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Application No. or Patent No.: 201511009996.3 Document Issue No.: 2021032600666760

Case Number: 1F290037

Invention Title: Bicycle Steerer Tube with Different Stiffnesses

Reexamination Requester: SRAM Co., Ltd.

Reexamination Decision (No. 251803)

☐ According to the opinions in the pre-examination opinion brief, the rejection decision made by the China National Intellectual Property Administration on the date:

_____ shall be revoked, and the original examination department shall continue the examination and approval procedure.

☒ The rejection decision made by the China National Intellectual Property Administration on May 29, 2019 shall be upheld.

☐ After review, the rejection decision made by the China National Intellectual Property Administration on the date: _____ shall be revoked.

According to the provision of Paragraph 2 of Article 41 of the Patent Act, if the reexamination requester is dissatisfied with this decision, the reexamination requester can file a lawsuit with the Beijing Intellectual Property Court within 3 months from the date of receipt of this Notice.

☒ Attachment: The main text of the decision includes 18 pages
(the main text starts from page 2).

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Patent Office Reexamination and Invalidation Division

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submitted.

**China National Intellectual Property Administration
Review Decision for Reexamination Request (No. 251803)**

Case Number	No. 1F290037
Decision Date	March 22, 2021
Invention Title	Bicycle Steerer Tube with Different Stiffnesses
International Classification Number	B62K21/12(2006.01)
Reexamination Requester	SRAM Co., Ltd.
Application Number	201511009996.3
Priority Date	December 30, 2014
Filing Date	December 29, 2015
Publication Date	July 06, 2016
Reexamination Request Date	July 04, 2019
Legal Basis	Paragraph 3, Article 22 of the Patent Act
Decision Points: If the technical solution claimed by a claim has distinguishing technical features compared to the closest prior art, where a part of the distinguishing technical features is disclosed by other prior art while the other part of the distinguishing technical features belongs to conventional technical means in the art, then it is obvious to those skilled in the art that the technical solution protected by the claim can be obtained by combining other existing technologies and conventional technical means of the art based on the closest existing technology, and the claim is not inventive.	

I. Cause of Case

The review decision of this reexamination request relates to the invention patent application No. 201511009996.3 with a title "Bicycle Steerer Tube with Different Stiffnesses" (hereinafter referred to as "the present application"). The applicant for the present application is SRAM Co., Ltd., the filing date is December 29, 2015, the priority date is December 30, 2014, and the publication date is July 6, 2016.

After substantive examination, the original examination department of the China National Intellectual Property Administration issued a rejection decision on May 29, 2019, rejecting the present application for the following reasons:

Claims 1-67 are not inventive as stipulated in Paragraph 3, Article 22 of the Patent Act. The text copies on which the rejection decision is based are: Claims 1-67, paragraphs 1-72 of the specification (i.e., pages 1-8), FIGs 1-36 of the drawings (i.e., pages 1-16), the abstract and the representative drawing submitted on the application date, December 29, 2015. The claims on which the rejection decision was made are as follows:

"1. A steerer tube for a bicycle, the steerer tube comprising:

an elongated hollow body arranged around a steering axis located in a vertical travelling plane of the bicycle,

the body having upper and lower sections, a segment of the upper section adapted to be joined to a bicycle handlebar, a segment of the lower section adapted to be joined to a crown of a front wheel fork of the bicycle, the lower section joined to the upper section, and

the body being formed by a wall, the thickness of the wall at any point in the lower section of the body varying according to an angle of cross section of the point relative to the travelling plane, and the wall thickness being at a maximum in the travelling plane of the bicycle.

2. The steerer tube of claim 1, wherein the outer surfaces of the upper and lower sections of the body have circular cross sections.

3. The steerer tube of claim 2, wherein an outer diameter of the lower section of the body is greater than an outer diameter of the upper section of the body.

4. The steerer tube of claim 3, wherein the lower section of the body has first and second portions, the first portion adjoining the upper section of the body, an outer diameter of the first portion of the lower section being greater than an outer diameter of the upper section and less than

an outer diameter of the second portion of the lower section.

5. The steerer tube of claim 4, wherein the outer diameter of the first portion of the lower section gradually tapers from the second portion of the lower section to the upper section of the body.

6. The steerer tube of claim 5, wherein an inner surface of the upper section forms an ellipse in cross section, a long diameter of the ellipse formed to be perpendicular to the travelling plane, a short diameter of the ellipse formed to be in the travelling plane of the bicycle.

7. The steerer tube of claim 5, wherein an inner surface of the upper section has a circular cross section.

8. The steerer tube of claim 7, wherein the inner and outer surfaces of the upper section are substantially circularly cylindrical, and the outer surface of the second portion of the lower section is substantially circularly cylindrical.

9. The steerer tube of claim 7, wherein a ratio of an inner diameter of the upper section of the body to an outer diameter of the upper section of the body is within the range of 0.75 to 0.95, and the range includes 0.75 and 0.95.

10. The steerer tube of claim 2, wherein an outer diameter of the lower section of the body is basically the same as an outer diameter of the upper section of the body.

11. The steerer tube of claim 2, wherein an inner surface of the upper section has a circular cross section.

12. The steerer tube of claim 11, wherein the inner and outer surfaces of the upper section are substantially circularly cylindrical, and the outer surface of the lower section is substantially circularly cylindrical.

13. The steerer tube of claim 11, wherein a ratio of an inner diameter of the upper section of the body to an outer diameter of the upper section of the body is within the range of 0.75 to 0.95, and the range includes 0.75 and 0.95.

14. The steerer tube of claim 1, wherein an outer diameter of the lower section of the body is greater than an outer diameter of the upper section of the body.

15. The steerer tube of claim 14, wherein the lower section of the body has first and second portions, the first portion adjoining the upper section of the body, an outer diameter of the first portion of the lower section being greater than an outer diameter of the upper section and less than an outer diameter of the second portion of the lower section.

16. The steerer tube of claim 15, wherein the outer diameter of the first portion of the lower section gradually tapers from the second portion of the lower section to the upper section of the body.

17. The steerer tube of claim 1, wherein the segment of the lower section of the body is integrally formed with the crown of the front wheel fork.

18. The steerer tube of claim 1, wherein the segment of the lower section of the body is joined to the crown of the front wheel fork, the body formed of a material different from the crown of the front wheel fork.

19. The steerer tube of claim 18, wherein the segment of the lower section of the body is integrally formed with the crown of the front wheel fork.

20. The steerer tube of claim 1, wherein the body is formed from a material selected from the group consisting of steel, carbon fiber reinforced composite, aluminum, titanium and magnesium.

21. The steerer tube of claim 1, wherein the wall thickness is at a minimum in a plane containing the steering axis and orthogonal to the travelling plane of the bicycle.

22. The steerer tube of claim 21, wherein the outer surfaces of the upper and lower sections of the body have circular cross sections.

23. The steerer tube of claim 22, wherein an outer diameter of the lower section of the body is greater than an outer diameter of the upper section of the body.

24. The steerer tube of claim 23, wherein the lower section of the body has first and second portions, the first portion adjoining the upper section of the body, an outer diameter of the first portion of the lower section being greater than an outer diameter of the upper section and less than an outer diameter of the second portion of the lower section.

25. The steerer tube of claim 24, wherein the outer diameter of the first portion of the lower section gradually tapers from the second portion of the lower section of the body to the upper section of the body.

26. The steerer tube of claim 25, wherein an inner surface of the upper section forms an ellipse in cross section, a long diameter of the ellipse formed to be perpendicular to the travelling plane, a short diameter of the ellipse formed to be in the travelling plane of the bicycle.

27. The steerer tube of claim 25, wherein an inner surface of the upper section has a circular cross section.

28. The steerer tube of claim 27, wherein the inner and outer surfaces of the upper section are substantially circularly cylindrical, and the outer surface of the second portion of the lower section is substantially circularly cylindrical.

29. The steerer tube of claim 27, wherein a ratio of an inner diameter of the upper section of the body to an outer diameter of the upper section of the body is within the range of 0.75 to 0.95, and the range includes 0.75 and 0.95.

30. The steerer tube of claim 21, wherein an outer diameter of the lower section of the body is basically the same as an outer diameter of the upper section of the body.

31. The steerer tube of claim 21, wherein an inner surface of the upper section has a circular cross section.

32. The steerer tube of claim 31, wherein the inner and outer surfaces of the upper section are

substantially circularly cylindrical, and the outer surface of the second portion of the lower section is substantially circularly cylindrical.

33. The steerer tube of claim 31, wherein a ratio of an inner diameter of the upper section of the body to an outer diameter of the upper section of the body is within the range of 0.75 to 0.95, and the range includes 0.75 and 0.95.

34. The steerer tube of claim 21, wherein an outer diameter of the lower section of the body is greater than an outer diameter of the upper section of the body.

35. The steerer tube of claim 34, wherein the lower section of the body has first and second portions, the first portion adjoining the upper section of the body, an outer diameter of the first portion of the lower section being greater than an outer diameter of the upper section and less than an outer diameter of the second portion of the lower section.

36. The steerer tube of claim 35, wherein the outer diameter of the first portion of the lower section gradually tapers from the second portion of the lower section of the body to the upper section of the body.

37. The steerer tube of claim 21, wherein the segment of the lower section of the body is integrally formed with the crown of the front wheel fork.

38. The steerer tube of claim 21, wherein the segment of the lower section of the body is joined to the crown of the front wheel fork, the body formed of a material different from the crown of the front wheel fork.

39. The steerer tube of claim 38, wherein the segment of the lower section of the body is integrally formed with the crown of the front wheel fork.

40. The steerer tube of claim 21, wherein the body is formed from a material selected from the group consisting of steel, carbon fiber reinforced composite, aluminum, titanium and magnesium.

41. The steerer tube of claim 21, wherein an inner surface of the wall within the lower section of the body forms an ellipse in cross section, a long diameter of the ellipse formed to be perpendicular to the travelling plane, a short diameter of the ellipse formed to be in the travelling plane of the bicycle.

42. The steerer tube of claim 41, wherein the inner surfaces of the upper and lower sections of the body have circular cross sections.

43. The steerer tube of claim 42, wherein an outer diameter of the lower section of the body is greater than an outer diameter of the upper section of the body.

44. The steerer tube of claim 43, wherein the lower section of the body has first and second portions, the first portion adjoining the upper section of the body, an outer diameter of the first portion of the lower section being greater than an outer diameter of the upper section and less than an outer diameter of the second portion of the lower section.

45. The steerer tube of claim 44, wherein the outer diameter of the first portion of the lower

section gradually tapers from the second portion of the lower section of the body to the upper section of the body.

46. The steerer tube of claim 45, wherein an inner surface of the upper section forms an ellipse in cross section, a long diameter of the ellipse formed to be perpendicular to the travelling plane, a short diameter of the ellipse formed to be in the travelling plane of the bicycle.

47. The steerer tube of claim 45, wherein an inner surface of the upper section has a circular cross section.

48. The steerer tube of claim 47, wherein the inner and outer surfaces of the upper section are substantially circularly cylindrical, and the outer surface of the second portion of the lower section is substantially circularly cylindrical.

49. The steerer tube of claim 47, wherein a ratio of an inner diameter of the upper section of the body to an outer diameter of the upper section of the body is within the range of 0.75 to 0.95, and the range includes 0.75 and 0.95.

50. The steerer tube of claim 41, wherein an outer diameter of the lower section of the body is basically the same as an outer diameter of the upper section of the body.

51. The steerer tube of claim 41, wherein an inner surface of the upper section has a circular cross section.

52. The steerer tube of claim 51, wherein the inner and outer surfaces of the upper section are substantially circularly cylindrical, and the outer surface of the second portion of the lower section is substantially circularly cylindrical.

53. The steerer tube of claim 51, wherein a ratio of an inner diameter of the upper section of the body to an outer diameter of the upper section of the body is within the range of 0.75 to 0.95, and the range includes 0.75 and 0.95.

54. The steerer tube of claim 41, wherein an outer diameter of the lower section of the body is greater than an outer diameter of the upper section of the body.

55. The steerer tube of claim 54, wherein the lower section of the body has first and second portions, the first portion adjoining the upper section of the body, an outer diameter of the first portion of the lower section being greater than an outer diameter of the upper section and less than an outer diameter of the second portion of the lower section.

56. The steerer tube of claim 55, wherein the outer diameter of the first portion of the lower section gradually tapers from the second portion of the lower section of the body to the upper section of the body.

57. The steerer tube of claim 41, wherein the segment of the lower section of the body is integrally formed with the crown of the front wheel fork.

58. The steerer tube of claim 41, wherein the segment of the lower section of the body is joined to the crown of the front wheel fork, the body formed of a material different from the crown of the

front wheel fork.

59. The steerer tube of claim 58, wherein the segment of the lower section of the body is integrally formed with the crown of the front wheel fork.

60. The steerer tube of claim 41, wherein the body is formed from a material selected from the group consisting of steel, carbon fiber reinforced composite, aluminum, titanium and magnesium.

61. The steerer tube of claim 41, wherein an inner surface of the upper section has a circular cross section, and an inner diameter of the upper section is basically the same as the short diameter of the lower section.

62. The steerer tube of claim 41, wherein the lower section has an axial length, the short diameter remaining substantially the same along the axial length of the lower section.

63. The steerer tube of claim 41, wherein the short diameter decreases with proximity to the upper section of the body.

64. The steerer tube of claim 41, wherein a ratio of the long diameter to the short diameter taken at a lower end of the lower section is within the range of 1.05 to 1.3.

65. The steerer tube of claim 64, wherein the ratio is within the range of 1.10 to 1.25, and the range includes 1.10 and 1.25.

66. The steerer tube of claim 41, wherein the long diameter of the lower section tapers from the second portion of the lower section to the first portion of the lower section.

67. The steerer tube of claim 41, wherein a ratio of the long diameter to the short diameter decreases with proximity to the upper section of the body."

The rejection decision cites the following reference documents:

Reference Document 1: US7503576B1, the issue date of which is March 17, 2009;

Reference Document 2: US2010259028A1, the publication date of which is October 14, 2010;

Reference Document 3: DE19629740A1, the publication date of which is January 29, 1998.

The rejection decision held that: the difference between Claim 1 and Reference Document 1 is that the thickness of the wall is at a maximum in a travelling plane of the bicycle. The technical issue actually solved is how to maximize the strength of the steerer tube in a travelling plane. However, Reference Document 3 discloses that the wall thickness of a bicycle frame tube is at a maximum in the direction of line 25 (see FIG. 1c), and the bicycle frame tube has the greatest strength in this direction. On this basis, those skilled in the art are motivated to apply the technical feature of Reference Document 3 to the steerer tube of Reference Document 1, so that the wall thickness of the tube can be at a maximum in the travelling plane of the bicycle. Therefore, it is obvious to those skilled in the art to obtain the technical solution protected by the claim by combining Reference Document 3 with common knowledge of the art based on Reference Document 1, so the claim does not comply with the provision of Paragraph 3, Article 22 of the Patent Act regarding inventiveness. One part of the additional technical features defined by the dependent Claim 2 is disclosed by Reference Document 1, and other part of them is a conventional arrangement that can be easily thought of based on the contents disclosed in Reference Documents 1 and 3; the additional technical feature of the dependent Claim 3 has been disclosed by Reference Document 2; parts of the additional technical features defined by the dependent Claims 4-9, 14-17, 19, 23-29, 34-37, 39, 43-49, 54-57, 59, and 66-67 are disclosed by Reference Document 2, and other parts of them are conventional arrangements that can be easily thought of based on the content disclosed in Reference Document 2; the additional technical features defined by the dependent Claims 10, 30, 42, 50 and 61-63 are conventional arrangements in the art; and parts of the additional technical features defined by the dependent Claims 11-13, 18, 20-22, 31-33, 38, 40-41, 51-53, 58, 60 and 64-65 are disclosed by Reference Document 1, and other parts of them can be obtained by those skilled in the art through limited experiments or are conventional technical means in the art. Therefore, the technical solutions defined by the dependent Claims 2-67 are not inventive and do not comply with the provision of Paragraph 3, Article 22 of the Patent Act.

The applicant (hereinafter referred to as the "reexamination requester") was dissatisfied with the above-mentioned rejection decision and submitted a reexamination request to the China National Intellectual Property Administration on July 4, 2019 without modifying the application document. The reexamination requester held that: (1) The difference between Claim 1 and Reference Document 1 is that "the thickness of the wall is at a maximum in the traveling plane of the bicycle". The technical issue identified by the examiner includes "in the travelling plane" among the distinguishing technical features, and the identified technical issue contains all or a part of the

distinguishing technical features. Since the technical means to solve the technical issue have been guided, the subsequent "obviousness" judgment falls into the trap of "hindsight"; and therefore, the identified technical issue is inappropriate. The technical issue actually solved by the present application is to reduce the weight of the steerer tube while meeting all load requirements. Reference Document 3 does not disclose or imply the above-mentioned distinguishing technical features. Reference Document 3 relates to a lightweight component, which may be a tubular structural component welded together with other components, such as a bicycle frame. Reference Document 3 does not disclose a tube that is rotated or turned relative to the frame. Reference Document 3 does not disclose a steerer tube or a steering axis. (2) There is no evidence to show that it is common knowledge in the art that the steerer tube of a bicycle bears the greatest strength in a travelling plane of the bicycle.

After passing the formal examination, the reexamination request was accepted by the China National Intellectual Property Administration in accordance with the Act on July 10, 2019, and transferred to the original examination department for preliminary examination.

The original examination department held, in the pre-examination opinion, that (1) the technical issue actually to be solved by Claim 1 is in terms of the basis on distinguishing technical features, not in terms of the overall technical solution of Claim 1, nor is it the technical issue asserted to be solved in the specification. Therefore, based on the distinguishing technical feature "the thickness of the wall is at a maximum in the traveling plane of a bicycle", it can be determined that the actual technical issue to be solved in Claim 1 is how to maximize the strength of a steerer tube in a travelling plane. (2) The bicycle frame tube disclosed by Reference Document 3 has a variety of wall thicknesses, and the above-mentioned different wall thicknesses can be applied to different bicycle frame tubes, wherein as can be clearly seen from FIG. 1c, there is the largest wall thickness in the direction of line 25, so there is also the greatest strength in the direction. It is common knowledge in the art that the steerer tube of a bicycle bears the greatest strength in a travelling plane. Therefore, in order to enhance the strength of the steerer tube of a bicycle, those skilled in the art, under inspiration by Reference Document 3, can apply the wall shape of the tube of FIG. 1c to Reference Document 1, so that the wall thickness of the steerer tube is at a maximum in the travelling plane of the bicycle, which is obvious to those skilled in the art. Therefore, the rejection decision was upheld.

Subsequently, the China National Intellectual Property Administration established a collegial group to review the present case.

The collegial group issued a reexamination notice to the reexamination requester on June 16, 2020, pointing out: the difference between Claim 1 and Reference Document 1 is that the thickness of the wall is at a maximum in a travelling plane of the bicycle. The technical issue actually solved is how to make the steerer tube of a bicycle lightweight while ensuring its required strength. Reference

Document 3 discloses that the wall thickness of a bicycle frame tube is at a maximum in the direction of line 25 (see FIG. 1C), and the bicycle frame tube has the greatest strength in this direction. On this basis, in order to ensure the strength of the steerer tube in the direction of the travelling plane, those skilled in the art are motivated to apply the tube of Reference Document 3 to the steerer tube of Reference Document 1, so that the wall thickness of the tube can be at a maximum in the travelling plane of the bicycle. Therefore, it is obvious to those skilled in the art to obtain the technical solution protected by the claim by combining Reference Document 3 with common knowledge of the art based on Reference Document 1, so the claim is not inventive as stipulated in Paragraph 3, Article 22 of the Patent Act. The additional technical features defined by the dependent Claims 2, 7, 11, 18-20, 22, 27, 31, 38-40, 42, 47 and 51 have been disclosed by Reference Document 1; the additional technical features defined by the dependent Claims 3-6, 14-17, 23-26, 34-37, 41, 43-46, 54-57 and 66-67 have been disclosed by Reference Document 2; the additional technical features defined by the dependent Claims 8-10, 12-13, 28-30, 32-33, 48-50, 52-53 and 61-65 are conventional arrangements in the art or data that can be obtained by those skilled in the art through limited experiments; the additional technical feature defined by the dependent Claim 21 is easily thought of based on the content disclosed in Reference Document 3; and parts of the additional technical features defined by the dependent Claims 58-60 are disclosed by Reference Document 1, and other parts of them are conventional technical means in the art. Therefore, the dependent Claims 1-67 are also not inventive as stipulated in Paragraph 3, Article 22 of the Patent Act. Regarding the reexamination requester's statement of opinion, the collegial group held that: (1) The difference between Claim 1 and Reference Document 1 is that "the thickness of the wall is at a maximum in the traveling plane of the bicycle". Therefore, based on this distinguishing technical feature, it can be determined that the technical issue actually to be solved by Claim 1 is how to reduce weight while ensuring the strength of the steerer tube. The bicycle frame tube disclosed by Reference Document 3 has a variety of wall thicknesses, and the above-mentioned different wall thicknesses can be applied to different bicycle frame tubes, wherein as can be clearly seen from FIG. 1C, there is the largest wall thickness in the direction of line 25, so there is also the greatest strength in the direction. It is well known that a bicycle is subject to greater impact from various forces in the travelling direction; for example, the impact on the crown and the steerer tube caused by potholes of a road comes from the travelling direction of the bicycle. Therefore, the strength in the travelling direction should be considered to be at a maximum while the steerer tube is designed. It is common knowledge in the art that the steerer tube of a bicycle bears the greatest strength in a travelling plane. Therefore, in order to enhance the strength of the steerer tube of a bicycle, those skilled in the art, under inspiration by Reference Document 3, can apply the wall shape of the tube of FIG. 1C to Reference Document 1, so that the wall thickness of the steerer tube is at a maximum in the travelling plane of the bicycle, which is obvious to those skilled in the art. (2) As mentioned above,

it is well known that a bicycle will be subject to forces, mainly including human body's gravity, impact of the road surface, etc, in all directions while travelling. Since the intersection between the crown and the steerer tube is the intersection point where the impact force caused by the road and the human body's gravity are concentrated, the strength of the crown and the steerer tube must be ensured while they are designed. From the perspective of the distribution and direction of force, the direction of human body's gravity is downward; during the bicycle's travelling, the human body will also produce a certain inertia force in the forward direction due to inertia, and the direction of force exerted by the front wheel of the bicycle to support the human body is upward. When the front wheel encounters a ditch or a pothole, an impact force will be given to the front wheel, and the impact force will be perpendicular to the action surface of the ditch or the pothole on the front wheel. This force will generally be parallel to the travelling plane and act on the front wheel of the bicycle. The steering force transmitted by the human arm to the steerer tube through the handle is perpendicular to the travelling plane or crosses the travelling plane. If the above forces are applied in translation to the lower section part of the steerer tube, it is obvious that the force is greatest in the plane of the bicycle's travelling direction. The position where the crown and the steerer tube overlap is also the lower section part of the steerer tube, which is a concentrated force-bearing part, that is, the lower section part of the steerer tube receives the greatest force in the plane of the bicycle's travelling direction. Therefore, when a steerer tube is designed, the maximum strength should be considered to be in the plane of the travelling direction, which is common knowledge in the art.

The reexamination requester submitted a statement of opinion on July 28, 2020, and amended the claims. The specific amendments are as follows: On the basis of the text copies on which the rejection decision is based, the feature "a segment of the lower section adapted to be joined to a crown of a front wheel fork of the bicycle" of Claim 1 is amended as "a segment of the lower section adapted to be assembled with a crown of a front wheel fork of the bicycle"; the additional technical feature of the dependent Claim 2 is added to Claim 1; Claims 17, 19, 22, 37, 39, 42, 57 and 59 are deleted, and the feature "the segment of the lower section of the body is joined to the crown of the front wheel fork" of Claims 18, 38 and 58 is deleted; and the serial number and dependency of the claims are adjusted to form new Claims 1-58. The reexamination requester held that: although Reference Document 1 discloses that the outer surface of the lower section of the body has a circular cross section, Reference Document 1 also describes the advantage that the outer surface of the neck of the steerer tube is elliptical. Therefore, those skilled in the art would most likely think of designing the outer surface of the neck of the steerer tube and the inner hole of the crown to other non-circular shape rather than a circular shape. In addition, two embodiments of Reference Document 1 both disclose that the steerer tube and the crown are molded into one piece rather than being assembled together. Therefore, even if the outer surface of the neck of the steerer tube is changed

from an elliptical shape to a circular shape under the teaching of the embodiment of FIG. 2 of Reference Document 1, the technical solution of Claim 1 could still not be obtained.

The amended claims submitted by the reexamination requester on July 28, 2020 in response to the reexamination notice are as follows:

"1. A steerer tube for a bicycle, the steerer tube comprising:

an elongated hollow body arranged around a steering axis located in a vertical travelling plane of the bicycle,

the body having upper and lower sections, a segment of the upper section adapted to be joined to a bicycle handlebar, a segment of the lower section adapted to be assembled with a crown of a front wheel fork of the bicycle, the lower section joined to the upper section, and

the body being formed by a wall, the thickness of the wall at any point in the lower section of the body varying according to an angle of cross section of the point relative to the travelling plane, and the wall thickness being at a maximum in the travelling plane of the bicycle,

wherein the outer surfaces of the upper and lower sections of the body have circular cross sections.

2. The steerer tube of claim 1, wherein an outer diameter of the lower section of the body is greater than an outer diameter of the upper section of the body.

3. The steerer tube of claim 2, wherein the lower section of the body has first and second portions, the first portion adjoining the upper section of the body, an outer diameter of the first portion of the lower section being greater than an outer diameter of the upper section and less than an outer diameter of the second portion of the lower section.

4. The steerer tube of claim 3, wherein the outer diameter of the first portion of the lower section gradually tapers from the second portion of the lower section to the upper section of the body.

5. The steerer tube of claim 4, wherein an inner surface of the upper section forms an ellipse in cross section, a long diameter of the ellipse formed to be perpendicular to the travelling plane, a short diameter of the ellipse formed to be in the travelling plane of the bicycle.

6. The steerer tube of claim 4, wherein an inner surface of the upper section has a circular cross section.

7. The steerer tube of claim 6, wherein the inner and outer surfaces of the upper section are substantially circularly cylindrical, and the outer surface of the second portion of the lower section is substantially circularly cylindrical.

8. The steerer tube of claim 6, wherein a ratio of an inner diameter of the upper section of the body to an outer diameter of the upper section of the body is within the range of 0.75 to 0.95, and the range includes 0.75 and 0.95.

9. The steerer tube of claim 1, wherein an outer diameter of the lower section of the body is

basically the same as an outer diameter of the upper section of the body.

10. The steerer tube of claim 1, wherein an inner surface of the upper section has a circular cross section.

11. The steerer tube of claim 10, wherein the inner and outer surfaces of the upper section are substantially circularly cylindrical, and the outer surface of the lower section is substantially circularly cylindrical.

12. The steerer tube of claim 10, wherein a ratio of an inner diameter of the upper section of the body to an outer diameter of the upper section of the body is within the range of 0.75 to 0.95, and the range includes 0.75 and 0.95.

13. The steerer tube of claim 1, wherein an outer diameter of the lower section of the body is greater than an outer diameter of the upper section of the body.

14. The steerer tube of claim 13, wherein the lower section of the body has first and second portions, the first portion adjoining the upper section of the body, an outer diameter of the first portion of the lower section being greater than an outer diameter of the upper section and less than an outer diameter of the second portion of the lower section.

15. The steerer tube of claim 14, wherein the outer diameter of the first portion of the lower section gradually tapers from the second portion of the lower section to the upper section of the body.

16. The steerer tube of claim 1, wherein the body formed of a material different from the crown of the front wheel fork.

17. The steerer tube of claim 1, wherein the body is formed from a material selected from the group consisting of steel, carbon fiber reinforced composite, aluminum, titanium and magnesium.

18. The steerer tube of claim 1, wherein the wall thickness is at a minimum in a plane containing the steering axis and orthogonal to the travelling plane of the bicycle.

19. The steerer tube of claim 18, wherein an outer diameter of the lower section of the body is greater than an outer diameter of the upper section of the body.

20. The steerer tube of claim 19, wherein the lower section of the body has first and second portions, the first portion adjoining the upper section of the body, an outer diameter of the first portion of the lower section being greater than an outer diameter of the upper section and less than an outer diameter of the second portion of the lower section.

21. The steerer tube of claim 20, wherein the outer diameter of the first portion of the lower section gradually tapers from the second portion of the lower section of the body to the upper section of the body.

22. The steerer tube of claim 21, wherein an inner surface of the upper section forms an ellipse in cross section, a long diameter of the ellipse formed to be perpendicular to the travelling plane, a short diameter of the ellipse formed to be in the travelling plane of the bicycle.

23. The steerer tube of claim 21, wherein an inner surface of the upper section has a circular cross section.

24. The steerer tube of claim 23, wherein the inner and outer surfaces of the upper section are substantially circularly cylindrical, and the outer surface of the second portion of the lower section is substantially circularly cylindrical.

25. The steerer tube of claim 23, wherein a ratio of an inner diameter of the upper section of the body to an outer diameter of the upper section of the body is within the range of 0.75 to 0.95, and the range includes 0.75 and 0.95.

26. The steerer tube of claim 18, wherein an outer diameter of the lower section of the body is basically the same as an outer diameter of the upper section of the body.

27. The steerer tube of claim 18, wherein an inner surface of the upper section has a circular cross section.

28. The steerer tube of claim 27, wherein the inner and outer surfaces of the upper section are substantially circularly cylindrical, and the outer surface of the second portion of the lower section is substantially circularly cylindrical.

29. The steerer tube of claim 27, wherein a ratio of an inner diameter of the upper section of the body to an outer diameter of the upper section of the body is within the range of 0.75 to 0.95, and the range includes 0.75 and 0.95.

30. The steerer tube of claim 18, wherein an outer diameter of the lower section of the body is greater than an outer diameter of the upper section of the body.

31. The steerer tube of claim 30, wherein the lower section of the body has first and second portions, the first portion adjoining the upper section of the body, an outer diameter of the first portion of the lower section being greater than an outer diameter of the upper section and less than an outer diameter of the second portion of the lower section.

32. The steerer tube of claim 31, wherein the outer diameter of the first portion of the lower section gradually tapers from the second portion of the lower section of the body to the upper section of the body.

33. The steerer tube of claim 18, wherein the body formed of a material different from the crown of the front wheel fork.

34. The steerer tube of claim 18, wherein the body is formed from a material selected from the group consisting of steel, carbon fiber reinforced composite, aluminum, titanium and magnesium.

35. The steerer tube of claim 18, wherein an inner surface of the wall within the lower section of the body forms an ellipse in cross section, a long diameter of the ellipse formed to be perpendicular to the travelling plane, a short diameter of the ellipse formed to be in the travelling plane of the bicycle.

36. The steerer tube of claim 35, wherein an outer diameter of the lower section of the body is

greater than an outer diameter of the upper section of the body.

37. The steerer tube of claim 36, wherein the lower section of the body has first and second portions, the first portion adjoining the upper section of the body, an outer diameter of the first portion of the lower section being greater than an outer diameter of the upper section and less than an outer diameter of the second portion of the lower section.

38. The steerer tube of claim 37, wherein the outer diameter of the first portion of the lower section gradually tapers from the second portion of the lower section of the body to the upper section of the body.

39. The steerer tube of claim 38, wherein an inner surface of the upper section forms an ellipse in cross section, a long diameter of the ellipse formed to be perpendicular to the travelling plane, a short diameter of the ellipse formed to be in the travelling plane of the bicycle.

40. The steerer tube of claim 38, wherein an inner surface of the upper section has a circular cross section.

41. The steerer tube of claim 40, wherein the inner and outer surfaces of the upper section are substantially circularly cylindrical, and the outer surface of the second portion of the lower section is substantially circularly cylindrical.

42. The steerer tube of claim 40, wherein a ratio of an inner diameter of the upper section of the body to an outer diameter of the upper section of the body is within the range of 0.75 to 0.95, and the range includes 0.75 and 0.95.

43. The steerer tube of claim 35, wherein an outer diameter of the lower section of the body is basically the same as an outer diameter of the upper section of the body.

44. The steerer tube of claim 35, wherein an inner surface of the upper section has a circular cross section.

45. The steerer tube of claim 44, wherein the inner and outer surfaces of the upper section are substantially circularly cylindrical, and the outer surface of the second portion of the lower section is substantially circularly cylindrical.

46. The steerer tube of claim 44, wherein a ratio of an inner diameter of the upper section of the body to an outer diameter of the upper section of the body is within the range of 0.75 to 0.95, and the range includes 0.75 and 0.95.

47. The steerer tube of claim 35, wherein an outer diameter of the lower section of the body is greater than an outer diameter of the upper section of the body.

48. The steerer tube of claim 47, wherein the lower section of the body has first and second portions, the first portion adjoining the upper section of the body, an outer diameter of the first portion of the lower section being greater than an outer diameter of the upper section and less than an outer diameter of the second portion of the lower section.

49. The steerer tube of claim 48, wherein the outer diameter of the first portion of the lower

section gradually tapers from the second portion of the lower section of the body to the upper section of the body.

50. The steerer tube of claim 35, wherein the body formed of a material different from the crown of the front wheel fork.

51. The steerer tube of claim 35, wherein the body is formed from a material selected from the group consisting of steel, carbon fiber reinforced composite, aluminum, titanium and magnesium.

52. The steerer tube of claim 35, wherein an inner surface of the upper section has a circular cross section, and an inner diameter of the upper section is basically the same as the short diameter of the lower section.

53. The steerer tube of claim 35, wherein the lower section has an axial length, the short diameter remaining substantially the same along the axial length of the lower section.

54. The steerer tube of claim 35, wherein the short diameter decreases with proximity to the upper section of the body.

55. The steerer tube of claim 35, wherein a ratio of the long diameter to the short diameter taken at a lower end of the lower section is within the range of 1.05 to 1.3.

56. The steerer tube of claim 55, wherein the ratio is within the range of 1.10 to 1.25, and the range includes 1.10 and 1.25.

57. The steerer tube of claim 35, wherein the long diameter of the lower section tapers from the second portion of the lower section to the first portion of the lower section.

58. The steerer tube of claim 35, wherein a ratio of the long diameter to the short diameter decreases with proximity to the upper section of the body."

The collegial group issued another reexamination notice on December 29, 2020, pointing out: the differences between Claim 1 and Reference Document 1 are that: (1) the thickness of the wall is at a maximum in a travelling plane of the bicycle, and (2) a segment of the lower section of the steerer tube is adapted to be assembled with a crown of a front wheel fork of the bicycle. However, Reference Document 3 has disclosed that the wall thickness of a bicycle frame tube is at a maximum in the direction of line 25 (see FIG. 1C), and the bicycle frame tube has the greatest strength in this direction. Reference Document 1 discloses that the steering tube and the crown are assembled by molding. On this basis, those skilled in the art are motivated to apply the steerer tube of Reference Document 3 to the steerer tube of Reference Document 1, so that the wall thickness of the tube can be at a maximum in the travelling plane of the bicycle. For molding or assembling, those skilled in the art can make a choice according to the materials and properties of the steerer tube and the crown, which does not require creative work. Therefore, it is obvious to those skilled in the art to obtain the technical solution protected by the claim by combining Reference Document 3 with common knowledge of the art based on Reference Document 1, so Claim 1 is not inventive as stipulated in Paragraph 3, Article 22 of the Patent Act. The additional technical features defined by

the dependent Claims 2-5, 13-15, 19-22, 30-32, 35-39, 47-49 and 57-58 have been disclosed by Reference Document 2; the additional technical features defined by Claims 6, 10, 23, 27, 40 and 44 all have been disclosed by Reference Document 1; the additional technical features defined by Claims 7-9, 11-12, 24-26, 28-29, 41-43, 45-46, 52-54 and 55-56 are conventional arrangements of the art or data that can be obtained by those skilled in the art through limited experiments; the additional technical features defined by the dependent Claims 16-17, 33-34 and 50-51 all have been disclosed by Reference Document 1, and as for the body that can also be formed from a material selected from the group consisting of steel, aluminum, titanium and magnesium, these materials are all commonly used materials in the art, and these selections are all conventional technical means in the art; and the additional technical feature defined by Claim 18 is easily thought of by those skilled in the art based on the content disclosed by Reference Document 3. Therefore, Claims 2-58 are not inventive as stipulated in Paragraph 3, Article 22 of the Patent Act. The reexamination requester held that: although Reference Document 1 discloses that the outer surface of the lower section of the body has a circular cross section, Reference Document 1 also describes the advantage that the outer surface of the neck of the steerer tube is elliptical. Therefore, those skilled in the art would most likely think of designing the outer surface of the neck of the steerer tube and the inner hole of the crown to other non-circular shape rather than a circular shape. Regarding the reexamination requester's statement of opinion, the collegial group believed that: the embodiment of FIG. 2 of Reference Document 1 discloses that the outer surface of the lower section of the body has a circular cross section; although Reference Document 1 describes the advantage that the outer surface of the neck of the steerer tube is elliptical in another embodiment, which eliminates the potential problem of the steerer tube rotating inside the crown when the steerer tube is molded into the crown, the possibility of making the neck of the steerer tube circular is not precluded. Therefore, those skilled in the art can easily think of configuring the combined portion of the steerer tube and the crown into a circular shape. In Reference Document 1, the method for connecting the steerer tube and the crown of the bicycle is molding. However, molding and assembling are common technical means in the art. For different steerer tubes and crowns, those skilled in the art can select an appropriate method for their connection based on their materials and properties; this is conventional selection of conventional means by those skilled in the art and does not require creative work. In addition, regarding "the thickness of the wall being at a maximum in the traveling plane of the bicycle", the bicycle frame tube disclosed by Reference Document 3 has a variety of wall thicknesses, and the above-mentioned different wall thicknesses can be applied to different bicycle frame tubes, wherein as can be clearly seen from FIG. 1C, there is the largest wall thickness in the direction of line 25, so there is also the greatest strength in the direction. It is well known that a bicycle is subject to greater impact from various forces in the travelling direction; for example, the impact on the crown and the steerer tube caused by potholes of a road comes from the travelling

direction of the bicycle. Therefore, the strength in the travelling direction should be considered to be at a maximum while the steerer tube is designed. It is common knowledge in the art that the steerer tube of a bicycle bears the greatest strength in a travelling plane. Therefore, in order to enhance the strength of the steerer tube of a bicycle, those skilled in the art, under inspiration by Reference Document 3, can apply the wall shape of the tube of FIG. 1C to Reference Document 1, so that the wall thickness of the steerer tube is at a maximum in the travelling plane of the bicycle, which is obvious to those skilled in the art.

The reexamination requester submitted a statement of opinion without amending the application document on January 13, 2021, and stated to hold that: (1) When the collegial group comments on Claim 1 lacking of inventiveness, it is unreasonable for the collegial group to compare Claim 1 with the technical solutions of the two embodiments shown in FIGs. 1, 4 and 5 of Reference Document 1; (2) The distinguishing technical feature "a segment of the lower section of the steerer tube is adapted to be assembled with a crown of a front wheel fork of the bicycle" is not obvious to those skilled in the art. The steerer tube and the crown disclosed in Reference Document 1 are molded components. After reading Reference Document 1, those skilled in the art would not think of assembling the steerer tube and the crown together; (3) Combining Reference Document 1 with Reference Document 3 does not result in a technical solution in which the outer surface of the lower section of the body is designed to have a circular cross section. Reference Document 1 teaches that: in order to eliminate the problem of the steerer tube rotating inside the crown during a molding process (i.e., in order to assist in "assembling" the steerer tube to the crown), the outer surface of the steerer tube should be designed to be non-circular, including elliptical, oval, triangular, pentagonal and hexagonal (see lines 11-19, column 7 of the specification of Reference Document 1). In fact, Reference Document 1 teaches away from Claim 1.

On the basis of the above procedure, the collegial group held that the fact of the present case is clear to make a review decision.

II. Reasons for Decision

(I) Identification of the reviewed text copies

The reexamination requester amended the claims on July 28, 2020 in response to the reexamination notice. After verification, the amendment was in compliance with the provision of Article 33 of the Patent Act and Paragraph 1, Article 61 of the Enforcement Rules of the Patent Act. Therefore, the reviewed text copies on which the review decision is based for the present reexamination request are: Claims 1-58 submitted on July 28, 2020, and pages 1-8 of the specification, pages 1-16 of the drawings, the abstract and the representative drawing submitted on the application date, December 29, 2015.

(II) Regarding inventiveness

The inventiveness stipulated in Paragraph 3, Article 22 of the Patent Act means that: as

compared with the technology existing before the date of filing, the invention has prominent substantive features and represents a notable progress, and the utility model has substantive features and represents progress.

1. Claim 1 recites a steerer tube for a bicycle, and a specific embodiment of Reference Document 1 (see content from line 1, column 6 to line 44, column 7 of the specification and FIGs. 1, 4 and 5) discloses a steering tube (i.e., steerer tube) for a bicycle and specifically discloses the following technical features: The steering tube 10 comprises a first proximal end 11, a second distal end 12 and a central bore 13 (i.e., an elongated hollow body). The body of the steering tube is arranged around the steering axis lying within the vertical travelling plane of the bicycle, and a shoulder 22 is located close to the second distal end 12 of the tube, which divides the steering tube 10 into a neck 15 (i.e., lower section), which composes a small portion of the tube, and a round body portion 18 (i.e., upper section), which composes a major portion of the tube (equivalent to disclosing the body having upper and lower sections and the lower section being joined to the upper section). The neck 15 is molded into the bore 31 for fixing the steerer tube to the crown, and a segment corresponding to the lower section is adapted to be assembled with a crown of a front wheel fork of the bicycle. The central portion 34 of the crown 30 is comprised of an interior elliptical bore 36, which matches the elliptical exterior surface 21 of the neck of the steering tube 10. It can be concluded directly from FIG. 5 and without doubt that the thickness of the wall at any point in the neck varies according to an angle of cross section of the point relative to the travelling plane (that is, the body being formed by a wall, the thickness of the wall at any point in the lower section of the body varying according to an angle of cross section of the point relative to the travelling plane). The body of the steering tube 10 includes the cylindrical body portion 18 and the neck 15 (that is, it is disclosed that the outer surface of the upper section of the steerer tube of the body has a circular cross section). The differences between Claim 1 and Reference Document 1 are that: (1) the thickness of the wall is at a maximum in the travelling plane of the bicycle; (2) a segment of the lower section of the steerer tube is adapted to be assembled with a crown of a front wheel fork of the bicycle; and (3) the outer surface of the lower section of the body has a circular cross section. Based on the above distinguishing features, it can be determined that the technical issue actually solved by Claim 1 is how to make the steerer tube of a bicycle lightweight while ensuring its required strength and facilitating the assembly of the steerer tube and the crown.

Regarding the distinguishing feature (1), Reference Document 3 (see lines 26-35, column 6 of the specification and FIG. 1C) discloses a bicycle frame tube, and specifically discloses the following technical features: the wall thickness of the bicycle frame tube is at a maximum in the direction of line 25 (see FIG. 1C), and the bicycle frame tube has the greatest strength in this direction. The function of the above technical feature in Reference Document 3 is the same as the function of that in the present application, and is also used to strengthen the strength of the tube. It is well known

that although a bicycle is subject to impact forces from all directions when travelling, it is subject to greater impact from various forces in the travelling direction; for example, the impact on the crown and the steerer tube caused by potholes of a road comes from the travelling direction of the bicycle. Therefore, the strength in the travelling direction should be considered to be at a maximum while the steerer tube is designed. On this basis, in order to ensure the strength of the steerer tube in the traveling plane, those skilled in the art are motivated to apply the tube of Reference Document 3 to the steerer tube of Reference Document 1, so that the wall thickness of the steerer tube is at a maximum in the travelling plane of the bicycle.

Regarding the distinguishing feature (2), the method disclosed by Reference Document 1 for assembling the steering tube and the crown is molding while the present application uses assembling. For those skilled in the art, molding is also a special form of assembling. The steering tube of Reference Document 1 can be made of resin with carbon fiber composites, and the crown is made of aluminum (lines 40-47, column 5 of the specification). Therefore, the connection between the resin steering tube and the aluminum alloy crown can be achieved by molding while other materials with relatively good cold plasticity can also be connected by assembling. Accordingly, no matter whether the connection is achieved by molding or assembling, those skilled in the art can make a selection based on the materials and properties of the steerer tube and the crown, which does not require creative work.

Regarding the distinguishing feature (3), another specific embodiment of Reference Document 1 discloses that the neck 15 includes a circular interior surface 16 and a circular exterior surface 17 (see FIG. 3 and paragraph 2, column 6 of the specification of Reference Document 1), that is, it has disclosed that the outer surface of the lower section of the body has a circular cross section. Moreover, its function in Reference Document 1 is also to facilitate assembling and make the steering tube lightweight. Therefore, it provides technical enlightenment for applying the above feature to other embodiments. On this basis, those skilled in the art can easily think of applying the relevant feature of the above embodiment to other embodiments, thereby forming the technical solution of Claim 1.

Therefore, it is obvious to those skilled in the art to obtain the technical solution protected by the claim by combining one embodiment of Reference Document 1 and Reference Document 3 with common knowledge of the art based on another embodiment of Reference Document 1, so the technical solution protected by the claim does not have prominent substantive features and represent a notable progress and is not inventive as stipulated in Paragraph 3, Article 22 of the Patent Act.

2. Regarding the dependent Claim 2, Reference Document 2 (see paragraphs [0036]-[0045] of the specification and FIGs. 1-6) discloses a bicycle steerer tube, and specifically discloses the following technical features: a hollow body 30 is included, and the outer diameter of the lower

section of the body is greater than the outer diameter of the upper section of the body (see FIG. 6). The function of the above technical features is the same as the function of those in the present application, and is also used to provide a steerer tube with different diameters to ensure the strength requirement of the steerer tube. On this basis, those skilled in the art are motivated to apply the technical features of Reference Document 2 to Reference Document 1. It is obvious to those skilled in the art to obtain the technical solution defined by Claim 2 by combining Reference Document 3, common knowledge of the art with Reference Document 2 based on Reference Document 1, so the claim is not inventive as stipulated in Paragraph 3, Article 22 of the Patent Act.

3. Regarding the dependent Claims 3-5, Reference Document 2 discloses that the lower section of the body has first and second portions, the first portion adjoining the upper section of the body, an outer diameter of the first portion of the lower section being greater than an outer diameter of the upper section and less than an outer diameter of the second portion of the lower section; the outer diameter of the first portion of the lower section gradually tapers from the second portion of the lower section to the upper section of the body; an inner surface of the upper section forms an ellipse in cross section, a long diameter of the ellipse is formed to be perpendicular to the travelling plane, and a short diameter of the ellipse is formed to be in the travelling plane of the bicycle (see paragraphs [0036]-[0045] of the specification and FIGs. 1-6 of Reference Document 2). Therefore, when another claim cited by the claim is not inventive, the above-mentioned claim is not inventive as stipulated in Paragraph 3, Article 22 of the Patent Act.

4. Regarding Claims 6 and 10, the additional technical features defined therein all have been disclosed by Reference Document 1 (see paragraph 2, column 6 and FIG. 2 of Reference Document 1), which discloses that an inner surface of the upper section has a circular cross section. Therefore, if another claim cited by the claims is not inventive, the above-mentioned claims are not inventive as stipulated in Paragraph 3, Article 22 of the Patent Act.

5. Regarding Claims 7, 8, 9, 11 and 12, the additional technical features defined therein are conventional arrangements of the art. Reference Document 1 has disclosed that the inner surface of the upper section is arranged to have a circular cross section, and that the inner surface and the outer surface of the upper section are substantially circularly cylindrical (see paragraph 2, column 6 and FIG. 2 of Reference Document 1). In this case, those skilled in the art can refer to the arrangement of the upper section and also arrange the outer surface of the second portion of the lower section to be substantially circularly cylindrical, and it is also a simple variation arrangement to make an outer diameter of the lower section substantially the same as an outer diameter of the upper section of the body; a ratio of an inner diameter of the upper section of the body to an outer diameter of the upper section of the body is limited within the range of 0.75 to 0.95 with 0.75 and 0.95 included, the data of which can be obtained by those skilled in the art through a limited number of experiments; further, the limitation of these specific values will not bring any unexpected

technical effect, and no creative work is required. Therefore, if another claim cited by the claims is not inventive, the claims are not inventive as stipulated in Paragraph 3, Article 22 of the Patent Act.

6. Regarding the dependent Claims 13-15, the additional technical features defined therein all have been disclosed by Reference Document 2. Specifically, Reference Document 2 discloses that: a hollow body 30 is included, and the outer diameter of the lower section of the body is greater than the outer diameter of the upper section of the body; the lower section of the body has first and second portions, the first portion adjoining the upper section of the body, an outer diameter of the first portion of the lower section being greater than an outer diameter of the upper section and less than an outer diameter of the second portion of the lower section; the outer diameter of the first portion of the lower section gradually tapers from the second portion of the lower section to the upper section of the body (see paragraphs [0027], [0036]-[0045] of the specification and FIGs. 1-6). Therefore, when another claim cited by the claim is not inventive, the above-mentioned claim is not inventive as stipulated in Paragraph 3, Article 22 of the Patent Act.

7. Regarding the dependent Claims 16-17, the additional technical features defined therein all have been disclosed in Reference Document 1. Specifically, Reference Document 1 discloses that the segment of the lower section of the body is joined to the crown of the front wheel fork, the body formed of a material different from the crown of the front wheel fork; the body is formed by carbon fiber reinforced composite, the crown is formed from a material selected from copper, aluminum, magnesium and titanium, etc., and the segment of the lower section of the body is molded with the crown of the front wheel fork (see the content from paragraph 2, column 7 to paragraph 1, column 9 of the specification and FIGs. 1B and 5 of Reference Document 1). As for the body that can also be formed from a material selected from the group consisting of steel, aluminum, titanium and magnesium, these materials are all commonly used materials in the art, and these selections are all conventional technical means in the art. Therefore, when another claim cited by the claims is not inventive, the above-mentioned claims are not inventive as stipulated in Paragraph 3, Article 22 of the Patent Act.

8. Regarding the dependent Claim 18, the feature "the wall thickness is at a minimum in a plane containing the steering axis and orthogonal to the travelling plane of the bicycle" is defined; when those skilled in the art apply the tube of Reference Document 3 (see FIG. 1C of Reference Document 3) to the combined segment of the steering tube and the crown of Reference Document 1, it is natural to form the technical feature, in order to ensure the strength requirement in the travelling plane of the bicycle, that the wall in the travelling plane is the thickest while the wall thickness is at a minimum in a plane containing the steering axis and orthogonal to the travelling plane of the bicycle. Therefore, if the claim cited by it does not possess an inventive step, the claim does not have an inventive step. Possess the inventive step stipulated in Article 22, Paragraph 3 of the Patent Act.

9. Regarding the dependent Claims 19-22, the additional technical features defined therein all

have been disclosed by Reference Document 2 (see paragraphs [0036]-[0045] of the specification and FIGs. 1-6). Specifically, Reference Document 2 discloses that a bicycle steerer tube includes a hollow body 30, and the outer diameter of the lower section of the body is greater than the outer diameter of the upper section of the body (see FIG. 6); the lower section of the body has first and second portions, the first portion adjoining the upper section of the body, an outer diameter of the first portion of the lower section being greater than an outer diameter of the upper section and less than an outer diameter of the second portion of the lower section; the outer diameter of the first portion of the lower section gradually tapers from the second portion of the lower section to the upper section of the body; an inner surface of the upper section forms an ellipse in cross section, a long diameter of the ellipse is formed to be perpendicular to the travelling plane, and a short diameter of the ellipse is formed to be in the travelling plane of the bicycle. Therefore, when another claim cited by the claim is not inventive, the above-mentioned claim is not inventive as stipulated in Paragraph 3, Article 22 of the Patent Act.

10. Regarding Claims 23 and 27, the additional technical features defined therein all have been disclosed by Reference Document 1 (see paragraph 2, column 6 and FIG. 2 of Reference Document 1), which discloses that an inner surface of the upper section has a circular cross section. Therefore, if another claim cited by the claims is not inventive, the above-mentioned claims are not inventive as stipulated in Paragraph 3, Article 22 of the Patent Act.

11. Regarding Claims 24, 25, 26, 28 and 29, the additional technical features defined therein are conventional arrangements of the art. Reference Document 1 has disclosed that the inner surface of the upper section is arranged to have a circular cross section, and that the inner surface and the outer surface of the upper section are substantially circularly cylindrical (see paragraph 2, column 6 and FIG. 2 of Reference Document 1). In this case, those skilled in the art can refer to the arrangement of the upper section and also arrange the outer surface of the second portion of the lower section to be substantially circularly cylindrical, and it is also a simple variation arrangement to make an outer diameter of the lower section substantially the same as an outer diameter of the upper section of the body; a ratio of an inner diameter of the upper section of the body to an outer diameter of the upper section of the body is limited within the range of 0.75 to 0.95 with 0.75 and 0.95 included, the data of which can be obtained by those skilled in the art through a limited number of experiments; further, the limitation of these specific values will not bring any unexpected technical effect, and no creative work is required. Therefore, if another claim cited by the claims is not inventive, the claims are not inventive as stipulated in Paragraph 3, Article 22 of the Patent Act.

12. Regarding the dependent Claims 30-32, the additional technical features defined therein all have been disclosed by Reference Document 2. Specifically, Reference Document 2 discloses that: a hollow body 30 is included, and the outer diameter of the lower section of the body is greater than the outer diameter of the upper section of the body; the lower section of the body has first and

second portions, the first portion adjoining the upper section of the body, an outer diameter of the first portion of the lower section being greater than an outer diameter of the upper section and less than an outer diameter of the second portion of the lower section; the outer diameter of the first portion of the lower section gradually tapers from the second portion of the lower section to the upper section of the body (see paragraphs [0027], [0036]-[0045] of the specification and FIGs. 1-6 of Reference Document 2). Therefore, when another claim cited by the claim is not inventive, the above-mentioned claim is not inventive as stipulated in Paragraph 3, Article 22 of the Patent Act.

13. Regarding the dependent Claims 33-34, the additional technical features defined therein all have been disclosed in Reference Document 1. Specifically, Reference Document 1 discloses that the segment of the lower section of the body is joined to the crown of the front wheel fork, the body formed of a material different from the crown of the front wheel fork; the body is formed by carbon fiber reinforced composite, and the crown is formed from a material selected from copper, aluminum, magnesium and titanium, etc. (see the content from paragraph 2, column 7 to paragraph 1, column 9 of the specification and FIGs. 1B and 5 of Reference Document 1). As for the body that can also be formed from a material selected from the group consisting of steel, aluminum, titanium and magnesium, these materials are all commonly used materials in the art, and these selections are all conventional technical means in the art. Therefore, when another claim cited by the claims is not inventive, the above-mentioned claims are not inventive as stipulated in Paragraph 3, Article 22 of the Patent Act.

14. Regarding the dependent Claim 35, Reference Document 2 discloses that an inner surface of the wall within the lower section of the body forms an ellipse in cross section, a long diameter of the ellipse formed to be perpendicular to the travelling plane, a short diameter of the ellipse formed to be in the travelling plane of the bicycle (see FIG. 4 of Reference Document 2). Therefore, when another claim cited by the claim is not inventive, the above-mentioned claim is not inventive as stipulated in Paragraph 3, Article 22 of the Patent Act.

15. Regarding the dependent Claims 36-39, Reference Document 2 discloses that: a hollow body 30 is included, and the outer diameter of the lower section of the body is greater than the outer diameter of the upper section of the body (see FIG. 6); the lower section of the body has first and second portions, the first portion adjoining the upper section of the body, an outer diameter of the first portion of the lower section being greater than an outer diameter of the upper section and less than an outer diameter of the second portion of the lower section; the outer diameter of the first portion of the lower section gradually tapers from the second portion of the lower section to the upper section of the body; an inner surface of the upper section forms an ellipse in cross section, a long diameter of the ellipse is formed to be perpendicular to the travelling plane, and a short diameter of the ellipse is formed to be in the travelling plane of the bicycle (see paragraphs [0036]-[0045] of the specification and FIGs. 1-6). Therefore, when another claim cited by the claim is not

inventive, the above-mentioned claim is not inventive as stipulated in Paragraph 3, Article 22 of the Patent Act.

16. Regarding Claims 40 and 44, the additional technical features defined therein all have been disclosed by Reference Document 1 (see paragraph 2, column 6 and FIG. 2 of Reference Document 1), which discloses that an inner surface of the upper section has a circular cross section. Therefore, if another claim cited by the claims is not inventive, the above-mentioned claims are not inventive as stipulated in Paragraph 3, Article 22 of the Patent Act.

17. Regarding Claims 41, 42, 43, 45 and 46, the additional technical features defined therein are conventional arrangements of the art. Reference Document 1 has disclosed that the inner surface of the upper section is arranged to have a circular cross section, and that the inner surface and the outer surface of the upper section are substantially circularly cylindrical (see paragraph 2, column 6 and FIG. 2 of Reference Document 1). In this case, those skilled in the art can refer to the arrangement of the upper section and also arrange the outer surface of the second portion of the lower section to be substantially circularly cylindrical, and it is also a simple variation arrangement to make an outer diameter of the lower section substantially the same as an outer diameter of the upper section of the body; a ratio of an inner diameter of the upper section of the body to an outer diameter of the upper section of the body is limited within the range of 0.75 to 0.95 with 0.75 and 0.95 included, the data of which can be obtained by those skilled in the art through a limited number of experiments; further, the limitation of these specific values will not bring any unexpected technical effect, and no creative work is required. Therefore, if another claim cited by the claims is not inventive, the claims are not inventive as stipulated in Paragraph 3, Article 22 of the Patent Act.

18. Regarding the dependent Claims 47-49, the additional technical features defined therein are all disclosed by Reference Document 2. Specifically, Reference Document 2 discloses that: a hollow body 30 is included, and the outer diameter of the lower section of the body is greater than the outer diameter of the upper section of the body (see FIG. 6); the lower section of the body has first and second portions, the first portion adjoining the upper section of the body, an outer diameter of the first portion of the lower section being greater than an outer diameter of the upper section and less than an outer diameter of the second portion of the lower section; the outer diameter of the first portion of the lower section gradually tapers from the second portion of the lower section to the upper section of the body (see paragraphs [0027], [0036]-[0045] of the specification and FIGs. 1-6 of Reference Document 2). Therefore, when another claim cited by the claim is not inventive, the above-mentioned claim is not inventive as stipulated in Paragraph 3, Article 22 of the Patent Act.

19. Regarding the dependent Claims 50-51, the additional technical features defined therein all have been disclosed in Reference Document 1. Specifically, Reference Document 1 discloses that the segment of the lower section of the body is joined to the crown of the front wheel fork, the body formed of a material different from the crown of the front wheel fork; the body is formed by carbon

fiber reinforced composite, and the crown is formed from a material selected from copper, aluminum, magnesium and titanium, etc. (see the content from paragraph 2, column 7 to paragraph 1, column 9 of the specification and FIGs. 1B and 5 of Reference Document 1). As for the body that can also be formed from a material selected from the group consisting of steel, aluminum, titanium and magnesium, these materials are all commonly used materials in the art, and these selections are all conventional technical means in the art. Therefore, when another claim cited by the claims is not inventive, the above-mentioned claims are not inventive as stipulated in Paragraph 3, Article 22 of the Patent Act.

20. Regarding the dependent Claims 52-54, the arrangements "an inner surface of the upper section has a circular cross section", "an inner diameter of the upper section is basically the same as the short diameter of the lower section", "the lower section has an axial length, the short diameter remaining substantially the same along the axial length of the lower section", and "the short diameter decreases with proximity to the upper section of the body" are all conventional arrangements in the art, and no creative work is required. Therefore, when another claim cited by the claim is not inventive, the above-mentioned claim is not inventive as stipulated in Paragraph 3, Article 22 of the Patent Act.

21. Regarding the dependent Claims 55 and 56, a ratio of the long diameter to the short diameter taken at a lower end of the lower section is within the range of 1.05 to 1.3, the ratio is within the range of 1.10 to 1.25, and the range includes 1.10 and 1.25; these are data that can be obtained by those skilled in the art through a limited number of experiments, and no creative work is required. Therefore, when another claim cited by the claim is not inventive, the above-mentioned claim is not inventive as stipulated in Paragraph 3, Article 22 of the Patent Act.

22. Regarding the dependent Claims 57 and 58, Reference Document 2 discloses that the long diameter of the lower section tapers from the second portion of the lower section to the first portion of the lower section, and a ratio of the long diameter to the short diameter decreases with proximity to the upper section of the body (see paragraphs [0038]-[0041] and FIGs. 2-6 of Reference Document 2). Therefore, when another claim cited by the claim is not inventive, the above-mentioned claim is not inventive as stipulated in Paragraph 3, Article 22 of the Patent Act.

(III) Comments on relevant opinions of the reexamination requester

Regarding the reexamination requester's statement of opinion, the collegial group held that:

1. The steering tube shown in FIGs. 4 and 5 of Reference Document 1 is a specific embodiment, in which the neck (i.e., lower section) shown has an elliptical outer surface (FIG. 5). The steering tube shown in FIG. 3 is another specific embodiment, in which the neck (i.e., lower section) shown has a circular outer surface (FIG. 3). Therefore, FIGs 5 and 3 are different embodiments of the steering tube of Reference Document 1. For the same technical solution, there are different embodiments. On one hand, those skilled in the art are motivated to apply one of the embodiments

to another specific embodiment to form a technical solution in which the lower section of the steering tube has a circular cross section. On the other hand, it is also shown that the shape of the outer surface of the lower section of the steering tube can be adjusted by those skilled in the art according to an actual situation. This requires no creative work.

2. The steerer tube and the crown disclosed in Reference Document 1 are molded components, and the steerer tube and the crown can be joined in a variety of methods, including molding and assembling; those skilled in the art can select an appropriate method for their connection based on their materials and properties; and the selection is conventional selection of conventional technical means by those skilled in the art and does not require creative work.

3. The bicycle frame tube disclosed by Reference Document 3 has a variety of wall thicknesses, and the above-mentioned different wall thicknesses can be applied to different bicycle frame tubes, wherein the tube shown in FIG. 1a with a circular outer surface and an elliptical inner surface has the greatest stiffness in the direction perpendicular to the plane 5. In the tube shown in FIG. 1C, there is the largest wall thickness in the direction of line 25, so there is also the greatest strength in this direction. It is well known that a bicycle is subject to greater impact from various forces in the travelling direction; for example, the impact on the crown and the steerer tube caused by potholes of a road comes from the travelling direction of the bicycle. Therefore, the strength in the travelling direction should be considered to be at a maximum while the steerer tube is designed. It is common knowledge in the art that the steerer tube of a bicycle bears the greatest strength in a travelling plane. Therefore, in order to enhance the strength of the steerer tube of a bicycle, those skilled in the art, under inspiration by Reference Document 3, can apply the wall shape of the tube of FIG. 1a or FIG. 1C to Reference Document 1, so that the wall thickness of the steerer tube is at a maximum in the travelling plane of the bicycle, which is obvious to those skilled in the art. The cross-sectional shape of the outer surface of the steering tube disclosed by Reference Document 1 can be adjusted, and Reference Document 1 has a specific embodiment in which the cross-sectional shape of the outer surface is circular. Therefore, Reference Document 1 does not give contrary teaching but gives technical enlightenment that the cross-sectional shape of the outer surface of the steering tube can be adjusted. According to the technical enlightenment of Reference Document 1, when the tube of Reference Document 3 is applied to Reference Document 1, the outer surface of the tube can be adjusted, so that the thickness of the wall of the present application is at a maximum in the travelling plane of the bicycle while the outer surface of the lower section of the body has a circular cross section. Therefore, Reference Document 3 provides technical enlightenment to be combined with Reference Document 1. Therefore, the collegial group does not support the reexamination requester's claims.

Based on the above facts and reasons, the collegial group makes the following decision.

III. Decision

The rejection decision made by the China National Intellectual Property Administration on May 29, 2019 for the present application shall be upheld.

If the reexamination requester is dissatisfied with the review decision for this reexamination request, the reexamination requester may file a lawsuit with the Beijing Intellectual Property Court within three months from the date of receipt of this decision according to the provision of Paragraph 2, Article 41 of the Patent Act.

Leader of Collegial Group: Wei Liu

Primary Examiner: Xian-Wen Gao

Associate Examiner: Xiao Li

Patent Office Reexamination and Invalidation Division

DECLARATION OF MING-FU TSAI

I, Ming-Fu Tsai, declare as follows:

1. I am currently a translator based in Taiwan.
2. I submit this declaration to certify the accuracy of the English translation of Reexamination Decision (No. 251803) made by China National Intellectual Property Administration on March 31, 2021.
3. I have personal knowledge of the facts set forth in this declaration and, if called as a witness, could and would testify to those facts.
4. Attached is a true and accurate copy of "Reexamination Decision (No. 251803)".
5. All statements made herein of my own knowledge are true, and all statements made on information and belief are believed to be true. Further, I am aware that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. § 1001. I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Dated this 31st day of January, 2024


Ming-Fu Tsai