angle of the bead base produces the lower limit 102.5% of the claimed ratio C_a/C_b (see table 1, conventional example

and example 1). Examples 2 and 3 show that a large portion of the claimed range in the relationship C_a/C_b is obtainable merely by placing the base of the bead core parallel to the bead seat of the rim and increasing the angle of the bead base by up to 2° . In accordance with the present application the skilled person beginning with a conventional tyre therefore merely has to vary the respective angles of the base of the bead core and the bead base whilst ensuring that these in combination provide values of the compression ratio which fulfil the claimed relationship. It is apparent from this that no amendment to the parameters listed by the examining division is necessary to put into effect the subject-matter of the claims. Since the specification of those parameters falls within the normal aptitude of the skilled person the board is satisfied that he is capable of putting into effect the subject-matter of the claims in the absence of further information in the application and without the need to exercise inventive activity.

7. On the basis of the foregoing the board concludes that the application does disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art (Article 83 EPC).

8. Since the contested decision did not treat patentability of the subject-matter of the claims the board exercises its discretion under Article 111(1), second sentence, EPC and remits the case for further prosecution.

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 for further prosecution.

The Registrar:

The Chairman:

C. Moser

S. Crane