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Datasheet for the decision of 9 January 2019

Case Number: T 0658/16 - 3.2.01

Application Number: 11003619.1

Publication Number: 2384905

IPC: B60B5/02, B60B21/06, B60B21/02

Language of the proceedings: EN

Title of invention:
Bicycle rim

Patent Proprietor:
SRAM, LLC.

Opponent:
SHIMANO INC.

Headword:

Relevant legal provisions:
EPC Art. 54(1)

Keyword:
Novelty - main request (no)

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Decisions cited:

Catchword:

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Case Number: T 0658/16 - 3.2.01

D E C I S I O N
of Technical Board of Appeal 3.2.01
of 9 January 2019

Appellant: (Patent Proprietor)	SRAM, LLC. 1333 North Kingsbury, 4th Floor Chicago, IL 60642 (US)
Representative:	Thum, Bernhard Wuesthoff & Wuesthoff Patentanwälte PartG mbB Schweigerstraße 2 81541 München (DE)
Respondent: (Opponent)	SHIMANO INC. OIMATSU-CHO 3-CHO 77, SAKAI OSAKA 590-8577 (JP)
Representative:	Grosse, Felix Christopher Grosse - Schumacher - Knauer - von Hirschhausen Patent- und Rechtsanwälte Nymphenburger Straße 14 80335 München (DE)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 13 January 2016 revoking European patent No. 2384905 pursuant to Article 101(3)(b) EPC.**

Composition of the Board:

Chairman	G. Pricolo
Members:	W. Marx
	P. Guntz

Summary of Facts and Submissions

I. The appellant (patent proprietor) lodged an appeal against the decision of the opposition division revoking European patent No. 2 384 905.

II. In its decision the opposition division held that the subject-matter of claims 5 of the main request and the first auxiliary request, claim 4 of the second auxiliary request, claim 3 of the third auxiliary request and claim 1 of the fourth auxiliary request, all filed with letter dated 2 November 2015, were not sufficiently disclosed to be carried out by a person skilled in the art under Article 83 EPC. Fifth to eighth auxiliary requests filed during the oral proceedings, in which the subject-matter objected to under Article 83 EPC was deleted, were admitted into the proceedings. However, the sixth auxiliary request did not comply with the requirements of Article 123(2) EPC, and the subject-matter of claims 1 of the fifth, seventh and eighth auxiliary requests were considered not new over document D3 (US 5,975,645)).

III. Together with its grounds of appeal dated 11 May 2016 the appellant (patent proprietor) filed a main request and first to fifth auxiliary requests, which were replaced by a new main request and first to seventh auxiliary requests with letter dated 31 January 2017 in response to the respondent's letter of reply. Further eighth to fourteenth auxiliary requests were filed with letter dated 13 April 2018.

IV. Oral proceedings before the board took place on 9 January 2019.

The appellant (patent proprietor) requested that the decision under appeal be set aside and that the patent be maintained in amended form on the basis of the main request as filed with the letter dated 31 January 2017. All auxiliary requests were withdrawn.

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

V. Claim 1 according to the main request filed with letter dated 31 January 2017 corresponds to a combination of granted claims 1 and 5 (see B-specification) and reads as follows (broken into a feature analysis adopted by the parties):

F1) A rim (12, 48) for a bicycle wheel (10) having a tire (14), hub (16) and spokes (20, 28), the bicycle rim (12) comprising:
F2) a radially outer tire-engaging portion (34, 50, 74);
F3) a radially inner spoke-engaging portion (36, 50, 74);
F4) a first sidewall (38, 54); and
F5) a second sidewall (40, 56) spaced apart from the first sidewall (38, 54), the first and second sidewalls (38, 54) extending between the tire-engaging and spoke-engaging portions;
F6) the tire-engaging and spoke-engaging portions and first and second sidewalls forming a toroid,

characterized in that

F7) a maximum width of the rim disposed closer to the spoke-engaging portion (36, 52, 72) than the tire-engaging portion (34, 50, 74), and
F8) a transverse cross section formed by the rim (12, 48) and the tire (14) mounted thereto is substantially elliptical.

Reasons for the Decision

1. The appeal is admissible.

2. The subject-matter of claim 1 of the main request as the appellant's sole request is not new in view of the disclosure of document D3 (Article 54(1) EPC).

2.1 Document D3 shows (see side view of wheel in Figure 1, sectional view along lines 2-2 of Figure 1 in Figure 2) a rim (10) for a bicycle wheel (8) having a tire (48), hub (13) and spokes (12) according to feature F1. The two-part bicycle rim (10), including a carbon body portion (14) and an aluminium tire engaging rim portion (16), comprises a radially outer tire-engaging portion (40, 42; alternatively 121, as shown in Figure 5, see column 5, lines 57-61), a radially inner spoke-engaging portion (17), a first sidewall (18, 36), and a second sidewall (20, 38) spaced apart from the first sidewall and the first and second sidewalls extending between the tire-engaging and spoke-engaging portion, as required by features F2 to F5. This was no longer contested by the appellant during the oral proceedings.

2.2 As regards feature F6, it is noted that the language of claim 1 does not exclude a rim made of two portions, as admitted by the appellant during oral proceedings. Therefore, the two-part rim known from D3 comprising a carbon body portion 14 and an aluminium tire engaging rim portion 16 falls under the wording of claim 1. Moreover, feature F6 does not specify a "toroidal rim", but a toroid formed from four rim members (sidewalls, tire-engaging and spoke-engaging portions). In case of a two-part rim, the sidewalls of the rim are formed in combination by the parallel planar surfaces of the

aluminium rim portion 16 and the sidewalls of the carbon body portion 14. As explicitly stated in D3 (column 5, lines 52-61), the aluminium rim portion (16) can be made in either of two different ways, either as a "clincher" type rim as shown in Figure 2, or alternatively, as a rim designed for sew-up wheels (which does not have beads 40, 42), having a tire mounting surface similar to that shown in Figure 5. Therefore, D3 discloses a modification of the rim of Figure 2 which is still made of two parts (14, 16), but which shows a tire mounting surface of the rim as shown in Figure 5 (having a concave tire mounting surface 121). In this alternative embodiment, the tire-engaging portion (121), the spoke-engaging portion (17) and the first and second sidewalls formed by the braking surfaces (36, 38) of the aluminium rim portion and the sidewalls (18, 20) of the carbon body portion form a toroid according to the definition given in the patent specification, i.e. a surface generated by rotating a plane closed curve (see paragraph [0009]: "*toroid or toroidal means a surface generated by a plane closed curve rotated about a line that lies in the same plane as the curve but does not intersect it*"), as required according to the appellant by feature F6. Contrary to the appellant's allegation, the board cannot see that the two-part rim of D3 constitutes a different rim than required by claim 1. It is irrelevant whether both rim portions 16 and 14 form, in addition, separate toroidal bodies that are attached to one another.

Therefore, the board concludes that feature F6 is also disclosed in D3. In view of the foregoing, it can be left open whether a clincher-type rim as shown in Figures 4 and 6 of the contested patent and known from Figure 2 of D3 falls under the wording of claim 1.

2.3 The board also finds that feature F7 is directly and unambiguously disclosed in D3. In particular, novelty of feature F7 over D3 can be assessed independently from feature F8, since it specifies the rim's shape independently from a tire mounted thereto as reflected in feature F8. The tire-engaging portion of feature F7 is the tire-engaging portion of feature F2, which is known from D3 as argued further above.

2.3.1 The appellant argued that D3 did not contain a clear teaching with regard to feature F7, which related to the wheel rim. The correct interpretation of the term "one-third to one-half distance" in D3 seemed to be that it referred to a distance from the radially outer end of the aluminium rim 16, i.e. the radially outer end of the entire rim formed by the aluminium rim 16 and the carbon body 14. The meaning of the feature mentioned in lines 44 to 46 of column 5 of D3 accordingly was that the widest part was arranged between the middle of the entire rim and the radially outermost third of the entire rim, i.e. closer to the tire, whereas claim 1 required a maximum width in a region farther away from the tire.

2.3.2 As stated in D3 (column 5, lines 44-46) in respect of the two-part rim of Figure 2, "*the widest part 28 of the carbon body 14 is approximately one-third to one-half the distance from the aluminium ring 16 to the radially inner most point 17*". The location of the widest part in D3 of the carbon body is measured "from the aluminium ring", i.e. in the board's view from the radially outermost point of the carbon body, as confirmed in D3 when specifying the carbon body (see column 3, lines 10 to 28). In the context of Figure 2, the radially outermost point of the carbon body is referred to as "*radially outermost point 22*" or

"*radially outwardly facing surface 32 of the radially outer point 22 of the carbon body portion 14*" (see column 5, lines 15 and 20-23).

The board therefore concurs with the respondent that the "widest part" as disclosed in D3 only relates to the carbon body and not to the entire rim composed of the carbon body 14 and the aluminium rim 16. The length of the entire rim in the radial direction (between tire-engaging portion and spoke-engaging portion) is made up of the length in the radial direction of the carbon body plus the radial extension of the aluminium rim. The tire-engaging portion forming part of the aluminium rim portion 16 in D3 (see Figure 2) is located (also in the alternative embodiment designed for sew-up wheels as argued above) radially outward of the carbon body 14, i.e. radially further outward than the outwardly facing surface 32 of the carbon body 14.

As a consequence, the range disclosed in D3 ("*one-third to one-half the distance from the aluminium rim*") for the maximum width (28) of the carbon body portion (14), measured from the outwardly facing surface of the carbon body, overlaps at least partly with the range specified in feature F7 ("*closer to the spoke-engaging portion than the tire-engaging portion*"). For example, a maximum width radially in the middle of the carbon body in D3 (i.e. at "*one-half the distance from the aluminium ring*") is closer to the spoke-engaging portion than the tire-engaging portion. As the aluminium ring of D3 includes braking surfaces and extends in the radial direction, even further values of the range known from D3 ("*one-third to one-half the distance...*"), i.e. maximum widths radially closer to the outer-most point of the carbon body portion than the innermost point fall within the claimed range.

Therefore, novelty of the range claimed by feature F7 cannot be acknowledged in view of the disclosure of D3 and the range specified therein for the location of the maximum width of the carbon body portion.

2.4 As regards feature F8, the board cannot see any definition or explanation in the patent specification which would allow to construe the term "substantially elliptical transverse cross section" according to feature F8 such that it would distinguish the claimed subject-matter from what is disclosed in D3.

2.4.1 According to the appellant, feature F8 required that the transverse cross section formed by the rim and the tire was substantially elliptical. Although claim 1 according to feature F1 only specified a rim, feature F8 required "suitable" rims and was thus limiting the scope of protection. The combination of features F7 and F8 required a substantially elliptical shape of rim and tire dominated by its widest part (the maximum width of a generalized outline of Figure 3 of the patent) being located closer to the spoke-engaging portion than the tire. It was inherent in an ellipse that from top to bottom of the cross-sectional shape the direction of a curvature of an outline of the rim (and the tire) was always the same. In particular, the direction of curvature of a generalized outline of the rim allegedly did not significantly change when merging with the outline of the tire. It was clear that there was only one widest part, and the air streaming around the tire would follow the elliptical shape continuously.

Allegedly, the skilled person would not ignore that D3 defined a totally different shape dominated by necked portions and a first widest part lying at the tire and

a second widest part in the mid portion of the rim, so that (see D3, column 7, lines 3-5) "*the air detaches as it approaches the area of the braking surfaces 36, 38*". The patent in suit showed necked regions which were considered neglectable and marginal for the overall shape of the tire and rim and hence the aerodynamics of the bicycle wheel. D3 required radially extending parallel planar braking surfaces of the aluminium rim portion 16 (see column 6, lines 7-15), so the direction of a curvature of the outline of both rim portions changed from the bulbous shape of the carbon body portion 14 to the braking surfaces. In addition, the direction of a curvature of a combined outline of rim and tire changed a second time from the parallel braking surfaces to the tire, as emphasized in D3 by referring to a "somewhat 'peanut' shaped" profile of the wheel (see column 6, lines 63-64), or to two bulb areas joined by a straight section (column 11, line 62 to column 12, line 8). This change of curvature could not achieve the aerodynamic effects provided by the rim and tire of the present invention. It was an object of D3 (although unfavorable for the wheel's aerodynamics) to have the peanut-shaped cross section of the wheel, which induced some small amount of turbulence and provided a cooling effect (see column 2, lines 16-18: "*to provide a rim that is capable of withstanding large amounts of thermal loading caused by brake heat build-up*"). As the air reattached along the carbon body, it still provided good air flow characteristics. It was not possible to reduce the tire's width considerably.

2.4.2 The board notes that the term "elliptical" or "ellipse" is recited twice in paragraph [0009] of the patent specification when describing the embodiments according to the invention.

- The plane closed curve which generates the form of the toroidal rim according to Figures 5 and 6 is said to be "*substantially an ellipse*" which has been modified to provide a concave end. Although the direction of a curvature of the outline of the rim according to these figures might not change, the rim has its maximum width in the lower portion, as shown in Figure 3 for a cross-section of the rim of Figure 5, whereas an ellipse has its widest portion in the center. Interpretation of the term "substantially elliptical" can therefore not rely on a single characteristic of an ellipse such as its direction of curvature, so this term has to be interpreted broadly. It is also noted that the appellant's argument regarding a double change in direction of curvature in D3 (due to the peanut-shaped profile of the wheel) relies on the true cross section (i.e. the outer surfaces) of rim and tire, whereas a generalized outline of the tire-rim combination in D3 might still be considered as "substantially elliptical".
- As further described in paragraph [0009] in respect of Figures 3 and 4 ("*the toroidal rim and tire mounted thereto may form a substantially elliptical cross section*"), it is referred to a "*substantially elliptical*" transverse cross section formed by the rim and the tire mounted thereto. Although the rim of Figure 5 might not show necked portions or a change in direction of its curvature, the cross-sectional view of rim and tire in Figures 3 and 4 shows at least small necked portions in the region of the tire-engaging surface. This makes clear that only a generalized outline approximating the cross section of rim and tire is referred to as being substantially elliptical.

Further, the board finds that the subject-matter of claim 1 is not limited by the exemplary representation of an embodiment of the claimed invention as shown e.g. in Figure 3 of the patent specification. In particular, the size of a specific tire as shown in Figure 3 (which seems to have a diameter smaller than the widest portion of the rim) cannot be considered as limiting the claimed subject-matter, since a maximum width of the rim being greater than a tire diameter is only specified in dependent claim 6 of the main request (see also paragraph [0003] of the description, referring only to "one embodiment of the invention"). The wording of claim 1 which specifies a maximum width of the rim in feature F7 does not exclude in feature F8 a "first widest part" of the tire, as allegedly present in D3, or a necked portion which is more pronounced and not marginal as allegedly suggested by Figure 3 of the patent specification. Moreover, the board cannot see that the patent specification provides support for a limited interpretation of feature F8 as proposed by the appellant, allegedly specifying a generalized elliptical outline of the rim which did not change significantly when merging with the outline of the tire. The mere fact that Figure 3 of the patent specification might show an embodiment in this regard cannot be used to ascribe a limited meaning to the subject-matter of claim 1.

Therefore, the appellant's arguments relying on a comparison between Figure 3 of the patent specification and Figure 2 of D3 could not convince the board. In the board's view, a generalized or approximative outline of the tire-rim-combination of Figure 2 of D3 is still to be qualified as "substantially elliptical".

The appellant's argument that according to the claimed invention the air streaming around the tire would follow the elliptical shape continuously, whereas the change of curvature of the peanut-shaped wheel in D3 could not achieve these aerodynamic effects and was intended for providing a cooling effect, was not convincing to the board either. On the one hand, detachment of air might occur also for a rim as specified in claim 1, as the size of a tire mounted to the rim (forming a "substantially elliptical" transverse cross section with the rim) is not further specified in claim 1 and might deviate from what is shown in Figure 3 of the patent in suit, as argued above. Moreover, as explicitly said in D3 (column 7, lines 21-25), "*the bulbous carbon body portion 14 causes the air to reattach*" so that "*good aerodynamic properties are achieved, even though some detachment of air occurs*". This implies that detachment of air in D3 and the associated turbulence are only unwanted side effects and not intentionally provided. The board cannot see that D3 clearly teaches a cooling effect relying primarily on a peanut shape of the tire-rim combination. Moreover, the board was not convinced that even a somewhat peanut shape of the true cross section of rim and tire as known from D3 is excluded by the wording of claim 1, since feature F8 only specifies a generalized outline of a tire-rim combination, as argued further above.

2.5 The board therefore comes to the conclusion that the subject-matter of claim 1 of the main request is not new over D3.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

A. Vottner G. Pricolo

Decision electronically authenticated