Internal distribution code:

(A) [-] Publication in OJ
(B) [-] To Chairmen and Members
(C) [-] To Chairmen
(D) [X] No distribution

Datasheet for the decision of 24 March 2015

Case Number: T 1791/12 - 3.2.06

Application Number: 05012459.3

Publication Number: 1609714

IPC: B62M9/10, F16H55/30

Language of the proceedings: EN

Title of invention:
Bicycle sprocket

Patent Proprietor:
SHIMANO INC.

Opponent:
SRAM Deutschland GmbH

Headword:

Relevant legal provisions:
EPC 1973 Art. 100(a), 54, 56, 112(1)
EPC Art. 123(2)
RPBA Art. 12(2), 13(1)

Keyword:
Novelty - (yes) Main request
Inventive step - (no) Main request
Amendments - added subject-matter
(yes) Auxiliary requests 1-6,8
Referral to the Enlarged Board of Appeal - (no)

Decisions cited:
G 0002/10, T 1906/11, T 0248/12, T 0801/13, T 0834/13

Catchword:

Europäisches Patentamt
European Patent Office
Office européen des brevets

Beschwerdekammern
Boards of Appeal
Chambres de recours

European Patent Office
D-80298 MUNICH
GERMANY
Tel. +49 (0) 89 2399-0
Fax +49 (0) 89 2399-4465

Case Number: T 1791/12 - 3.2.06

D E C I S I O N
of Technical Board of Appeal 3.2.06
of 24 March 2015

Appellant: (Patent Proprietor)	SHIMANO INC. 3-77, Oimatsu-cho 3-cho Sakai Osaka 590-8577 (JP)
Representative:	Grosse Schumacher Knauer von Hirschhausen Patent- und Rechtsanwälte Nymphenburger Strasse 14 80335 München (DE)
Appellant: (Opponent)	SRAM Deutschland GmbH Romstr. 1 97424 Schweinfurt (DE)
Representative:	Thum, Bernhard Wuesthoff & Wuesthoff Patent- und Rechtsanwälte Schweigerstrasse 2 81541 München (DE)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 8 June 2012 concerning maintenance of the European Patent No. 1609714 in amended form.**

Composition of the Board:

Chairman	M. Harrison
Members:	M. Hannam
	W. Ungler

Summary of Facts and Submissions

I. An appeal was filed by both the appellant/opponent and the appellant/proprietor against the interlocutory decision of the opposition division, in which it found that European patent No. 1 609 714 in an amended form met the requirements of the EPC.

II. The appellant/proprietor (hereafter the 'proprietor') requested that the patent be maintained as granted, auxiliarily that it be maintained in amended form according to one of auxiliary requests 1 to 3. The appellant/opponent (hereafter the 'opponent') requested that the patent be revoked.

III. The following document is relevant for the present decision:

D1 US-A-4 475 894

IV. With letter dated 28 June 2013, the proprietor requested the following question to be referred to the Enlarged Board of Appeal according to Article 112(1)(a) EPC: "What principles apply for judging an intermediate generalization in sense of Art. 123(2) EPC especially in view of the differing interpretations as given in T1906/11 and T0248/12?"

V. The Board issued a summons to oral proceedings including a communication containing its provisional opinion, in which it indicated *inter alia* that the subject-matter of claim 1 of the main request appeared to lack an inventive step whilst the subject-matter of claim 1 of each of the auxiliary requests 1 to 3 seemingly failed to meet the requirement of Article 123(2) EPC. Regarding the requested referral to the Enlarged Board of Appeal,

the Board indicated that, in view of the conclusion made in G2/10, such a referral did not appear necessary.

VI. Oral proceedings were held before the Board on 24 March 2015, during which the proprietor withdrew auxiliary request 7 and filed an auxiliary request 8.

The proprietor requested that the decision under appeal be set aside and and the patent be maintained as granted, auxiliarily that the patent be maintained in amended form based on one of the auxiliary requests 1 to 3 as filed with letter dated 8 October 2012, or based on auxiliary requests 4 to 6 as filed with letter dated 24 February 2015, or based on auxiliary request 8 filed during the oral proceedings of 24 March 2015, and that the question contained in the letter dated 28 June 2013 be referred to the Enlarged Board of Appeal. The proprietor declared that it did not request dismissal of the opponent's appeal.

The opponent requested that the decision under appeal be set aside and that the patent be revoked.

VII. Claim 1 of the main request (patent as granted) reads as follows (with paragraph annotation as used by the opposition division included for ease of reference):

1.1 "A bicycle sprocket assembly comprising:
1.2 a rotational drive unit (51), and
1.3 a bicycle sprocket (71) configured to be mountable to the rotational drive unit (51), the bicycle sprocket (71) comprising:
1.4 a sprocket ring part (72, 90, 90') including
1.4.1 an inner periphery and
1.4.2 an outer periphery with a plurality of sprocket teeth (72a, 90a) arranged on the outer periphery,

1.4.3 the sprocket ring part (72, 90, 90') extending around a central rotation axis (X); and
1.4.4 a synthetic resin fastening part (72c, 91)
1.4.5 non-movably coupled to the sprocket ring part (72, 90, 90') at a location radially inwardly of the sprocket teeth (72a, 90a) relative to the rotation axis (X),
1.4.6 the synthetic resin fastening part (72c, 91) including at least one mounting through hole (91e); and
1.5 a fastening member (80) having an enlarged head (80a) to apply a fastening force,
characterized in that
1.6 the sprocket (71) further includes a metallic tubular member (92)
1.6.1 mounted in the mounting through hole (91e) of the fastening part (91),
1.6.2 the metallic tubular member (92) has a first fastener contact surface (92c), and
1.7 the enlarged head (80a) of the fastening member (80) is sized and configured to contact the first fastener contact surface (92c) of the metallic tubular member (92)
1.8 to apply the fastening force to the first fastener contact surface (92c) to fixedly couple the metallic tubular member (92) to the rotational drive unit (51)."

Claim 1 of auxiliary request 1 reads as follows (with paragraph annotation from the main request maintained):
1.1 "A bicycle sprocket assembly comprising:
1.2 a rotational drive unit (51) including a support arm portion (76) having a mounting section (76a),
1.3 a first bicycle sprocket (71) configured to be mountable to the rotational drive unit (51), the first bicycle sprocket (71) comprising:
1.4 a sprocket ring part (90, 90') including

1.4.1 an inner periphery and
1.4.2 an outer periphery with a plurality of sprocket teeth (90a) arranged on the outer periphery,
1.4.3 the sprocket ring part (90, 90') extending around a central rotation axis (X); and
1.4.4 a synthetic resin fastening part (91)
1.4.5 non-movably coupled to the sprocket ring part (90, 90') at a location radially inwardly of the sprocket teeth (90a) relative to the rotation axis (X),
1.4.6 the synthetic resin fastening part (91) including at least one mounting through hole (91e); and a second bicycle sprocket (72); and
1.5 a fastening member (80) having an enlarged head (80a) to apply a fastening force,
wherein the mounting section (76a) of the support arm portion (76) being configured to attach the first sprocket (71) and the second sprocket (72) thereto, and
1.6 the first sprocket (71) further includes a tubular member (92)
1.6.1 mounted in the mounting through hole (91e) of the synthetic resin fastening part (91),
1.6.2 the tubular member (92) has a first fastener contact surface (92c) and a second contact surface (92d), and
1.7 the enlarged head (80a) of the fastening member (80) is sized and configured to contact the first fastener contact surface (92c) of the tubular member (92)
1.8 to apply the fastening force to the first fastener contact surface (92c) to fixedly couple the tubular member (92) to the rotational drive unit (51), characterised in that
the tubular member (92) is metallic, and
the second contact surface (92d) is sized and configured to contact the mounting section (76a) of the support arm portion (76) so that axial tightening force is applied

to the metallic tubular member (92) instead of the synthetic resin fastening part (91) when the first sprocket (71) is fixed by the fastening member (80)."

Claim 1 of auxiliary request 2 reads as per claim 1 of auxiliary request 1 except for feature 1.6.2 reading: "the tubular member (92) has a first fastener contact surface (92c) and a second annular axially facing contact surface (92d), and"

Claim 1 of auxiliary request 3 reads as per claim 1 of auxiliary request 2 except for feature 1.2 which reads: "a rotational drive unit (51) including a crank connecting portion (75), a support arm portion (76), and a main crank arm portion (77), the support arm portion (76) having a mounting section (76a),"

Claim 1 of auxiliary request 4 reads as per claim 1 of auxiliary request 3 except for feature 1.2 which reads: "a rotational drive unit (51) including a crank connecting portion (75), a plurality of support arm portions (76), and a main crank arm portion (77), each support arm portion (76) having a mounting section (76a),"

Claim 1 of auxiliary request 5 reads as per claim 1 of auxiliary request 4 except for feature 1.2 which reads: "a rotational drive unit (51) including a crank connecting portion (75), a plurality of support arm portions (76), and a main crank arm portion (77), each support arm portion (76) having a tip end provided with a mounting section (76a),"

Claim 1 of auxiliary request 6 reads as follows (with paragraph annotation from the main request maintained):

1.1 "A bicycle sprocket assembly comprising:

1.2 a rotational drive unit (51) including a crank connecting portion (75), a plurality of support arm portions (76), and a main crank arm portion (77), each support arm portion (76) having a tip end provided with a mounting section (76a), the mounting sections (76a) being recessed on opposite axial sides thereof relative to the other portions to form radially outwardly facing abutment surfaces;
1.3 a first bicycle sprocket (71) configured to be mountable to the rotational drive unit (51), the first bicycle sprocket (71) comprising:
1.4 a sprocket ring part (90, 90') including
1.4.1 an inner periphery and
1.4.2 an outer periphery with a plurality of sprocket teeth (90a) arranged on the outer periphery,
1.4.3 the sprocket ring part (90, 90') extending around a central rotation axis (X); and
1.4.4 a synthetic resin fastening part (91)
1.4.5 non-movably coupled to the sprocket ring part (90, 90') at a location radially inwardly of the sprocket teeth (90a) relative to the rotation axis (X),
1.4.6 the synthetic resin fastening part (91) including at least one mounting through hole (91e); and
a second bicycle sprocket (72); and
1.5 a fastening member (80) having an enlarged head (80a) to apply a fastening force,
wherein the mounting sections (76a) of the support arm portions (76) being configured to attach the first sprocket (71) and the second sprocket (72) thereto,
wherein the first sprocket (71) and the second sprocket (76) are mounted on both opposite axial sides of the mounting sections (76a), and
1.6 the first sprocket (71) further includes a tubular member (92)
1.6.1 mounted in the mounting through hole (91e) of the synthetic resin fastening part (91),

1.6.2 the tubular member (92) has a first fastener contact surface (92c) and a second annular axially facing contact surface (92d), and
1.7 the enlarged head (80a) of the fastening member (80) is sized and configured to contact the first fastener contact surface (92c) of the tubular member (92)
1.8 to apply the fastening force to the first fastener contact surface (92c) to fixedly couple the tubular member (92) to the rotational drive unit (51), wherein
the tubular member (92) is metallic, and
the second contact surface (92d) is sized and configured to contact the mounting section (76a) of the support arm portion (76) so that axial tightening force is applied to the metallic tubular member (92) instead of the synthetic resin fastening part (91) when the first sprocket (71) is fixed by the fastening member (80)."

Claim 1 of auxiliary request 8 reads as per claim 1 of auxiliary request 6 save for the word 'sized' being replaced by the word 'arranged'.

VIII. The opponent's arguments may be summarised as follows:

Main request
D1 disclosed all features of claim 1 of the main request. The hatching depicted on the bush 23 in Fig. 2 clearly indicated this to be a metallic component. Ceramics and fibre-reinforced materials would have a different hatching. The expression 'rotational drive unit' was very broad and a pedal crank was simply one possible, non-limiting embodiment (see [0002]) mentioned in the patent. This did thus not restrict the interpretation of what the 'rotational drive unit' in D1 entailed, it including plate member 11 as well as the

pedal crank 19.

No significant difference in weight could be attributed to a metallic bush compared to a ceramic or plastic bush. The problem to be solved was merely to find a suitable material for the bush. Metal bushes were well known in the field of bicycles. The skilled person would thus adopt a metallic bush without involving an inventive step.

Auxiliary request 1
At least the addition of the feature 'including a support arm portion (76)...' extended the subject-matter of claim 1 beyond that disclosed in the application as originally filed, where only five support arm portions were unambiguously disclosed. Paragraphs [0033] and [0034], on which this amendment was allegedly based, also included many more features of the sprocket assembly which had not been taken-up into the claim.

Auxiliary request 4
This request should not be admitted under Article 13(1) RPBA due to the requirement of Article 123(2) not being met. The request was filed at the latest possible time, rather than promptly in response to the objections against the higher ranking requests first being raised. Specifically, no basis existed for claiming a plurality of support arm portions; only exactly five were disclosed. This structure also had technical relevance when considering the required distribution of forces in the type of assembly claimed.

Auxiliary request 8
This request should also not be admitted. The subject-matter of claim 1 did not meet the requirement of Article 123(2) EPC firstly because the detail of how the

second contact surface was arranged and configured to contact the mounting section from col. 11 lines 8 to 43 had been omitted. Secondly, the detail of the axial fastening holes in the mounting sections allowing simultaneous fastening of the two sprockets had not been taken-up into claim 1, amounting to an unallowable intermediate generalisation.

IX. The proprietor's arguments may be summarised as follows:

Main Request
As regards the novelty of the subject-matter of claim 1, the rotational drive unit of D1 was solely the pedal crank 19. The plate member 11 comprised the inner sprocket and so could not be considered part of the rotational drive unit. D1 also failed to disclose the bush 23 being fixedly coupled to the plate member 11. No detail was given regarding the way in which the bush 23 interacted with the plate member 11; it could be loosely located on the mount boss 18 and not at all coupled with the inner gear/mounting plate. Despite being molded in the bore of the annular member 1, this did not unambiguously imply the bush being coupled with the annular member.

Starting from the Board's conclusion that the only difference over D1 was that the bush was metallic, the subject-matter of claim 1 involved an inventive step when starting from D1, since D1 was directed to saving weight in a sprocket assembly and the skilled person would thus be dissuaded from using metal as the material for the bush.

Auxiliary request 1
The subject-matter of claim 1 did not contravene Article 123(2) EPC. A single support arm portion was directly

and unambiguously disclosed to the skilled person in the application documents as originally filed. The skilled person would consider the technical relevance to the invention of the five support arm portions, coming to the conclusion that a single support arm portion was all that was required to fully define the invention. The five support arm portions had nothing to do with the invention itself and the skilled person would appreciate this. Col.9, line 16 onwards and line 39 onwards clearly indicated that five support arm portions were optional and col. 11, lines 4 to 8 confirmed that just a single support arm portion was important for the thrust of the invention as seen by the proprietor throughout all requests. Claim 1 as originally filed also claimed 'at least one through hole' which further indicated that only one support arm was necessary for the invention.

Auxiliary requests 2 and 3
No additional arguments over those presented for auxiliary request 1 were relevant for these requests.

Referral to the Enlarged Board of Appeal
Recent decisions of the Boards of Appeal had diverged as regards the application of Article 123(2) EPC, particularly with respect to the question of technically relevant information (see T1906/11, T0248/12, T0834/13 and T0801/13). A referral of the following question to the Enlarged Board of Appeal was thus justified:
"What principles apply for judging an intermediate generalization in sense of Art. 123(2) EPC especially in view of the differing interpretations as given in T1906/11 and T0248/12?"

Auxiliary request 4
The term 'plurality' in combination with elements related to the support arm portions was explicitly to be

found in col. 9, line 42 and col. 10, lines 38 and 40 of the originally filed description. Since all these references were to parts of the support arm portions, the term 'plurality' obviously applied to the support arm portions themselves too. The use of the term '(five)' after the word 'plurality' disclosed to the reader that five was only preferable.

Auxiliary requests 5 and 6
The further amendments in these requests relative to auxiliary request 4 did not affect the feature 'plurality of support arm portions'.

Auxiliary request 8
Claim 5 as originally filed provided the 'arranged and configured' wording taken up into claim 1. Whilst this claim only related to the rotational drive unit, this had been further specified at the start of claim 1, such that the claim included all features required by Article 123(2) EPC. Regarding the axial fastening holes in the support arms, this was implicitly disclosed through both sprockets being mounted on opposite sides of the mounting section with a single fastening member.

Reasons for the Decision

1. Main request

1.1 Article 100(a) EPC 1973 - Novelty

The subject-matter of claim 1 is novel with respect to the cited prior art.

1.1.1 D1 discloses the following features of claim 1 (see Figs. 1, 2 and 4; col. 2, line 29 - col.3, line 31; col. 3, lines 41-54), whereby reference numerals in brackets refer to features in D1

A bicycle sprocket assembly comprising:

- a rotational drive unit (11,19);
- a sprocket (1) comprising a sprocket ring (3) with an inner periphery (radially inner portion of mount portion 24 in Fig. 4) and sprocket teeth (5) on an outer periphery (see Fig. 4);
- a synthetic resin fastening part (24) coupled (via through holes 25) to the sprocket ring part (3);
- the synthetic resin fastening part (24) including at least one mounting through hole (10; col.2, line 59);
- a fastening member (22) having an enlarged head to apply a fastening force (see Fig. 2);
- the sprocket (1) including a tubular member (23) mounted in the mounting through hole (10) of the synthetic resin fastening part (24);
- the tubular member having a first fastener contact surface (right hand end surface of bush 23 in Fig. 2) with which the fastening member (22) has contact;
- to apply a fastening force to the first fastener contact surface (right hand end of bush 23) to fixedly couple the tubular member (23) to the rotational drive unit (11,19).

The sole feature of claim 1 not known from D1 is that the tubular member is metallic.

1.1.2 The opponent's argument, that also the metallic nature of the tubular member is known from D1 is not convincing. The nature of the hatched lines shown on the bush 23 in the cross-section of Fig. 2 relative to the other hatching shown does not allow the skilled person to derive that the bush material is unambiguously metal.

It is to be noted that patent figures are not engineering drawings, and hatching is used in cross-section drawings to differentiate physically distinguishable elements of an assembly and provides no indication of particular materials of construction. The opponent's argument that the drawings are of a US patent, and that drawing requirements there necessitate that metal be shown as depicted is not persuasive, at least for the reason that it cannot be concluded that this aspect of the drawing had not been overlooked. Whilst col.3, lines 29 to 30 states that 'the bush 23 can be placed in the bore 10 when the annular member 1 is molded' from which it can be derived that the bush is most likely not the same construction material as the annular member, this does not allow a conclusion to be drawn that the bush is metal. An equally viable material for such a bush would be, for example, carbon fibre reinforced resin.

1.1.3 The proprietor's argument that feature 1.8 is also not known from D1 is not convincing since the expression 'rotational drive unit' is so broad as to encompass more than solely the pedal crank. Additionally, any drive to the chain via sprockets 5 in D1 is transmitted from the pedal crank 19, via the plate member 11 and the fastening screw 22 to the annular member 1 and thus sprockets 5 (see Fig. 2), such that the plate member 11 unambiguously falls within the scope of the expression 'rotational drive unit' of claim 1 since it forms part of the assembly by which the chain is driven by rotating the pedal crank. The proprietor's references to paragraphs [0002] and [0011] do not alter the aforegoing conclusion. Paragraph [0002] merely notes a possible rotational driving unit 'such as a crank' and paragraph [0011] includes the phrase 'a rotational drive unit of a bicycle or crank' which may indicate alternatives.

Neither of these unambiguously equates a crank with a rotational drive unit.

1.1.4 The proprietor's argument that the bush 23 is not fixedly coupled to the inner gear 13 is not accepted. Firstly it is noted that the primary function of the screw 22 is to axially secure the annular member 1 and the plate member 11 together; the circumferential drive transmission from the plate member 11 to the annular member 1, whilst supported by the screw 22 in the bore 10 formed in the base portion 8 of the annular member 1, is provided by way of the mount boss 18 extending into the bore.
Referring to Fig. 2, this shows bush 23 having a flange at its right hand end face against which the head of screw 22 pushes when tightened. This flange is also embedded in the annular member 1, as depicted in Fig. 2, such that tightening of the screw 22 will force the annular member 1 axially towards the plate member 11. If the bush 23 is accurately dimensioned to correspond in axial length to the base portion of the annular member 1, the bush will, by way of tightening screw 22, itself tighten against the plate member, corresponding to the claimed expression 'fixedly couple'. However, even if, as argued by the proprietor, the bush 23 does not extend to contact the plate member 11, the bush is nonetheless fixedly coupled to the plate member 11 on tightening of the screw via the annular member into which the bush is preferably molded. The proprietor's argument in this respect that the bush need not be fixedly molded into the annular member and could be loosely located on the mount boss 18 is not convincing, particularly in view of col. 3, lines 29 to 30 stating that the bush 23 can be placed in the bore 10 when the annular member 1 is molded. This would leave the skilled person in no doubt that the molding of the bush into the annular member

results in the fixed coupling between the bush and the plate member irrespective of bush axial dimension.

1.1.5 The subject-matter of claim 1 is thus novel over D1. With no further arguments raised against the novelty of the subject-matter of claim 1 and the Board also seeing none as valid, the subject-matter of claim 1 is found to be novel (Article 54 EPC 1973).

1.2 Article 100(a) EPC 1973 - Inventive step

The subject-matter of claim 1 does not involve an inventive step.

1.2.1 As found under point 1.1.1 above, the subject-matter of claim 1 differs from D1 only in that the tubular member is metallic. Based on this difference, the most appropriate objective technical problem is to provide a suitable material for the tubular member.

D1 shows (see Fig. 2) the tubular member (bush 23) as a separate material from both the annular member 1 (plastic; col. 2, lines 33 to 34) and the plate member 11 (metal; col. 2, lines 61 to 62). Being inserted into the plastic annular member preferably by being molded into the annular member (see col.3, lines 29 to 30), the provision of a metallic tubular member would be an obvious option for the skilled person. A metal tubular member is not least an obvious option since it would protect the plastic annular member 1 from damage by taking the forces resulting from tightening the screw 22. To use metal bushes in moulded plastic parts to prevent damage or help in the mounting thereof is something well known to the skilled person in the field of mechanical engineering.

1.2.2 The proprietor's argument that D1 is directed to saving weight which would dissuade the skilled person from selecting a metal bush is not persuasive. The bush 23 in D1 is a physically small item which would not have a significant mass, whether manufactured from hard plastic, ceramic or metal. Thus, even if metal were selected as the bush material, the weight penalty, if any, would be very slight and not of such a proportion to dissuade the skilled person from its adoption.

1.2.3 Thus, starting from D1 and wishing to solve the objective problem of finding a suitable material for the bush, the skilled person would, through his general knowledge of suitable bush materials in such applications, provide a metallic bush and reach the subject-matter of claim 1 without exercising an inventive step (Article 56 EPC 1973). The main request is thus not allowable.

2. Auxiliary request 1

2.1 *Article 123(2) EPC*

The subject-matter of claim 1 fails to meet the requirement of Article 123(2) EPC.

2.1.1 The amendment to claim 1 to include 'a support arm portion having a mounting section' is not directly and unambiguously disclosed to the skilled person using common general knowledge in the application as filed. First it should be noted that whilst claim 1 does not explicitly define a 'single' support arm, its subject-matter covers this possibility due to the wording 'a support arm'. Figs. 1 to 5 in combination with col. 6, line 36 to col. 12, line 10 of the A-publication (corresponding to the application as originally filed)

however clearly indicate five support arm portions for the depicted and described embodiment, rather than just a single one as now covered due to the amendment made to claim 1. There is also no indication in the originally filed documents that a single support arm portion was ever intended as part of the disclosure.

2.1.2 The Board finds the proprietor's argument, regarding the skilled person considering the technical relevance to the invention of the five support arm portions and coming to the conclusion that a single support arm portion was all that was required to fully define the invention, not persuasive. Indeed the basic premise of the proprietor's argument that the technical relevance to the invention was of importance when considering which features were disclosed to the skilled person, is invalid. As clearly indicated in G2/10, this is not the test to be applied when analysing an amended claim; the technical relevance is not considered. Of importance is solely that which the skilled person would directly and unambiguously see as being disclosed in the application as filed. In the present case, the sole embodiment directed to the claimed bicycle sprocket assembly includes five support arm portions (see col. 6, line 36 to col. 12, line 10) and nowhere is an indication to be found suggesting that a single support arm portion suffices for the bicycle sprocket assembly.

2.1.3 The proprietor's argument regarding the invention clearly having no link to the five support arm portions is not convincing. In this respect it is noted that the concept of what the 'invention' comprises may change over the course of examination and opposition dependent upon the way in which the claims are amended and which prior art is considered. As such, the argument that particular features of an embodiment are not to be

considered as part of the disclosure due to the 'invention' not being related to these features, is not a valid method for establishing what was unambiguously disclosed by the original application documents to the skilled person. With the 'invention' not necessarily being constant, allowing such a basis for an amendment would result in different amendments being acceptable dependent upon the particular invention defined by the claims at any particular time. This is clearly not the standard to be applied, rather of importance is what the skilled person would directly and unambiguously see as being disclosed in the application as filed. In the present case, this is five support arm portions, not the single support arm portion introduced to claim 1.

2.1.4 The proprietor's argument that the word 'five' being placed in parentheses in col.9, line 16 onwards and line 39 onwards clearly indicated that this was an optional feature was also not convincing. As also argued by the opponent, even if the word five in parentheses were ignored, the remaining physical features in the sentences are still described in the plural, i.e. bolts, nuts, tubular members such that also here no basis exists to suggest just a single support arm portion ever having been intended in the application as originally filed.

2.1.5 The proprietor's reference to col. 11, lines 4 to 8 was also unconvincing in supporting its view regarding compliance with Article 123(2) EPC. This reference merely states that, due to preferably identical tubular members and identical attachment to the fastening parts, only one of the 'tubular members' will be explained and/or illustrated in detail. Thus, whilst only one tubular member is described in detail, it is clear that the embodiment as a whole includes more than one tubular

member and thus more than just one support arm portion.

2.1.6 The further reference to claim 1 as originally filed which claimed 'at least one through hole' is also not persuasive regarding compliance with the requirement of Article 123(2) EPC. This feature does not explicitly present a basis for the limitation in claim 1 'including a support arm portion', it simply claiming at least one through hole. It also does not implicitly disclose the possibility of a single support arm portion, nor does it suggest to the skilled person that a single support arm portion is intended since it is clear that an embodiment in which a single support arm portion were present would not present a mechanically sound arrangement of the bicycle sprocket assembly unless special, and undisclosed, measures were taken.

2.1.7 It thus follows that the subject-matter of claim 1 does not meet the requirement of Article 123(2) EPC at least due to the addition of the feature 'including a support arm portion'. The auxiliary request 1 is thus not allowable.

3. Auxiliary requests 2 and 3

3.1 The subject-matter of claim 1 of each of these auxiliary requests also includes the feature 'including a support arm portion', found above not to meet the requirement of Article 123(2) EPC. The proprietor offered no further defence of these requests so the Board finds, for the same reasons as apply to auxiliary request 1, that the subject-matter of claim 1 of auxiliary requests 2 and 3 fails to meet the requirement of Article 123(2) EPC. Auxiliary requests 2 and 3 are thus not allowable.

4. Request for referral of a question to the Enlarged Board of Appeal

4.1 Article 112(1)(a) EPC 1973 requires the Board of Appeal during proceedings on a case, and in order to ensure uniform application of the law or if an important point of law arises, to refer any question to the Enlarged Board of Appeal, either of its own motion or following a request from a party to the appeal, if it considers that a decision is required for the above purposes.

4.2 In the present case, the proprietor has requested the referral of a question relating to the principles which apply for judging an intermediate generalisation under Article 123(2) EPC.

4.3 However, as pointed out above, under Article 112(1) EPC 1973 a question can be referred to the Enlarged Board only if the Board of Appeal considers this to be necessary. As follows from the findings under points 2.1 to 2.1.7 above, this is not the case here, since the Board of Appeal has been able to answer the question with reference to existing case law of the Enlarged Board of Appeal. The principles which apply for judging an intermediate generalisation are already clear from G2/10 (see item 4.3) which cites the principles which are to be used 'for assessing any amendment for its compliance with Article 123(2) EPC' as the gold standard and having been established in G3/89 and G11/91. The words 'any amendment' evidently also applies to amendments of the type which the proprietor refers to as 'intermediate generalisations'. Also, in the cases cited by the proprietor (T1906/11, T0248/12, T0834/13 and T0801/13), no divergent interpretations of the principles contained in G2/10 for judging amendments are anyway apparent, those principles being that an

amendment must be 'directly and unambiguously derivable, using common general knowledge, and seen objectively and relative to the date of filing, from the whole of the application as filed'.

4.4 The request for referral of the above questions to the Enlarged Board of Appeal must therefore be refused.

5. Auxiliary request 4

5.1 Non-admittance - Article 13(1) RPBA

Auxiliary request 4 is not admitted into the proceedings as it fails at least to *prima facie* overcome the objections to Article 123(2) EPC of the higher ranking requests.

5.1.1 In appeal proceedings, the Rules of Procedure of the Boards of Appeal (RPBA) apply. Article 12(2) RPBA specifies that the statement of grounds of appeal and reply must contain the party's complete case. After filing the grounds of appeal or reply, any amendment to a party's case may be admitted and considered at the Board's discretion, which is set out in Article 13(1) RPBA, such discretion being exercised *inter alia* in view of the need for procedural economy. As is established case law of the Boards of Appeal, such procedural economy implies that amended requests should at least be *prima facie* allowable in order to be admitted.

5.1.2 The proprietor filed auxiliary requests 4 to 7 in response to the Board's preliminary opinion and, in fact, at a very late stage of proceedings, exactly one month prior to oral proceedings. The request thus represented a change to the respondent's complete case as defined in Article 12(2) RPBA and its admittance is

to be considered at the Board's discretion under Article 13(1) RPBA. It is also noted that the proprietor submitted a letter dated 28 June 2013 presenting further arguments in support of its main and auxiliary requests 1 to 3 on file, yet the proprietor elected, at that opportunity to react to the opponent's complete appeal case, not to file further auxiliary requests, even though the objection under Article 123(2) EPC in this respect had been made.

5.1.3 In the present request, the feature 'a support arm portion' objected to in auxiliary requests 1 to 3 is replaced by the feature 'a plurality of support arm portions'. In effect this wording includes within its scope anything from two to an infinite number of support arm portions. This range in number of support arm portions is however not unambiguously derivable from the originally filed application documents, in which only five support arm portions are directly and unambiguously disclosed. The subject-matter of claim 1 thus at least *prima facie* fails to meet the requirement of Article 123(2) EPC.

5.1.4 The proprietor's reference to several passages in the description where 'a plurality (five) ...' is presented in combination with elements associated with the support arm portions does not persuade the Board that the requirement of Article 123(2) EPC is met in the amended claim. All the references to 'a plurality (five)' are included in the single embodiment of the bicycle sprocket assembly found in the description which specifically depicts and describes an embodiment with exactly five support arm portions. It can thus not be unambiguously derived that the expression 'a plurality (five)' found within the description of this embodiment intends a simple plurality of support arm portions

rather than specifically five.

5.1.5 Therefore, the subject-matter of claim 1 is not *prima facie* allowable, which would be necessary for fulfilling the need for procedural economy and consequently admitting the request into the proceedings at such a late stage. Accordingly, the Board exercised its discretion under Article 13(1) RPBA not to admit this request.

6. Auxiliary requests 5 and 6

6.1 The subject-matter of claim 1 of each of these auxiliary requests also includes the feature 'a plurality of support arm portions', found above not to meet the requirement of Article 123(2) EPC. The proprietor also conceded that the further amendments to claim 1 in these requests did not affect the findings related to auxiliary request 4. The Board therefore finds, as for auxiliary request 4, that the subject-matter of claim 1 of auxiliary requests 5 and 6 at least *prima facie* fails to meet the requirement of Article 123(2) EPC. The Board thus exercised its discretion not to admit auxiliary requests 5 and 6 into the proceedings (Article 13(1) RPBA).

7. Auxiliary request 8

7.1 Non-admittance - Article 13(1) RPBA

Auxiliary request 8 is not admitted into the proceedings as it fails to *prima facie* overcome the objections to Article 123(2) EPC of the auxiliary requests 4 to 6.

7.2 At least two of the amendments made to claim 1 *prima facie* fail to meet the requirement of Article 123(2)

EPC.

7.3 The first of these amendments concerns the last feature in claim 1 'the second contact surface is arranged and configured to contact the mounting section of the support arm portion so that axial tightening force is applied to the metallic tubular member instead of the synthetic resin fastening part when the first sprocket is fixed by the fastening member'. This details only some of the features associated with the arrangement and configuring of the second contact surface which are disclosed to the skilled person in combination from col. 11, lines 8 to 43. This passage in col. 11 is to be read as a whole, since it details how tightening of the fastening member (80) acts upon the first contact surface (92c) in order to urge the synthetic resin fastening part (91) into contact with the mounting section (76a). The embodiment particularly describes from line 8 to 24 how the flange section (92b) of the tubular member (92) fits in an annular groove of the synthetic resin fastening part (91) in order to transfer force applied by the fastening member (80) to the synthetic resin fastening part (91). The omission of at least this detail of how the second contact surface is 'arranged and configured' to contact the mounting section of the support arm portion, results in this feature being an unallowable intermediate generalisation of those features described in combination in the above referenced passage of the originally filed application.

7.3.1 The proprietor's argument that claim 5 as originally filed provides the 'arranged and configured' wording taken up into claim 1 does not alter the Board's conclusion. This claim does use the 'arranged and configured' wording, although specifically relating to the second contact surface (92d) being 'configured and

arranged to contact the rotational drive unit'. In present claim 1, however, the rotational drive unit has been further detailed as being the mounting section (76a) of the support arm portion (76), which detail is not taken from the claims as originally filed, rather is only detailed in the passage of the description as originally filed from col. 11, lines 8 to 43 as indicated above. Thus, claim 5 cannot provide the required direct and unambiguous basis for this amended feature in claim 1, the basis being col. 11 lines 8 to 43, where this passage has further features included in the embodiment disclosed in combination with those taken-up into the claim. No basis for not including also those omitted features can be recognised.

7.4 The second amendment *prima facie* failing to meet the requirement of Article 123(2) EPC is the feature 'wherein the first sprocket (71) and the second sprocket (76) are mounted on both opposite axial sides of the mounting sections (76a)', first introduced in auxiliary request 6 but not forming part of the decision for that request. The alleged basis for this amendment is col. 9, lines 14 to 19 in which, with reference to Fig. 5, a first axially extending fastening hole 76b is disclosed allowing the sprockets 71 and 72 to be fastened simultaneously to the mounting sections 76a. From both Fig. 5 and the statement that both sprockets can be 'simultaneously' fastened, the fastening hole 76b must clearly then be a through-hole which takes the common fastening bolt 80 for both sprockets. This is not reflected in the features introduced into claim 1, where neither a simultaneous fastening, nor features implicitly indicating the structural arrangement necessary for this to occur, have been included in the claim. The scope of claim 1 thus covers, for example, two blind holes for fastening the sprockets from either

side, which represents an embodiment extending beyond that originally disclosed in the application documents.

7.4.1 The proprietor's argument that fastening holes 76b were implicitly present in the mounting sections 76a and thus allowed simultaneous connection is not persuasive. Claim 1 solely mentions the mounting sections (76a) to which the sprockets are attached but provides no detail of how this is achieved, let alone that both sprockets are simultaneously attached via through holes in the mounting sections. This feature of claim 1 thus represents an unallowable intermediate generalisation of a combination of features disclosed as a single embodiment in the originally filed description.

7.5 The subject-matter of claim 1 of auxiliary request 8 thus fails to *prima facie* overcome the objections to Article 123(2) EPC at least for the two reasons mentioned above. The Board thus exercised its discretion not to admit auxiliary request 8 into the proceedings (Article 13(1) RPBA).

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:

N. Schneider M. Harrison

Decision electronically authenticated