Patents Act 1977 **Opinion Number** **06/24**

OPINION UNDER SECTION 74A

Patent	GB 2529923 B
Proprietor(s)	Frogbikes Ltd
Exclusive Licensee	
Requester	Marks & Clerk LLP
Observer(s)	The IP Asset Partnership Ltd
Date Opinion issued	16 May 2024

The request

1. The Comptroller has received a request from Marks & Clerk LLC (the requester) to issue a validity opinion in respect of patent GB 2529923 B (the patent) in the name of Frogbikes Ltd. The request questions the validity of the patent on the basis that claim 1 at least lacks novelty by virtue of prior use.

2. The patent has a filing date of 1 May 2015. No priority is claimed. The patent was granted on 6 September 2016 and it remains in force.

3. Observations were received from The IP Asset Partnership Ltd (the observer).

4. Observations in reply were received from the requester.

The patent

5. The patent relates to a bicycle drivetrain, in particular, to the arrangement of pedal crank arms for a child's bicycle. The patent proprietor (Frogbikes) would be well known to the skilled person as a manufacturer of child specific bicycles.

6. For the purpose of this opinion, I consider the skilled person to be a bicycle mechanic or technician. They would have particular knowledge and experience of designing, configuring, fitting and adapting all the drivetrain components for a bicycle. They would be familiar with frame components and their standard dimensions.

7. For the purpose of understanding the patent, figure 1 illustrates the main components of a bicycle frame. Of particular significance to the invention are the

bottom bracket (16) and the chainstays (14a, 14b), which are also illustrated in plan view in figure 2. The pedals mount to the bottom bracket and the rear wheel mounts to the rear of the chainstays at the rear dropouts (18a, 18b). The front forks are not shown.

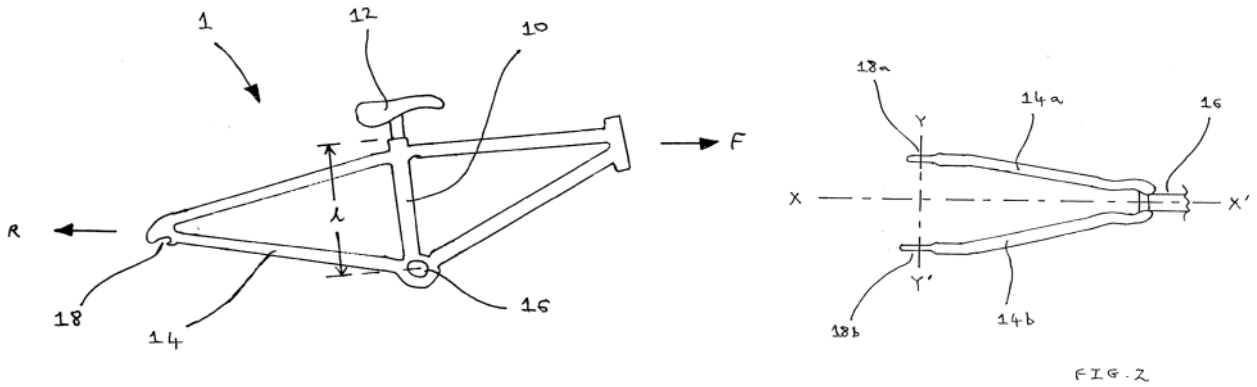

FIG. 2

FIG. 1

8. The patent seeks to reduce the transverse distance between the pedals of a child's bicycle to make it more suited to a child and therefore easier for a child to ride.

9. Figure 4 of the patent diagrammatically illustrates the invention:

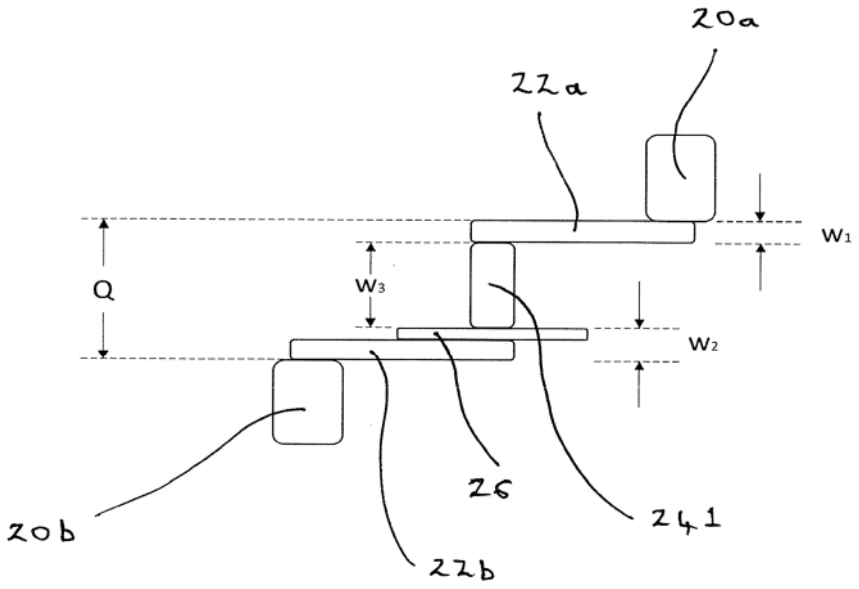

FIG. 4

10. The important components of the drivetrain of the invention are the pedals (20a, 20b), the cranks arms (22a, 22b), the chainring (26) and the bottom bracket shell (241). The bottom bracket shell houses a spindle connecting the left and right crank arms, and retains the bearings on which the spindle rotates.

11. Of particular importance to the invention is the dimension identified in figure 4 as Q.

This is the Q-factor and is a dimension that would be familiar to the skilled person. It is specifically the distance, measured transverse to the bicycle frame, between the outer faces of the left and right crank arms at the point where the pedals join the crank arms. In figure 4 the Q factor is shown as being made up of the sum of the widths of the bottom bracket shell W3, the left crank arm W1, and the right crank arm and chainring W1. Although this is accurate in relation to the figure, I note that the presence of gaps between the bottom bracket shell and the crank arms, or the use of spacers between the shell and the crank arm would also contribute to the Q factor.

12. Q-factor is important because it provides clearance between the end of the crank arms and the frame, in particular the chainstays, as the crank arms rotate. It can also be important in making sure the chainstays do not interfere with a rider's heels when pedalling. Minimum Q-factor is generally determined by the distance between the chainstays to provide clearance between the crank arms and the chainstays, and between a rider's heels and the chainstays. The distance between the chainstays is typically a function of the width of the wheel at the hub and the width of the tyre that needs to be accommodated between the chainstays. As will be apparent from figure 2, the chainstays are splayed so that they are closer together at the bottom bracket and further apart at the dropouts. Thus there is less clearance the further from the bottom bracket the pedals are.

13. Another major importance of Q-factor is that of rider power output and efficiency. It is generally regarded that narrower Q factors (within the ranges suitable for a bike, taking account of the need to provide clearances) allow for increased power output from a rider, and research into this is set out on page 3, lines 25 to 30 of the patent[1]. That research suggests that power increases of 1.5-2% are achieved when reducing the Q-factor from 150 or 180 mm to 90 or 120 mm. The patent suggests that such small increases may be of negligible importance to recreational cyclists. However, the patent then goes on to identify that it may nevertheless be particularly important for a child due to the child's lower power-to-weight ratio.

14. In order to provide a reduced Q factor for the drivetrain of a child's bike, the patent specifies that the crank arms should be parallel to the longitudinal axis of the bicycle. That contrasts with most modern crank arms which are angled such that the pedal end of the arm is further from the frame than the bottom bracket end. Further requirements are that the width of the crank arms is 30 mm or less and the bottom bracket shell width is 68 mm or narrower. A Q-factor of 128 mm or less is thereby achieved (compared to approximately 150 mm for a typical adult road bike). Shorter crank arms in the range 100 to 155 mm are also specified as, due to the splayed nature of chain stays, shorter crank arms provide increased clearance for the same Q factor.

Claim construction

15. As a first step in determining the validity of the patent I must correctly construe the claims. This means interpreting them in the light of the description and drawings as instructed by Section 125(1). In doing so I must interpret the claims in context

[1] "The Effect of Q Factor on Gross Mechanical Efficiency and Muscular Activation in Cycling". Scandinavian Journal of Medicine and Science in Sport, February 2014, Vol 24(1), pp. 117-21.

through the eyes of the person skilled in the art. Ultimately the question is what the person skilled in the art would have understood the patentee to be using the language of the claims to mean. This approach has been confirmed in the decisions of the High Court in *Mylan v Yeda*[2] and the Court of Appeal in *Actavis v ICOS*[3].

16. There is a single independent claim, claim 1, and an omnibus claim, claim 12.

17. Claim 1 reads (the numbers in brackets refer to the relevant section of the opinion request):

> *(3.1.1) A pedal cycle drivetrain comprising:*
>
> *(3.1.2) bottom bracket shell with a width of 68 mm or less; and*
>
> *(3.1.3) a pair of crank arms each having a width less than or equal to 30 mm, whereby*
>
> *(3.1.4) the drivetrain has a Q factor of 128 mm or less;*
>
> *wherein*
>
> *(3.1.5) each crank arm comprises: a pedal spindle attachment part; a bottom bracket attachment part; a shaft connecting the pedal spindle attachment part to the bottom bracket attachment part;*
>
> *(3.1.6) a length of the crank arm from a centreline of the pedal spindle attachment part to a centreline of the bottom bracket attachment part being in a range of from 100 to 155 mm;*
>
> *wherein*
>
> *(3.1.7) an outermost face of the pedal spindle attachment part is coplanar with an outermost face of the bottom bracket attachment part in a plane orthogonal to the centrelines of the pedal spindle attachment part and the bottom bracket attachment part, and*
>
> *(3.1.8) substantially no part of the shaft extends outwardly beyond the plane containing the outermost faces of the pedal spindle attachment part and the bottom bracket attachment part.*

18. Most of the claim is considered straightforward to construe using terms that would be familiar to the skilled person. Nevertheless, the following issues arise.

19. Firstly, the claim requires *a bottom bracket shell with a width of 68 mm or less*. It is first necessary to consider how the skilled person would interpret bottom bracket shell.

20. I consider that the skilled person would understand the bottom bracket shell to be

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[2] *Generics UK Ltd (t/a Mylan) v Yeda Research and Dev. Co. Ltd & Anor* [2017] EWHC 2629 (Pat)
[3] *Actavis Group & Ors v ICOS Corp & Eli Lilly & Co.* [2017] EWCA Civ 1671

that part of the frame which supports the remaining bottom bracket components, i.e. the bottom bracket spindle and the bottom bracket bearings. The crank arms connect to the ends of the bottom bracket spindle where they extend from the shell. The bottom bracket bearings are retained by the shell (albeit not necessarily within the shell) and support the spindle allowing it to rotate freely. As noted in the patent, and as would be well known to the skilled person, 68mm represents a standard bottom bracket shell width.

21. The observer argues in their observations that the bottom bracket shell is not a part of the frame. This is based on the passage on page 1, lines 22 to 23 of the patent which states:

> *"The bottom bracket comprises a bottom bracket shell mounted to a frame of the cycle."*

22. The observer suggests that the use of the phrase *mounted to a frame* means that the bottom bracket shell is not part of the frame (i.e. it could not be mounted to the frame if it was already part of the frame). I disagree with this interpretation. The skilled person would be well aware of which part of a bicycle frame is the bottom bracket shell based on their common general knowledge. They would presume that the use of *mounted to a frame* was just a clumsy description of the relationship. The bottom bracket shell is typically defined as the part of the frame that the bottom bracket spindle goes through[4]. Wikipedia[5] defines it as a part of a bicycle frame, in particular, the part where the seat tube, down tube and chainstays connect.

23. More than anything else the skilled person would recognise it as that part of the frame to which the remaining bottom bracket components are attached. Modern bottom brackets are available in a number of standards familiar to the skilled person. By determining the diameter and width of the shell and whether/what type of threading it has, the skilled person can determine the most appropriate bottom bracket bearing and spindle combination from the available standards. Whilst it is possible to use adapters to fit different standards in certain situations, that is not considered to change the shell width. It would still be necessary to choose the appropriate adapter based on that shell width.

24. In summary, the skilled person would recognise that the shell width is a fundamental attribute of the frame where the remaining bottom bracket components are mounted.

25. The recognition that shell width is a fundamental attribute of the frame does however create another issue in the interpretation of claim 1. Whilst claim 1 is directed solely to a drivetrain, the requirement for a bottom bracket shell width of 68mm or less potentially requires the inclusion of the frame. Clearly that is not intended to be the case, and claim 9 refers to a *"A pedal cycle frame … mounted with a pedal cycle drivetrain according to any one of the preceding claims".* I consider that the skilled person would interpret the requirement for *a bottom bracket shell with a width of 68 mm or less*, to be a requirement that the bottom bracket of the drivetrain fits natively (i.e. without the use of adapters or spacers) in a bottom bracket shell with those

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[4] E.g. sheldonbrown.com "bottom bracket - the bearings and axle assembly that runs through the bottom bracket shell of the frame". Parktool.com "the bottom bracket is held inside the part of the frame called the bottom bracket shell".

[5] http://en.wikipedia.oeg/wiki/List_of_bicycle_parts

dimensions.

26. As identified in the patent, 68 mm is a standard bottom bracket shell width, and the skilled person would be well aware of the types of conventional bottom brackets that fit such a shell width (dependant also on the diameter of the shell and whether/how it is threaded). It would also be apparent to them whether any particular bottom bracket was intended to fit in a smaller width shell.

27. Section 3.1.3 of the claim (as set out above) requires a crank arm width less than or equal to 30mm. It is clear from the description that the 30mm refers to width *measured transversely to the longitudinal axis.* The main issues are where the width of the arm is measured and whether or not it is intended to include the width of the chainring, i.e. W2 in figure 4. The patent refers to W1 and W2 as follows:

> *"As can be seen in Fig. 4, the width W1 of the left crank arm 22a is different from the width W2 of the right crank arm 22b because the right crank arm 22b is shaped to accommodate the width of the chainring 26 as well. Thus, as noted above, the pair of crank arms is asymmetrical."*

28. Figure 8B shows the right side crank arm with through-holes for attachment of a pedal axle (631) and bottom bracket spindle (632). The width W2 is also marked. The description (page 12, line 22) specifies that:

> *The lug 625, which may best be seen in the region highlighted C in Fig. 8C, is for rigidly connecting a chainring to the crank arm 62. The width of the lug 625, represented by w4 in Fig. 8B, contributes to the overall width w2 of the crank arm 62, but a chainring rigidly connected to the crank arm 62 in this way does not contribute to the Q factor of a drivetrain comprising crank arm 62 because the width of the chainring is less than or equal to the width w4 of the lug 625. This is why, referring back to Fig. 4 described above, the Q factor is only made up of the sum of the width w1 of the left crank arm 22a, the width w2 of the right crank arm 22b and the width w of the bottom bracket shell 241, but with no contribution to the Q factor from the width of the chainring 26.*

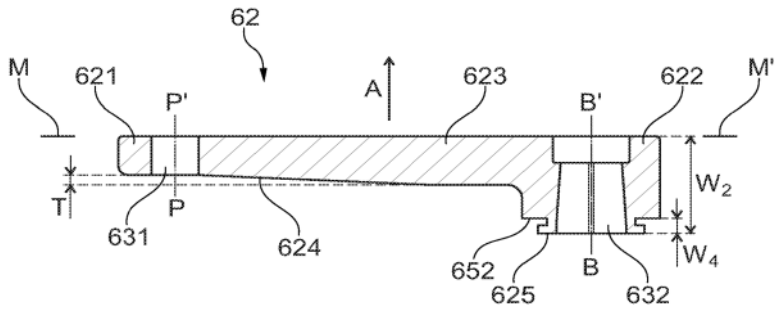

Fig. 8B

29. This part of the description makes clear that the dimension W2 includes the dimension W4, and the dimension W4 includes the width of the chainring. Accordingly, I consider it clear from the description that the width of the crank is the width measured at its widest point where it attaches to the bottom bracket spindle including any width due to the chain ring.

Prior art

30. The prior art referred to by the requester is a child's bike dating from 1965 manufactured by French Company Motoconfort and known as the "Serie Luxe Type C.A.F". A catalogue published in October 1965 showing the bike for sale is provided as Exhibit A, along with pictures of a sample of the bike obtained by the requester (Exhibit B). In particular, pictures are provided showing various measurements associated with the bottom bracket and associated drive train components of the bicycle.

Excerpt from 1965 catalogue (Exhibit A)

Figure B2 (Exhibit B)

Discussion

31. Considering the elements of the claim in detail:

3.1.1 A pedal cycle drivetrain comprising

32. The "Serie Luxe Type C.A.F" clearly includes a pedal cycle drivetrain.

3.1.2 bottom bracket shell with a width of 68 mm or less; and

33. Figure B4 shows a photograph of the bottom bracket from the underside. The skilled person would note that it shows a cottered crank assembly, i.e. the crank arms are fixed to the bottom bracket by means of cotter pins. On the chain ring side of the bottom bracket a stationary bearing cup can be made out tightened up against the bottom bracket shell, and on the non-chain ring side a lock-ring can be seen tightened up against the other end of the bottom bracket shell. The digital caliper can be seen to be measuring the width of the bottom bracket shell between the stationary cup and the lock-ring and indicating a value of 59.65 mm for the bottom bracket shell width. I observe that a part of the adjustable bearing cup extends beyond the end of the bottom bracket shell and the lock-ring, and that the bottom bracket spindle is visible between the end of the adjustable bearing cup and the crank arm. These details would be readily apparent to the skilled person from this photograph.

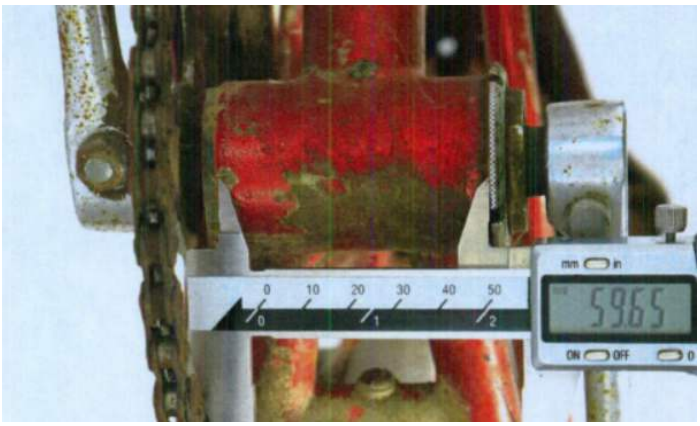

Figure B4

34. The observer makes the argument that the dimension being measured is not the bottom bracket shell width. In particular, the observer appears to be suggesting that modern external bearings contribute to the overall shell width, and accordingly the bearing cups of the prior art should also be considered as part of the shell width. I do not agree with that argument. The patent refers to standard bottom bracket shell widths of 68mm as would be familiar to the skilled person. The skilled person would be equally aware that for a standard BSA/ISO bottom bracket having that width, it would be possible to use either internal bearings (e.g. ISIS or square taper) or external bearings (e.g. Hollowtech II (RTM) or UltraTorque (RTM)). The choice of internal or external bearings does not affect the width of the shell. As I have previously determined, the skilled person understands the shell width to be a fundamental attribute of the frame.

35. The observer also argues that the digital caliper could have been zeroed incorrectly. However, I do not consider that the requester would have been anything other than diligent in taking the measurements and, aside from minor discrepancies in them, they may be taken as read. Although the figures are shown in the figures to two decimal places and I have reproduced this accuracy in this opinion, I do not consider the requester to be relying on that level of accuracy and I interpret the measurements to be accurate to only two significant figures.

36. I therefore consider that the shell has a width of less than 68mm.

37. In view of the requirement of claim 1 that the invention is directed to a drivetrain, I have interpreted the requirement for a shell width of less than 68mm as being a requirement that the bottom bracket fits a shell of less than 68mm. The bottom bracket of the “Serie Luxe Type C.A.F” clearly fits in the shell and it therefore comprises a bottom bracket that meets the requirements of this part of the claim as I have interpreted it.

3.1.3 a pair of crank arms each having a width less than or equal to 30 mm,

38. Figure B9 shows a figure of 18.10mm for the width of the left hand crank arm, taken at its widest point where it mounts to the bottom bracket spindle. Figure B8 shows a figure of 21.47 mm for the width of the right hand crank arm. However, it does not include the width of the chain ring. I have construed the width of the crank arm on the basis that it does include the width of the chain ring (i.e. W2 of figure 4).

Nevertheless, it is clear that if the width of the chain ring is included, it will not be more than 30 mm wide. (It seems the chain ring thickness is roughly the same as the inner width of the chain. The chain will be a standard single speed 1/8” chain having an inner width of 3.1 mm.) In any case the observer has not contested this measurement.

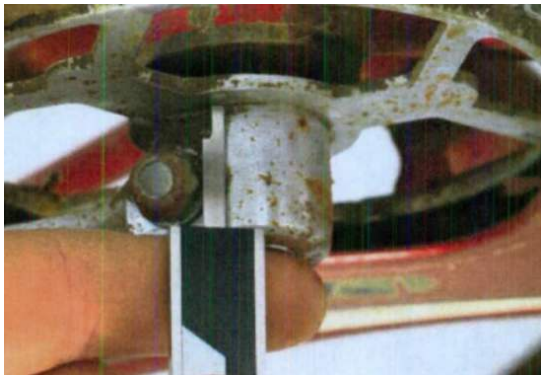

Figure B8 (detail). Note the depth gauge of the digital caliper does not include the width of the chainring.

39. The width of the crank arms is therefore less than 30mm for both the left and right crank arms as measured at their widest point and including the width of the chain ring.

3.1.4 the drivetrain has a Q factor of 128 mm or less;

40. Figures B5 to B7 illustrate the measurement of the Q factor. The method of measurement adopted involves measuring from the outside face of each crank arm at the pedal axle to the opposite side of the frame, adding these two measurements together and then subtracting the width of the frame (which is otherwise included twice in this method). The figures show 78.16mm from the pedal side face of the right crank arm to the opposite side of the frame, 73.52 mm from the pedal side face of the left crank arm to the opposite side of the frame and 28.18mm as the width of the frame. These measurements give a Q factor of 123.5mm.

41. The observer has firstly questioned this method of measurement, suggesting that it cannot be relied upon to give an accurate figure for Q factor. Whilst the method appears somewhat clumsy, provided it is applied diligently, and I have no doubt that it was, I consider it sufficiently accurate to establish that the Q factor is less than 128mm. In any event, the requester responded to this criticism in the observations in reply and applied a more accurate method of measuring Q factor as suggested by the observer. Figure F2 shows a square being held against the outside face of one crank arm, with the other limb of the square measuring the distance to the outside face of the opposite crank arm. That measurement indicates a Q-factor of 124mm.

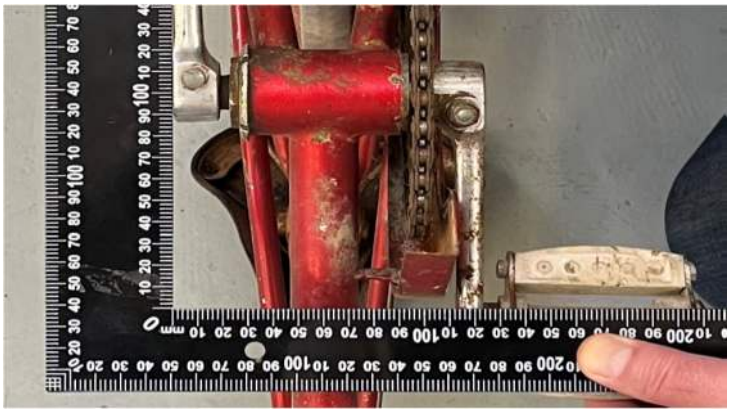

Figure F2 – measurement of Q factor.

42. The observer also appears to argue that the Q factor referred to is only the sum of the dimensions W1, W2 and W3 as illustrated in figure 4. I.e. it is only the sum of the bottom bracket shell and the crank arm widths, and any gaps between these components do not contribute to Q factor. It is not clear how this argument helps the observer, as this sum would be even smaller than the measured Q factor. In any event Q factor would be well known to the skilled person. As identified in the patent, Q factor relates to the horizontal separation of the pedals. Due account therefore needs to be taken of any spacers or gaps between the bottom bracket and the crank arms. Q factor is specifically defined as the transverse distance between the outside faces of the crank arms at the pedal interface, and this definition would be part of the skilled person's common general knowledge.

43. The Q factor of the "Serie Luxe Type C.A.F" meets the requirement for this part of the claim.

> *3.1.5 each crank arm comprises: a pedal spindle attachment part; a bottom bracket attachment part; a shaft connecting the pedal spindle attachment part to the bottom bracket attachment part;*

44. These are all standard features and are present in the crank arms of the "Serie Luxe Type C.A.F".

> *3.1.6 A length of the crank arm from a centreline of the pedal spindle attachment part to a centreline of the bottom bracket attachment part being in a range of from 100 to 155 mm;*

45. This is a standard measurement of crank length familiar to the skilled person. Most adult crank lengths are found in the range 165mm to 175mm in 2.5mm increments. Child crank lengths are correspondingly smaller depending on the expected age/height of the child rider.

46. Figure B10 shows a digital caliper being used to measure the crank length with a value of 110.00mm displayed, which thus falls within the required range.

> *3.1.7 an outermost face of the pedal spindle attachment part is coplanar with an outermost face of the bottom bracket attachment part in a plane orthogonal to the centrelines of the pedal spindle attachment part and the bottom bracket attachment part, and*

47. Figure B11 is intended to show that these parts are coplanar. However, the observer argues that the gaps between the square being used and the relevant parts of the bicycle mean it is not wholly apparent that the parts are indeed truly coplanar. I am inclined to agree with the observer's comments.

48. The requester has responded to these criticisms in the observations in reply, and has provided figures F5 and F6. The photographs of these figures show a square held against the outer face of the left hand crank and measurements made between the square and the outer face of the bottom bracket attachment part and between

the square and the outer face of the pedal spindle attachment part. Both measurements can be seen to be 124mm. I consider it clear from these figures that the outer face of each crank arm is coplanar. Additionally, I consider it clear that the outer faces of the crank arms are parallel to one another. Accordingly, it must be the case that the outer faces of the crank arms lie in plane orthogonal to the centrelines of the pedal and bottom bracket attachment parts.

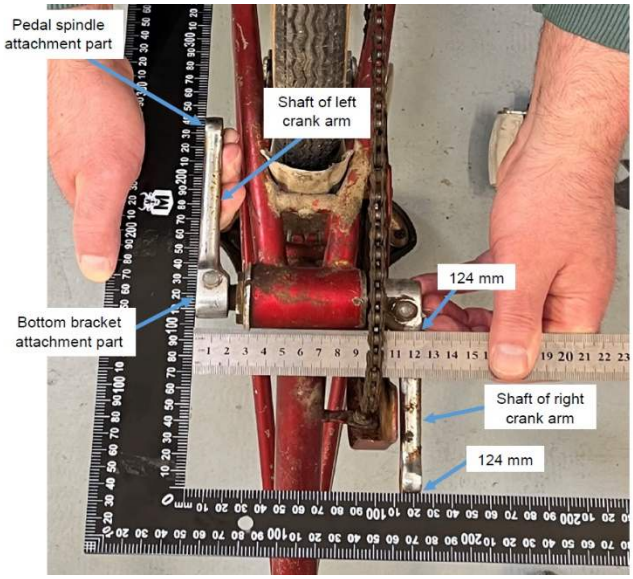

Figure F5

Figure F6 (magnified view of Figure F5)

3.1.8 substantially no part of the shaft extends outwardly beyond the plane containing the outermost faces of the pedal spindle attachment part and the bottom bracket attachment part.

49. It is also clear from figures F5 and F6 that no part of the shaft extends outwardly beyond the plane containing the outermost face of the pedal spindle attachment part and the bottom bracket attachment part.

50. The observer seems to have misidentified which part is the *shaft* of this part of the claim. It is clear from part 3.1.5 of the claim that the shaft is the part of the crank arm "*connecting the pedal spindle attachment part to the bottom bracket attachment part".* The observer seems to be suggesting that the shaft is the bottom bracket spindle and that the ends of the bottom bracket spindle extend beyond the plane containing the outermost face of the bottom bracket attachment part. In particular, they refer to figure B13 which shows in detail the bottom bracket attachment part of the crank but only the very end of the crank arm shaft. In any event, neither this figure nor any of the others provided suggest that any part of the crank arm shaft extends beyond the specified plane.

51. I therefore consider that the "Serie Luxe Type C.A.F" has all the features of claim 1 such that it falls within its scope. Claim 1 therefore lacks novelty and is anticipated.

Dependant claims

52. The requester also argues that claims 4, 5, 9, 10, 11, 12 lack novelty and that claims 2, 3, 6, 7 and 12 lack an inventive step.

53. I deal firstly with the inventiveness of claims 2, 3, 6 and 7.

54. No substantive argument was provided regarding the inventiveness of these claims beyond an assertion that the features of these claims were well known to the skilled person before the filing date of the invention. The observer objects that it is not possible to provide counter-argument to such unreasoned assertions. I tend to agree with the requester. Unless the features are blindingly obvious, in the sense that no reasonable person could argue that the features were not generally well known, then I will not accept the requester's assertions.

55. Claims 2 and 3 relate to features of the shaft of the crank arm. No evidence is provided to show that crank arms having these features *and* the other crank arm features of claim 1 were well known. In the absence of such evidence, I do not accept it would be obvious to replace the cottered crank arms of the "Serie Luxe Type C.A.F" with cranks arms having the required features to fall within the scope of claims 2 and 3. The requester's argument in respect of claims 2 and 3 fails.

56. Claims 6 and 7 refer to selections of crank lengths suitable for a child's bike. The 110mm crank length of the "Serie Luxe Type C.A.F" is not amongst the figures. No evidence is provided regarding what would be common crank lengths for children. Without such evidence I do not consider that these claims lack an inventive step.

57. Turning to claim 4:

> *4. A pedal cycle drivetrain according to any one of the preceding claims, wherein one of the crank arms further comprises an integrally formed spider radiating from the centreline of the bottom bracket attachment part thereof.*

58. The requester provided figure B13 to show that the spider and crank arm were *integrally formed.* The observer contends that:

> *"The spider and chainring are integral with each other alone and formed from pressed steel. It is then connected to the pedal crank arm by mechanical means such as swaging over a metal portion formed on the pedal crank arm itself or welding."*

59. It is a little difficult to ascertain from figure B13 how the spider and crank arm are connected. I consider that the skilled person would expect them to be joined by one of the methods described by the observer, and they would not expect them to be integrally formed. The requester seems to have conceded this in the observations in reply and argues instead that claim 4 lacks an inventive step. As the observer has not had a chance to comment on this argument I will not consider it further. The requester has not persuaded me that the "Serie Luxe Type C.A.F" has the feature of claim 4 and this claim is not therefore anticipated.

60. As I have found claim 4 to be novel, I do not need to consider the novelty of claim 5 which is dependant from it, and it is therefore also novel.

61. Claim 8 requires a chainguard having a width equal to or less than 7mm. The requester has provided a photograph (figure B14) showing the thickness of the metal from which the main part of the chainguard is made of 2.70mm. The observer argues that this is not the width of the chainguard that matters for the purpose of claim 8, and it is the overall width of the chainguard which is the relevant width. They refer to page 7, lines 4 to 6 of the patent which states:

> *"If the pedal cycle drive train further comprises a chainguard having a width less than or equal to 7mm, this further reduces the risk of a rider's ankle or lower leg colliding with the chainguard during peddling."*

62. The observer's argument here is not made out. The transverse parts of the chainguard, i.e. those parts which extend beyond the main part of the chain guard to cover the chain, and which contribute to its overall width, extend away from the rider's lower leg. The overall width of the chainguard does not therefore contribute to the clearance with the rider's leg, except where that width is due to the thickness of the material from which the main part of the chainguard is made. That thickness necessarily lies between the chainring and the crankarm, and suitable clearance must be provided. It is the material thickness of the main part of the chainguard which determines the clearance. Although 7mm seems somewhat thick for such material, I consider it not unreasonable for a plastic chainguard. I therefore consider that the skilled person would interpret claim 8 as requiring a material thickness of the main part of the chainguard of 7mm or less. That requirement is met by the chainguard of the "Serie Luxe Type C.A.F" and claim 8 is therefore anticipated.

63. Claim 9 reads as follows:

> *9. A pedal cycle frame for a driven wheel having a diameter of 660.4mm or less and mounted with a pedal cycle drivetrain according to any one of the preceding claims.*

64. Figure B15 indicates that the diameter of the rear wheel including the tyre is roughly 445mm. The frame of the "Serie Luxe Type C.A.F" is therefore a frame for a driven wheel having a diameter of less than 660.4mm (irrespective of whether or not that is intended to include or exclude the tyre). The drivetrain mounted to the frame falls within the scope of claim 1 and this claim is also anticipated.

65. Similarly, claim 10 requires *"a pedal cycle comprising a drivetrain according to any one of claims 1 to 8",* and is also anticipated.

66. Claim 11 adds the requirement that the frame is for a driven wheel having a diameter of less than 660.4mm (as in claim 9), and this claim is similarly anticipated.

67. Claim 12 is an omnibus claim as follows:

> *12. A pedal cycle drivetrain substantially as hereinbefore described with reference to figures 3 and 4.*

68. I agree with the requester's interpretation of this claim. It is notable in that it refers

only to figures 3 and 4 which are very diagrammatic representations of the invention. These figures are limited to the general arrangement of the drivetrain (figure 3), and the widths of the crank arms (W1 and W2; figure 4), the width of the bottom bracket shell (W3; figure 4) and the overall Q factor (Q; figure 4). I therefore consider that it should be construed broadly such that it has the same scope as claim 1. As I consider claim 1 to be anticipated then claim 12 is also anticipated.

Opinion

69. Based on the evidence and arguments provided, it is my opinion that claim 1 lacks novelty in view of the Motoconfort Serie Luxe Type C.A.F bicycle as illustrated in Exhibits A and B of the request. It is also my opinion that claims 8, 9, 10, 11 and 12 lack novelty on the same basis.

70. Accordingly, it is my opinion that the patent is invalid.

71. Based on the evidence and arguments provided, it is my opinion that claims 2 to 7 are novel and inventive.

Application for review

72. Under section 74B and rule 98, the proprietor may, within three months of the date of issue of this opinion, apply to the comptroller for a review of the opinion.

Matthew Jefferson
Examiner

NOTE

This opinion is not based on the outcome of fully litigated proceedings. Rather, it is based on whatever material the persons requesting the opinion and filing observations have chosen to put before the Office.