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File Number: T 221/91 - 3.2.1

Application No.: 85 630 024.9

Publication No.: 0 192 910

Title of invention: A pneumatic tire

Classification: B60C 3/04, B60C 9/18

D E C I S I O N
of 8 December 1992

Proprietor of the patent: The Goodyear Tire & Rubber Company

Opponent: Bridgestone Corporation

Headword:

EPC Articles 54 and 56

Keyword: "Prior use (yes)"
"Novelty (main request, no; auxiliary request, yes)"
"Inventive step (auxiliary request, yes)"



Case Number : T 221/91 - 3.2.1

D E C I S I O N
of the Technical Board of Appeal 3.2.1
of 8 December 1992

Appellant :
(Opponent)

Bridgestone Corporation
10-1, Kyobashi 1-Chome
Cho-ku
Tokyo (JP)

Representative :

Whalley, Kevin
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London WC2A 3LS (GB)

Respondent :
(Proprietor of the patent)

The Goodyear Tire & Rubber Company
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Akron
Ohio 44316-0001 (US)

Representative :

Mitscherlich & Partner
Patentanwälte
Steinsdorfstraße 10
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Decision under appeal :

Decision of the Opposition Division of the
European Patent Office dated 14 November 1990,
and issued in written form on 7 February 1991,
rejecting the opposition filed against European
patent No. 0 192 910 pursuant to Article 102(2)
EPC.

Composition of the Board :

Chairman : F. Gumbel
Members : S. Crane
W.M. Schar

Summary of Facts and Submissions

I. European patent No. 0 192 910 was granted on 11 May 1988 on the basis of European patent application No. 85 630 024.9 filed on 26 February 1985.

II. Claim 1 of the granted patent reads as follows:

"A truck tire (110) of radial carcass (111) construction, having an aspect ratio SH/SW not exceeding 0.7, where SW is defined as the maximum axial width across the tire as molded, and SH is the maximum radial height of the tread portion (115) at the mid-circumferential plane M-M from a cylindrical plane passing through the heel of the bead portions (112), a crown region (114) with a ground contacting tread portion (115) of a distinct treadwidth (TW), a belt reinforcement (116) extending circumferentially around the carcass (111) beneath the tread portion (115), and a pair of annular elastomeric wedges (117) inserted between the axially outer margins of the belt reinforcement (116) and the radial carcass (111), the crown region (114) including an area of concentricity (CM) in which the ground contacting external surface of the tread portion (115) is concentric with the carcass ply (111), the belt reinforcement (116) extending axially beyond the area of concentricity (CM), characterized in that

(1) the area of concentricity (CM) extends axially between 0.75 and 0.85 of the treadwidth (TW),

(2) the maximum thickness (WG) of the wedges (117) between the carcass ply (111) and the belt reinforcement (116) is between 0.1 and 0.2 of the maximum thickness (SG) between the mid ply line (120) of the carcass ply (111) and the external surface of said tread portion (115)."

III. The patent was opposed by the Appellants on the grounds that its subject-matter lacked novelty and/or inventive step (Article 100(a) EPC) and that the patent insufficiently disclosed the invention (Article 100(b) EPC).

The state of the art particularly relied upon was:

Smithers International Tire Analysis 81-3, Specification No. 654-IT (hereinafter document D4) relating to the Bridgestone, ISR22.5, V-Steel Rib 160, Radial "All Steel" Tire (hereinafter the R160Z tire).

IV. By its decision taken at oral proceedings on 14 November 1990, and issued in written form on 7 February 1991, the Opposition Division rejected the opposition.

It held with respect to document D4 that the position of the carcass ply in the cross-section of the tire shown there could not be established so that it was not possible accurately to determine the values CM, WG and SG. The evidence of the Appellants submitted for the first time at the oral proceedings relating to prior use of the R160Z tire was not considered as satisfactory for showing that a tire with the features of granted Claim 1 had been made available to the public.

The objection under Article 100(b) EPC, which was based on an allegation that the specification did not explain why the claimed ranges of CM and the ratio of WG to SG led to an advantageous product, was dismissed.

V. An appeal was filed against this decision on 13 March 1991, the appeal fee having been received one day earlier.

The Statement of Grounds of Appeal was filed on 4 June 1991. The statement was accompanied by an affidavit sworn by Mr David E. Williams of Smithers Scientific Services (hereinafter "Smithers"), cut samples of tires referred to in and attached to the affidavit, and footprints prepared from those cut samples.

The Appellants requested that the decision under appeal be set aside and the patent revoked in its entirety.

VI. In response to a communication of the Board dated 18 May 1992 pursuant to Article 11(2) RPBA the Appellants filed, with a letter dated 27 November 1992, a statement of Mr E. Mineki, an employee of the Appellants, explaining the relationship between the inflated and in-mould aspect ratio of a tire, particularly with respect to the R160Z tire.

VII. Oral proceedings were held on 8 December 1992.

At the oral proceedings the Respondents (Proprietors of the patent) submitted as a main request that the appeal be dismissed and the patent be maintained unamended. The auxiliary request of the Respondents was for maintenance of the patent in amended form on the basis of a set of Claims 1 to 4 and revised description submitted at the oral proceedings, together with the drawings as granted.

VIII. Claim 1 of the auxiliary request is worded as follows:

"A truck tire (110) of radial carcass (111) construction, having an aspect ratio SH/SW of approximately 0.65 not exceeding 0.7, where SW is defined as the maximum axial width across the tire as molded, and SH is the maximum radial height of the tread portion (115) at the mid-circumferential plane M-M from a cylindrical plane passing

through the heel of the bead portions (112), a crown region (114) with a ground contacting tread portion (115) of a distinct treadwidth (TW), a belt reinforcement (116) extending circumferentially around the carcass (111) beneath the tread portion (115) and a pair of annular elastomeric wedges (117) inserted between the axially outer margins of the belt reinforcement (116) and the radial carcass (111), the crown region (114) including an area of concentricity (CM) in which the ground contacting external surface of the tread portion (115) is concentric with the carcass ply (111), the belt reinforcement (116) extending axially beyond the area of concentricity (CM), wherein

- (1) the area of concentricity (CM) extends axially between 0.75 and 0.85 of the treadwidth (TW),
- (2) the maximum thickness (WG) of the wedges (117) between the carcass ply (111) and the belt reinforcement (116) is between 0.1 and 0.2 of the maximum thickness (SG) between the mid ply line (120) of the carcass ply (111) and the external surface of said tread portion (115),
- (3) the tire has a cross-sectional configuration in which the tread portion (115) has a radius of curvature TR such that the ratio TR/SW is greater than 2.0,
- (4) the belt reinforcement (116) extends a distance (X) of about 7% of the treadwidth (TW) beyond the area of concentricity (CM) of the tire, characterised in that
- (5) the carcass ply (111) follows a natural shape contour from a first point A located radially adjacent each bead portion to a second point B beneath each axially outer edge of the belt reinforcement (116),
- (6) and that said second points B are coincident with the axial extent of said central area of concentricity (CM) of the tread portion.

Independent Claims 2 to 4 relate to preferred features of the tire according to Claim 1.

IX. The arguments put forward by the Appellants in support of their request can be summarised as follows:

Smithers was a long-established and well-known commercial intelligence unit one of whose specialisations was in providing information on new tire products to the tire industry. As stated in the Williams affidavit the monthly tire analyses result from the purchase by Smithers of commercially available tires. This statement was confirmed by the affidavit of another Smithers employee, Mr Jerry J. Leyden, filed in the opposition proceedings. On the basis of these statements it was clear that the R160Z tire which was the subject of document D4, published in 1981, had been made available to the public before the application date of the contested patent. The Williams affidavit was perfectly clear and should be accepted at face value. The onus was on the Respondents to produce concrete evidence for their contention that Smithers may have obtained the tire in question by some other route and not merely to make unsupported allegations in this respect. Smithers was an independent organisation of high standing, of whom both the Appellants and the Respondents were customers, and could have no interest in supplying misleading information to one side or the other.

On the basis of information derivable from document D4, which the Respondents now recognised as pre-published state of the art, and measurements taken directly from the cut sample of the R160Z tire on which document D4 was based, it was clear that the prior used R160Z tire had all the features defined in Claim 1 of the granted patent. The subject-matter of that claim therefore lacked novelty.

As far as Claim 1 according to the auxiliary request was concerned there was no evidence that features (4) and (5)

of that claim had any combinatorial effect with its other features. It was not clear where the inventive step was supposed to lie.

X. In reply the Respondents argued essentially as follows:

The general statement in the Williams affidavit relating to the purchase of commercially available tires made no specific mention of the R160Z tire in question. In the experience of the Respondents Smithers also received tires for analysis directly from the manufacturers without purchasing them. This threw doubt on the validity of Mr William's statement. It was strange that the Appellants, who were the manufacturers of the R160Z tire, had to rely on such a third party affidavit in order to attempt to prove the prior use of that tire and could not produce the usual form of evidence in such cases, such as bills of sale etc. The requirements mentioned in T 93/89 regarding the substantiation of an alleged prior use (what, when, how and by whom) were accordingly not satisfied.

Even if it were accepted that the R160Z tire had been made available to the public the values of CM, WG and SG could not be measured unequivocally from the cut sample provided. Furthermore, the skilled man would only have call to perform such measurements once he had been made aware of their significance by the contested patent, so that the claimed ranges as such had not been made available to the public.

Features (4) and (5) of Claim 1 according to the auxiliary request giving the carcass ply a natural shape contour extending into the critical shoulder region of the tire where it was desired to reduce the build up of stresses. This was the originally stated object of the application

and features (4) and (5) clearly contributed to its solution. There was nothing in the prior art which could lead the skilled person to a tire of the construction defined in this claim.

Reasons for the Decision

1. The appeal complies with the requirements of Articles 106 to 108 and Rules 1(1) and 64 EPC; it is therefore admissible.

2. Prior use of the R160Z tire

It is undisputed that Document D4, the Smithers analysis of the R160Z tire, which bears a publication date of September 1981, belongs to the state of the art. It is clear therefore that at some time before this date Smithers must have been in possession of such a tire in order for them to have performed the necessary tests and measurements. To answer the question whether the tire itself has to be considered as belonging to the state of the art it has to be considered how Smithers came into possession of it.

Mr Williams is Director, Tire Industry Sales of Smithers. Smithers is a company independent from both parties to the proceedings. According to Mr William's affidavit the tire analyses result from the purchase by Smithers of commercially available tires. This statement is confirmed by Mr Leyden, Executive Vice President of Smithers, in his affidavit filed before the Opposition Division. In the opinion of the Board both of these persons, by virtue of their position, must clearly have an intimate knowledge of Smithers' operations and are competent to give authoritative statements with respect thereto. The

Respondents however allege that in practice Smithers do not purchase all the tires they analyse, but receive some as donations from the manufacturing companies involved, so that the possibility is not excluded that the R160Z tire in question was not available commercially. This possibility is highlighted by the fact that Mr Williams makes in his affidavit a general statement about the purchase of tires but does not specifically indicate that the R160Z tire was obtained in this way and gives no further details of the purchase thereof. The allegations of the Respondents are, however, wholly unsubstantiated. In the circumstances it was incumbent upon the Respondents to seek clarification from Smithers on this issue if they wished to rely on this line of argument, which was put forward for the first time at the oral proceedings, and present suitable evidence to the Board. Furthermore, it would be unrealistic, given the length of time that has elapsed, to expect Mr Williams to be able to exact details relating to the purchase of one specific tire.

The Board is therefore satisfied that the R160Z tire was made available to the public by the Appellants before the application date of the contested patent and belongs to the state of the art according to Article 54(2) EPC. The construction of the tire can be determined by reference to document D4 and to the cut sample of the specific tire analysed by Smithers attached to the Williams affidavit. All the requirements for establishing prior use mentioned in Decision T 93/89 (OJ EPO 1992, 718) are therefore met. The Board sees no need to comment on whether the reliance on a third party affidavit is an unusual method of proving prior use since it was for the Appellants to decide how they wished best to present their case.

Even on the assumption that the scenario put forward by the Respondents, i.e. that Smithers had obtained the R160Z

tire from the Appellants free of charge and that the tire may not have been available commercially, was correct, then public prior use would still, in the opinion of the Board, be established. The Respondents did not contest that Smithers and their employees belonged to the public and that they actually were in possession of the said tire. Furthermore, Smithers can clearly, given the publication of document D4, not have been under any obligation to keep the construction of the tire secret.

3. Main request

In order to establish whether the prior used R160Z tire exhibited all the features of the tire according to granted Claim 1 it is necessary to refer both to document D4 and to the cut sample of the tire filed with the Williams affidavit. This results from the fact that on the one hand some of the measurements required can only be performed on the complete tire and on the other some of the finer details are not visible in document D4. There is no objection to this since, as stated in the Williams affidavit, and no longer disputed by the Respondents, the cut sample derives from the same specific tire on which document D4 is based. It is to be noted in this respect that the taking of cut samples from tires to determine their construction is standard practice in the tire industry, as witnessed by the activities of Smithers.

It is not in contention that the R160Z tire exhibits all the features of the preamble of granted Claim 1. The aspect ratio SH/SW of the inflated tire as derived from the measurements given in document D4 is 0.66. According to the uncontested evidence of Mr Mineki the aspect ratio of such a tire increase slightly on inflation and the

aspect ratio as moulded is 0.64. Furthermore, the fact that a pair of wedges is inserted between the axially outer margins of the belt reinforcement and the radial carcass is specifically mentioned in document D4 and these wedges, which result in a gradually increasing separation of the belt reinforcement from the carcass ply in the shoulder regions of the tire, can be plainly seen on the cut sample.

The treadwidth TW as given in document D4 is 276.8 mm. The area of concentricity CM, in which the ground contacting surface of the tire is concentric with the carcass ply, can be measured from the cut sample as constituting 215 mm. The ratio CM/TW equals therefore 0.78 and lies within the range 0.75 to 0.85 specified in feature (1) of the characterising clause of granted Claim 1.

There is no difficulty in measuring directly from the cut sample the maximum thickness WG of the wedges between the carcass ply and the belt reinforcement. This value is 5 mm. The maximum thickness SG between the mid ply line of the carcass ply and the external surface of the tread portion as measured from the cut sample is 31 mm. The ratio WG/SG is therefore 0.16 which lies within the range 0.1 to 0.2 specified in feature (2) of the characterising clause of granted Claim 1.

Accordingly, it can be seen from the above that the prior used R160Z tire was of a construction falling within the terms of granted Claim 1.

The argument of the Respondents that to establish lack of novelty it would have been necessary for the skilled person to have been presented with the information that the ratio WG/SG, and the combination of a range of values for this ratio with the given range of extent of the area

of concentricity, were in some way of significance cannot be accepted by the Board. Such considerations could only have been of importance had inventive step been at issue, not novelty.

The Board therefore comes to the conclusion that the subject-matter of granted Claim 1 was not new. The main request of the Respondents must accordingly be refused.

4. Auxiliary request

4.1 Admissibility

Claim 1 according to the auxiliary request comprises the features of granted Claims 1 to 5 and 7, whereby all the features of granted Claim 1 and those of Claims 2, 3 and 7 appear in the preamble of the claim and those of Claims 4 and 5 constitute its characterising clause. Dependent Claims 2 to 4 are equivalent to granted Claims 6, 8 and 9 respectively.

Granted Claim 1 corresponded to a combination of the features of originally filed Claims 1 and 2 and granted Claims 2 to 9 corresponded to originally filed Claims 3 to 10.

The amendments made to the description do not go beyond those necessary to render this consistent with the terms of the new claims and to recognise the most relevant state of the art.

Accordingly, there are no objections under Articles 123(2) and (3) EPC to the documents submitted with the auxiliary request.

4.2 Novelty and inventive step

The preamble of Claim 1 of the auxiliary request is based on the R160Z tire. According to the characterising clause of the claim the carcass ply has a natural shape contour which extends from a first point radially adjacent each bead portion to a second point coincident with the end of the central area of concentricity of the tread portion. As conceded by the Appellants at the oral proceedings there is no evidence that the R160Z tire exhibited such features. The subject-matter of the claim is therefore novel.

The concept of a natural shape contour of the carcass ply is discussed in the description of the patent specification at column 4, lines 15 to 32 where a number of prior art patent documents are referred to as illustrating tires in which at least a portion of the carcass ply structure is of this form. The Board has studied these documents of its own motion and can find no suggestion therein that it would have been obvious to combine a natural shape contour of the extent defined in the characterising clause of Claim 1 of the auxiliary request with the very particular construction of the crown and shoulder regions of the tire specified in the preamble of the claim. Furthermore, the Board sees no reason to doubt the assertion of the Respondents that the extension of the natural shape contour up to the end of the area of concentricity contributes to a reduction in stress build-up in the shoulder regions of the tire, which has been from the outset the problem with which the claimed invention is concerned.

Consequently, the Board has reached the conclusion that the subject-matter of Claim 1 according to the auxiliary

request cannot be derived in an obvious manner from the state of the art and therefore constitutes a patentable invention (Articles 52(1) and 56 EPC).

4.3 Article 100(b) EPC

The objection to insufficiency raised in the opposition proceedings, which was not pursued on appeal, has been adequately dealt with in point II.1 of the decision of the Opposition Division. The Board agrees with what is said there and has nothing to add to it.

4.4 The documents according to the auxiliary request of the Respondents therefore provide a suitable basis for maintenance of the patent in amended form.

Order

For these reasons, it is decided that:

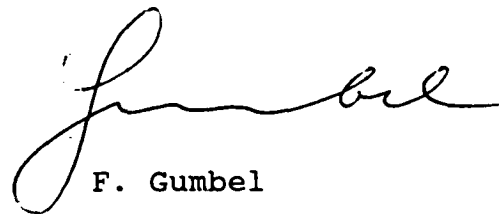
1. The decision under appeal is set aside.
2. The case is remitted to the first instance with the order to maintain the patent on the basis of Claims 1 to 4 and the description submitted at the oral proceedings together with the drawings as granted.

The Registrar:



N. Maslin

The Chairman:



F. Gumbel