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Datasheet for the decision of 10 December 2019

Case Number: T 0087/18 - 3.2.01

Application Number: 07001857.7

Publication Number: 1864902

IPC: B62L3/02, B60T7/10, B60T11/16

Language of the proceedings: EN

Title of invention:
Bicycle hydraulic brake actuation device

Patent Proprietor:
SHIMANO INC.

Opponent:
SRAM Deutschland GmbH

Headword:

Relevant legal provisions:
EPC Art. 100(a), 54, 56
RPBA Art. 12(4)

Keyword:
Novelty - main request (no)
Inventive step - auxiliary requests (no)
Late-filed facts - admitted (yes)

Decisions cited:

Catchword:

Europäisches Patentamt
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Office européen des brevets

Beschwerdekammern

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Chambres de recours

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Case Number: T 0087/18 - 3.2.01

D E C I S I O N
of Technical Board of Appeal 3.2.01
of 10 December 2019

Appellant: (Patent Proprietor)	SHIMANO INC. 3-77, Oimatsu-cho Sakai-ku, Sakai City Osaka 590-8577 (JP)
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Appellant: (Opponent)	SRAM Deutschland GmbH Romstr. 1 97424 Schweinfurt (DE)
Representative:	Thum, Bernhard Wuesthoff & Wuesthoff Patentanwälte PartG mbB Schweigerstraße 2 81541 München (DE)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 26 October 2017 concerning maintenance of the European Patent No. 1864902 in amended form.**

Composition of the Board:

Chairman	H. Geuss
Members:	J. J. de Acha González
	A. Jimenez

Summary of Facts and Submissions

I. The appeals of the patent proprietor and the opponent lie against the decision of the Opposition Division to maintain the above mentioned European patent in amended form according to the auxiliary request 1 filed during the oral proceedings before the Opposition Division.

II. In the contested decision the following pieces of prior art were cited among others:

E1: DE 3712734 A1;
E2: US 4176886 A;
E5: US 3554334 A;
E6: US 2004/0055840 A1;
E7: DE 202005003033 U1;
E8: US 4560049 A;
E9: DE 2724969 A1; and
E10: DE 4340379 A1.

In order to prove common general knowledge of the skilled person, the opponent filed for the first time with its statement of grounds of appeal the following document:

E23: "Ingenious Mechanisms for designers and inventors"; volume I; Franklin D. Jones; Industrial Press Inc.; 1930.

III. In a communication dated 16 September 2019 pursuant to Article 15(1) RPBA (Rules of Procedure of the Boards of Appeal OJ EPO 2007, 536) the Board in preparation to the oral proceedings presented its preliminary view of the case. In particular, it pointed out that the additional features in the respective claim 1 of the

auxiliary requests 2 to 4 and 7 to 9 seemed to be already disclosed in E1, E2 and E5, and that the appellant/patent proprietor failed to indicate the technical effect and the problem solved by these added features.

IV. Oral proceedings before the Board were held on 10 December 2019.

V. The appellant (patent proprietor) requested that the decision under appeal be set aside and that the patent be maintained as granted (main request) or alternatively that the patent be maintained on the basis of one of the auxiliary requests 1 to 5 filed during opposition proceedings (the auxiliary request 1 corresponding to the one maintained by the Opposition Division and thus to the rejection of the appeal of the opponent) or one of the auxiliary requests 6 to 10 filed with its letter of reply.

The appellant (opponent) requested that the decision be set aside and that the patent be revoked.

VI. Claim 1 as granted, i.e. according to the main request, reads as follows (feature analysis as referred to by the parties):

1. A bicycle hydraulic brake actuation device (30, 230, 430) comprising:
2. a hydraulic master cylinder housing (34, 234) having a bore (64) and a push rod guide surface (95);
3. a master piston (36) and a radial seal (86, 88) received in the bore (64);
4. a push rod (44, 244) supported by the push rod guide surface (95) for sliding movement within the

hydraulic master cylinder housing (34),

4.1 the push rod (44, 244) being configured to move the master piston and the radial (86, 88) seal from a neutral position to a braking position; and

5. a lever (110, 310) pivotally attached for pivotal movement between an at rest position and a brake actuation position,

5.1 the lever (110, 310) being configured and arranged to move the push rod (44, 244) and the master piston (36) from the neutral position toward the braking position as the lever (110, 310) is pivoted between the at rest position and the brake actuation position.

Claim 1 of auxiliary request 1, which is identical to claim 1 of auxiliary request 6, differs from claim 1 as granted in that it further includes the following features (numbering as used by the parties):

6. wherein the push rod (44, 244) has a lever contact portion (97, 254), which includes a roller (104, 262) configured to contact a portion of the lever (110, 310),

7. and the roller (104, 262) is supported for rotational movement to the lever contact portion (97, 254) of the push rod (44, 244).

Claim 1 of the auxiliary request 2, which is identical to claim 1 of auxiliary request 7, differs from claim 1 of the auxiliary request 1 in that the feature 5 reads as follows (differences highlighted by the Board):

5. a lever (110, 310) pivotally attached <u>to the housing</u> for pivotal movement between an at rest position and a brake actuation position,

Claim 1 of the auxiliary request 3, which is identical to claim 1 of auxiliary request 8, differs from claim 1 of the auxiliary request 1 in that the features 6 and 7 read as follows (differences highlighted by the Board):

6. wherein the push rod (44, 244) has a lever contact portion (97, 254), which includes a roller (104, 262) configured to contact a cam surface area (130, 330, 445) of the lever (110, 310), whereby the cam surface area (130, 330, 445)is planar or has a curved or arcuate contour,

7. and the roller (104, 262) is supported for rotational movement to the lever contact portion (97, 254) of the push rod (44, 244) such that the roller (104, 262) rolls along the cam surface area (130, 330, 445) when the lever (110, 310) is moved from its at rest position to the brake actuation position.

Claim 1 of the auxiliary request 4, which is identical to claim 1 of auxiliary request 9, differs from claim 1 of the auxiliary request 1 in that it further includes the following feature:

8. and wherein the push rod guide surface of the hydraulic master cylinder housing is configured to restrict the push rod (44, 244) to linear movement along an axis that is coaxial with the bore.

Claim 1 of the auxiliary request 5, which is identical to claim 1 of auxiliary request 10, differs from claim 1 of the auxiliary request 2 in that the reference signs have been adapted and in that it further includes the following feature:

8. and wherein the lever contact portion of the push

rod (440) includes first and second support walls (450) with the roller (455) rotatably supported therebetween, the roller (455) being configured to contact a portion of the lever (110).

Reasons for the Decision

1. Main request - Patent as granted

1.1 Novelty - Article 100 (a) together with 54 EPC

The subject-matter of granted claim 1 is not new in view of the bicycle hydraulic actuation device disclosed in E1 (Article 54 EPC).

The appellant/patent proprietor defends that the brake actuation device of E1 does not show features 2 and 4 of granted claim 1. Specifically, a push rod guide surface would not be disclosed in the embodiment of figure 1 of E1 since it is not disclosed how the rod 44 is guided. The elastic sleeve 38 does not slide relative to the inward facing surfaces of the housing 25 and the rod 44 just slides relative to the elastic sleeve.

The Board disagrees and shares the view of the opponent in its reply and that of the Opposition Division in its decision (see page 5 of the contested decision and point I.3 of the letter of 11 June 2018 from the opponent). Indeed does the rod 44 (push rod) slide relative to the pot-like plastic insert 38 (elastic sleeve), whose inner surface represents a push rod guide surface that supports the push rod for sliding

movement within the hydraulic master cylinder housing 25 (see column 3 line 360 to column 4, line 10), in the same manner as the inner surface 95 of the bushing 94 in figure 1 of the patent defines the push rod guide surface (see par. 47 and 52 of the patent) for guiding the push rod linearly coaxial with the axis A of the cylinder bore, direction that correspond to the direction x in E1.

Moreover, as pointed out by the Opposition Division in its decision, the inner surface of the clamping ring 28 also represents a push rod guide surface of the hydraulic master cylinder housing 25 as claimed in granted claim 1.

2. Auxiliary request 1 - as maintained by the Opposition Division - and auxiliary request 6

2.1 Admissibility of the inventive step objection with common general knowledge of the skilled person

2.1.1 During the opposition proceedings the opponent raised inventive step objections to the subject-matter of claim 1 of auxiliary request 1 based on E1, E2 or E5, as representing the closest prior art, combined with the teaching of E7, E8, E9 or E10, and E6 combined with E9.

With the statement of grounds of appeal, the opponent put forward for the first time a lack of inventive step objection for that subject-matter departing also from E1, E2 or E5, but combining it merely with common general knowledge of the skilled person. Document E23 was filed as proof of this common general knowledge with the statement of grounds of appeal.

The appellant/patent proprietor considers that this new line of argument should be disregarded since it did not form part of the discussion before the Opposition Division, is late filed and not prima facie relevant, because E23 cannot serve to document the common general knowledge of a person that deals with the design of bicycle brake actuation devices.

2.1.2 According to Article 12(4) RPBA the Board has the power to hold inadmissible facts or evidence which could have been presented in the first instance proceedings.

The purpose of this provision is to enable the Board, as primarily a review instance, to retain discretion to refuse new material, including requests, not submitted during opposition proceedings, which brings along a fresh case.

In the Board's view, arguing in the case at hand with common general knowledge instead of with another patent document (i.e. E7, E8, E9 or E10) when considering the same documents (E1, E2 and E5) as the closest prior art, does not change substantially the discussion on inventive step. Accordingly, the opponent is not bringing an entirely fresh case with the appeal.

Consequently, the objection on lack of inventive step based on E1, E2 and E5 together with common general knowledge is admitted.

The appellant/patent proprietor also requested not to admit document E23 as proof for common general knowledge. The admissibility of this document can however be left aside, since there is no evidence needed to prove common general knowledge of the skilled person in the present case.

2.2 Inventive step - Article 56 EPC

2.2.1 The subject-matter of claim 1 of auxiliary request 1 (and 6 respectively) does not involve an inventive step in view of any of the disclosures of E1 or E5 combined with common general knowledge of the skilled person (Article 56 EPC). Claim 1 of auxiliary request 1 and claim 1 of auxiliary request 6 being identical.

2.2.2 Both parties agree that the subject-matter of claim 1 differs from the device of E1 or E5 in features 6 and 7, namely in that:

- the push rod has a lever contact portion, which includes a roller configured to contact a portion of the lever, and
- the roller is supported for rotational movement to the lever contact portion of the push rod.

2.2.3 The Board follows the decision of the Opposition Division that the roller is configured to contact a portion of the lever and is rotatably mounted to the lever contact portion of the push rod. A roller is intended to roll and not merely to rotate. The appellant/opponent contests this view. However and to the benefit of the appellant/patent proprietor, their scrutiny can be left aside, since the evaluation on inventive step put forward by the opponent in spite of these considerations is persuasive.

2.2.4 It derives thus from all the features of claim 1 that the pivoting movement of the lever from the rest position to the brake actuation position moves the push rod in a sliding movement from the neutral position to the braking position. Consequently, under the subject-matter of claim 1 falls an interaction of the brake

lever and the push rod as being a cam-follower system as shown in the description of the patent (see par. 22, 49, 50 and 53 and figure 9 of the contested patent).

2.2.5 As acknowledged by both parties, the technical effect of the difference is to reduce friction in the lever contact portion of the push rod.

The problem to be solved by the invention can be formulated as how to reduce wear on contacting surfaces between push rod and lever.

2.2.6 The Opposition Division and the appellant/patent proprietor see the objective technical problem as to reduce wear on contact surfaces and push rod guide surfaces, to improve brake feel and brake force transfer upon braking.
This is not shared. As put forward by the opponent, there are no technical features in claim 1 that aim at a reduction of wear on the push rod guide surfaces. Further, the improvement of brake feel and brake force transfer upon braking is another direct consequence of the reduction of friction and represents thus a bonus effect. The appellant/patent proprietor has failed to put forward any reasons that contest the formulation of the objective technical problem from the part of the opponent, which the Board shares.

2.2.7 E1 and E5 as closest prior art disclose a cam-follower interaction between lever contact surface (being the cam) and the push rod (being the follower).
The appellant/patent proprietor refutes that either E1 or E5 disclose such a cam-follower system between brake lever and push rod. However, E1 specifies that a cam 46 ("Nocken") of the rotatably mounted hand lever 13 engages on the free forehead 45 of the push rod 44 (see

column 4, lines 4 to 7 and figure 2 of E1), and E5 refers to the contacting surface A' of the brake lever A with the foremost end of the piston rod 4 (i.e. the push rod) as a cam portion (see column 2, lines 14 to 17 and the figure of E5). Consequently, both prior art documents disclose a cam-follower system between brake lever and push rod of the hydraulic brake device.

2.2.8 Cam-follower systems which convert a rotational or pivoting motion of the cam to a linear motion of the follower are well known to the skilled person. Furthermore, the skilled person is aware that, among the different types of contact portions for the follower in such cam-follower systems, a roller represents an obvious known possibility that reduces friction in the contact surfaces and - as a consequence - wear.
Accordingly, the skilled person would be prompted by their common general knowledge to solve the problem posed exactly as suggested by claim 1. Consequently, departing from any of the devices of E1 or E5 and bearing in mind the common general knowledge the skilled person would arrive at the subject-matter of claim 1 without exercising an inventive step.

The appellant/patent proprietor refutes that the skilled person when trying to solve the problem posed would modify the devices of E1 or E5 in order to provide the missing features 6 and 7. In order to arrive at the solution proposed by the invention as defined by claim 1, the skilled person would be faced with a two step procedure. Firstly, they would have to consider a roller as a possible solution for the posed problem, and secondly, they would have to provide it in the lever contact portion of the push rod instead of providing it in the push rod contact portion of the

lever. The skilled person would clearly not be hinted by their common general knowledge to proceed that way. Turning to a roller as a "cure-all" or "solve-all" - solution for friction does not form part of common general knowledge. Even if it were to be assumed that the skilled person would consider a roller at all, which they would not, there is no guidance or hint in their common general knowledge to locate it in the push rod. They would indeed place it in the contact portion of the brake lever because it would be the most simple solution since the cam surfaces of E1 and E5 of the brake lever already have some resemblance with the circumference of a roller. Accordingly, the reasoning of the opponent is based on hindsight and does not render the subject-matter of claim 1 obvious.

The Board disagrees. When faced with the problem of reducing wear in the contacting surfaces of the cam-follower system of the brake devices of E1 or E5, the skilled person is not confronted with a two step procedure to arrive at the claimed solution. It pertains to common general knowledge that a roller follower provides less friction, and consequently less wear, in the contacting surfaces between cam and follower because the contact is almost entirely rolling rather than sliding. Further, the surface of the cam of a cam-follower system contains specific information on how the rotational movement of the cam is translated into the desired linear movement of its follower. Thus, contrary to the appellant/patent proprietor's allegations, the skilled person would not consider to provide the roller in the cam (i.e. in the brake lever contacting surface with the push rod) because the information of the surface of the cam would then be lost and accordingly also the intended linear movement of the follower.

3. Auxiliary requests 2 to 4 and 7 to 9

3.1 During the written appeal proceedings the appellant/ patent proprietor asserts that the subject-matter of the respective claim 1 of these requests is novel and based on an inventive step.
However, the appellant/patent proprietor fails to indicate the technical effect and the problem to be solved by the additional features in claim 1 of the auxiliary requests 2 to 4 and 7 to 9 and their specific contribution to inventive step. In particular, the appellant/patent proprietor merely argues that the subject-matter of claim 1 is based on inventive step for the same reasons as argued for the auxiliary request 1.

The Board informed the parties in its communication in preparation to the oral proceedings (cf. point III, above) that the supplementary features of the respective claim 1 of auxiliary requests 2 to 4 and 7 to 9 are already disclosed in E1, E2 and E5.

3.2 During the oral proceedings before the Board the appellant/patent proprietor refrained to put forward any submissions in support for inventive step of the subject-matter of claim 1 of these requests. The opinion of the Board that the supplementary features of claim 1 of the auxiliary requests 2 to 4 and 7 to 9 are disclosed in E1, E2 and E5 was not put into question.

3.3 Thus, the Board has therefore no reason to deviate from its preliminary view presented in its communication in preparation to the oral proceedings. Consequently, for the same reasons as for claim 1 of the auxiliary request 1, the subject-matter of the respective claim 1

of auxiliary requests 2 to 4 and 7 to 9 does not involve an inventive step in view of E1 or E5 together with common general knowledge of the skilled person (Article 56 EPC).

4. Auxiliary requests 5 and 10

4.1 The subject-matter of claim 1 of auxiliary request 5 and 10, its claim 1 being identical to claim 1 of the auxiliary request 5, does not involve an inventive step in view of the combination of E1 or E5 with common general knowledge of the skilled person (Article 56 EPC).

4.2 The additional feature 8 in claim 1 with respect to claim 1 of auxiliary request 1 reads as follows:

8. and wherein the lever contact portion of the push rod (440) includes first and second support walls (450) with the roller (455) rotatably supported therebetween, the roller (455) being configured to contact a portion of the lever (110).

The last part of this feature - i.e. the roller being configured to contact a portion of the lever - is already included in feature 6 of claim 1.

4.3 The appellant/patent proprietor defines the technical effect and the object of this additional feature as to provide a simple attachment of the roller to the push rod. In its view, this specific way of supporting the roller to the push rod is nowhere suggested in the prior art referred to by the opponent and it certainly does not belong to common general knowledge.

4.4 The Board concurs with the opponent and is not persuaded by the appellant/patent proprietor. Indeed a

fork-like support for a roller to be mounted in a cam follower is an obvious alternative to the skilled person. Such a support represents one of the common ways to bring a roller to a cam follower. Additionally, the advantages and disadvantages of this kind of support to others (e.g. stiffness, easy mounting...) are well known to the skilled person. Consequently and bearing in mind the reasoning on inventive step for the auxiliary request 1 above, the added feature cannot render the subject-matter of claim 1 as involving an inventive step since it is well known to the skilled person.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The patent is revoked.

The Registrar: The Chairman:

A. Vottner H. Geuss

Decision electronically authenticated