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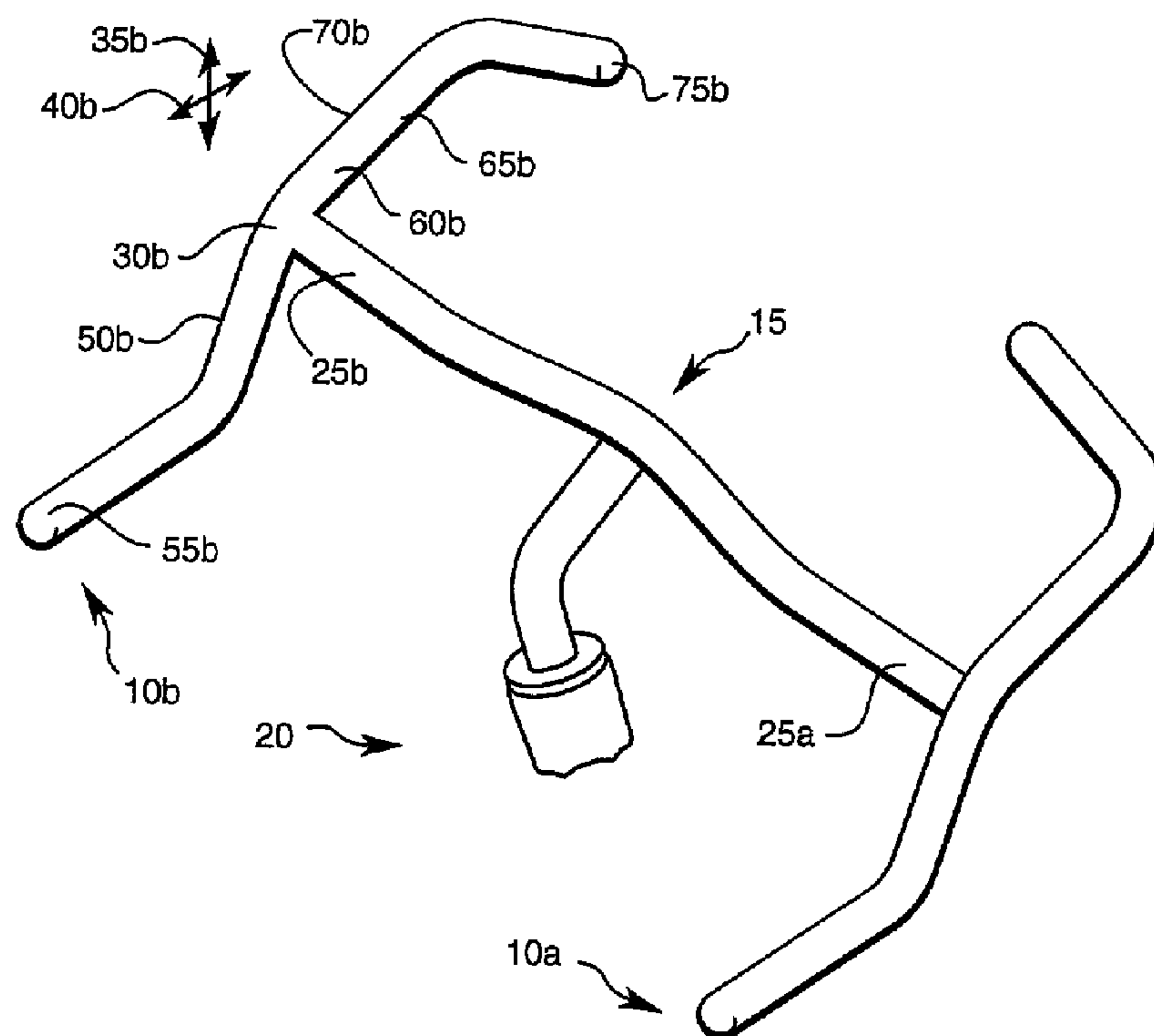
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(54) **GUIDON DE BYCYCLETTE REGLABLE EN HAUTEUR ET EN
INCLINAISON**

(54) **UP-AND-DOWN BICYCLE HANDLEBARS**



(57) Cette invention se rapporte à une poignée (10) pour l'extrémité des types de guidons de bicyclette (15) qui possèdent une extrémité (25) s'étendant à angle droit par rapport à la bicyclette (20). La combinaison poignée (10) et guidon (15) est conçue pour permettre au cycliste de se tenir dans plusieurs positions verticales différentes ou dans plusieurs positions ramassées différentes ou dans une position ramassée avec support pour les bras, au

(57) This invention is a grip (10) for the end of the type of bicycle handlebars (15) which has an end (25) projecting at right angles to the bicycle (20). The grip (10) and handlebars (15) combination is designed and shaped to allow riders to ride in several different vertical positions, or several different crouched down positions, or in a crouched down position with arm support, at will. The grip (10) comprises in a single integral unit; a central





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choix. Cette poignée (10) comprend en une seule unité monobloc: une partie centrale (30), une partie descendante (50) s'étendant vers le bas et vers l'arrière depuis la partie centrale (30), une partie horizontale (55) s'étendant vers l'arrière depuis la partie descendante (50), une partie supérieure (60) s'étendant vers le haut et vers l'avant depuis la partie centrale (30) en formant un angle avec elle, ainsi qu'une partie rentrante (75) s'étendant vers l'avant et vers l'intérieur depuis la partie supérieure (60) en formant un angle avec elle. Cette poignée (10) est fixée à angle droit à l'extrémité (10) du guidon (15) au niveau de sa partie centrale (30). La fixation peut être réalisée par une pince (110), pour que de telles poignées (10) puissent être fixées à des guidons existants (15). Dans une variante, la fixation peut être conçue permanente, afin de créer un nouveau type de guidon (45) pouvant être monté sur des bicyclettes.

portion (30), a downward portion (50) extending downward and rearward from the central portion (30), a horizontal portion (55) extending rearward from the downward portion (50), an upper portion (60) extending upwards and forwards at an angle from the central portion (30), and an inwards portion (75) extending forwards and inwards at an angle from the upper portion (60). The grip (10) is attached at right angles to the end (10) of the handlebars (15) at the central portion (30). Attachment may be made by a clamp (110) so that grips (10) in accordance with this invention may be affixed to existing handlebars (15). Alternatively, attachment may be made permanently thereby creating a new type of handlebars (45) for assembly into bicycles.



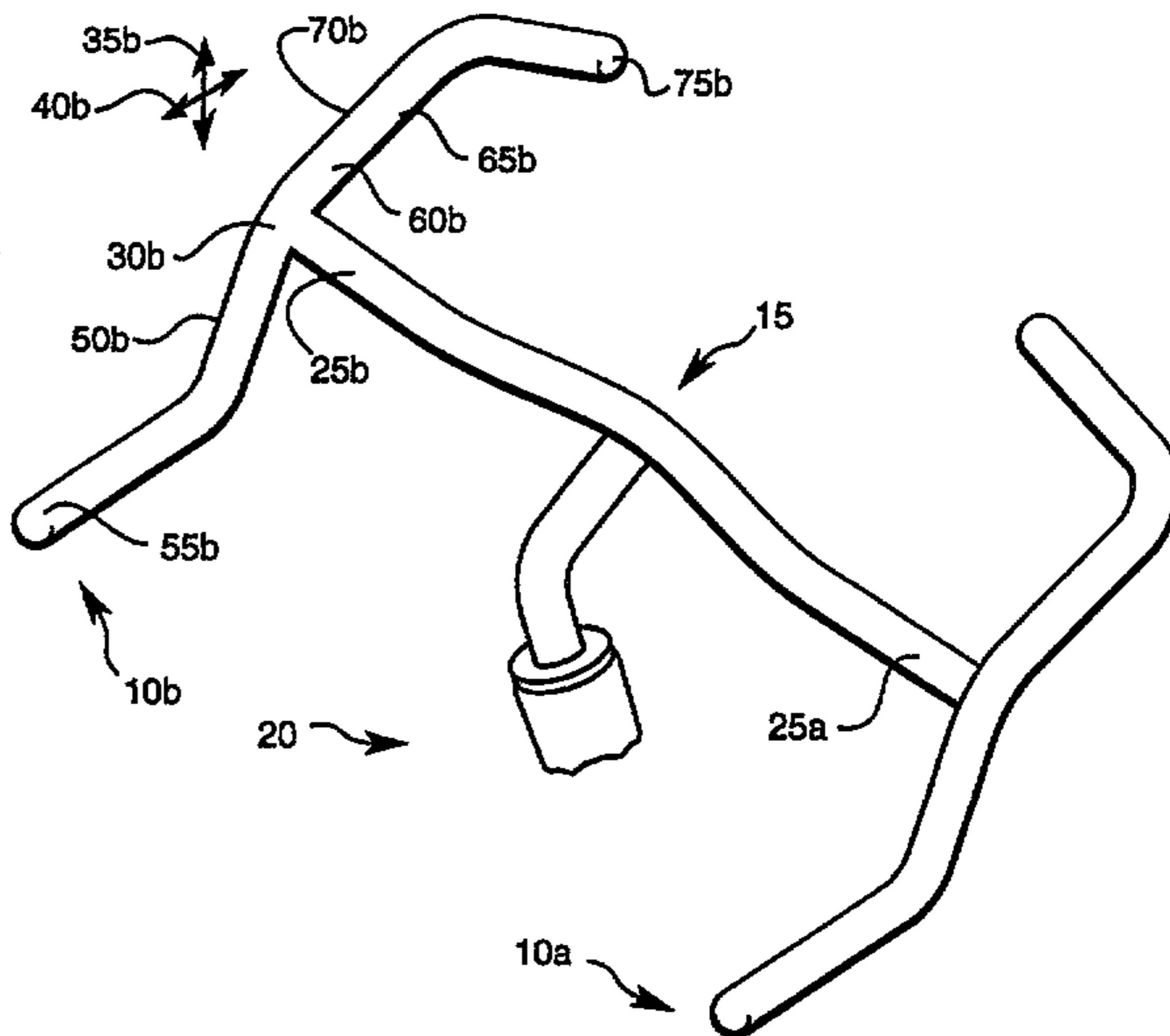
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<p>(21) International Application Number: PCT/US95/03042 (22) International Filing Date: 10 March 1995 (10.03.95) (30) Priority Data: 08/212,209 11 March 1994 (11.03.94) US (71)(72) Applicant and Inventor: NEWKIRK, Joel, H. [US/US]; 345 25th Street, Santa Monica, CA 90402 (US). (74) Agent: CISLO, Daniel, M.; Cislo & Thomas, Suite 900, 233 Wilshire Boulevard, Santa Monica, CA 90401 (US).</p>	<p>(81) Designated States: AM, AT, AU (Petty patent), BB, BG, BR, BY, CA, CH, CN, CZ, DE, DE (Utility model), DK, EE, ES, FI, GB, GE, HU, JP, KE, KG, KP, KR, KZ, LK, LR, LT, LU, LV, MD, MG, MN, MW, MX, NL, NO, NZ, PL, PT, RO, RU, SD, SE, SI, SK, TJ, TT, UA, US, UZ, VN, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG), ARIPO patent (KE, MW, SD, SZ, UG).</p> <p>Published <i>With international search report.</i></p> <p style="text-align: center; font-size: 2em;">2190721</p>	

(54) Title: UP-AND-DOWN BICYCLE HANDLEBARS

(57) Abstract

This invention is a grip (10) for the end of the type of bicycle handlebars (15) which has an end (25) projecting at right angles to the bicycle (20). The grip (10) and handlebars (15) combination is designed and shaped to allow riders to ride in several different vertical positions, or several different crouched down positions, or in a crouched down position with arm support, at will. The grip (10) comprises in a single integral unit: a central portion (30), a downward portion (50) extending downward and rearward from the central portion (30), a horizontal portion (55) extending rearward from the downward portion (50), an upper portion (60) extending upwards and forwards at an angle from the central portion (30), and an inwards portion (75) extending forwards and inwards at an angle from the upper portion (60). The grip (10) is attached at right angles to the end (10) of the handlebars (15) at the central portion (30). Attachment may be made by a clamp (110) so that grips (10) in accordance with this invention may be affixed to existing handlebars (15). Alternatively, attachment may be made permanently thereby creating a new type of handlebars (45) for assembly into bicycles.



Alternatively, attachment may be made permanently thereby creating a new type of handlebars (45) for assembly into bicycles.

UP-AND-DOWN BICYCLE HANDLEBARS

TECHNICAL FIELD

5 This invention relates to the field of bicycles and more particularly to handlebars which enable multiple modes of riding bicycles, and more particularly to end bars which attach to or mount to handlebars.

BACKGROUND ART

 The first chain and pedal driven bicycle was produced around
10 1890. Since then bicycle design has undergone many different technological changes. For example, the first bicycles were made of steel tubing, which although strong is quite heavy, whereas today, bicycles are more typically made of aluminum and even titanium tubing because of their light weight. Also, the first bicycles had no gearing while today, bicycles with twenty-one gears ratios (also called speeds) are commonly
15 available. The purpose of gearing is to allow riders to handle different conditions encountered en route. Low gears are used for climbing while high gears are used for going down steep hills and for speed on level terrain.

 Handlebars design has also undergone some significant changes. The first
20 handlebars curved back from the steering post towards the rider. This made the rider assume an erect (sometimes called the "sit up and beg") position. However, in this position the rider presents a large frontal area which produces great wind
resistance.

 As bicycle racing became more popular drop handlebars became more
popular. These handlebars have a lower U-Shaped loop. They force the rider to
25 adopt a hunched position over the handlebars (also called the tuck position) thus

2190721

2

lowering wind resistance and enabling the racer to apply more force to the pedals. However, it is tiring to hold this hunched over position for long periods of time. To relieve fatigue riders sit up and place their hands on the cross bar which is higher than the U-shaped loop. Thus drop handlebars do not provide flexibility for riders to adjust to difficult and changing road conditions and they do not allow riders to ride in maximum comfort.

Lennon attempted to relive the racer's fatigue with development of a specially curved handlebars on which the rider could also rest his or her forearms. See U.S. Patent No. 4,878,397.

Nowadays, mountain biking has become popular. The mountain bike, while still lightweight, is sturdier than the racing bicycle. It also has more rugged tires so that it can traverse mountain trails as well as pavement. The typical mountain bike has straight across handlebars which force the rider to assume the erect position also. This is comfortable when travelling through gently rolling hills or on fairly level terrain. However, the straight across handlebars do not provide the flexibility to allow the rider to adapt his riding position to the other terrain that is encountered on a typical bike ride. The straight across handlebars do not allow the rider to adopt the aerodynamic, tuck position necessary to lower wind resistance when climbing, going downhill or racing.

So today when a person wants to buy one bicycle for general use, or to fulfill several purposes, he or she is faced with a variety of choices and compromises. If a person does not need speed he or she may purchase a standard bike with backward curving handlebars. The person will ride in maximum comfort but may sacrifice the

ability to ride at maximum speed. If a person enjoys riding fast he or she may purchase a racing bike. But then he or she will not be able to ride in maximum comfort and may, unless he or she purchases a bike with Lennon handlebars, become overly fatigued when riding. If a person wants to occasionally ride on mountain trails, purchase of a mountain bike is indicated. A mountain bike is quite useable around town but its straight across handlebars mean that the person will sacrifice the ability to ride at maximum speed for the ability to ride in maximum comfort.

What the industry needs are handlebars which will enable riders to choose, at will, an erect position for maximum comfort; a crouched down position for maximum speed; an aerodynamic position for handling wind, climbs or going down steep hills; or a crouched down position with arm support. Development of handlebars which could accommodate all three riding positions would represent a great improvement in the field of bicycle design and would satisfy a long felt need of the bicycle riding public.

DISCLOSURE OF INVENTION

This invention is a grip for the end of the type of bicycle handlebars which have an end projecting at right angles to the bicycle. This is the type of handlebars typically found on a mountain bike.

In one embodiment, the invention provides a bar end for attachment to a terminus of a straight handlebar for a bicycle; the bar end comprising:

- a. a clamp section including a means for clamping to the terminus, a forward projection and a rear projection;
- b. a rear tube affixed to the rear projection; the rear tube including a downward portion extending downward and rearward at a first angle from the clamp section and a horizontal portion extending rearward from the downward portion; and

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- c. a forward tube affixed to the forward projection; the forward tube including an upper portion, having an inner side and an outer side, extending upwards and forwards at a second angle from the clamp section and an inwards portion extending forwards and inwards at a third angle from the upper portion.

In another embodiment, the invention provides a bar end for attachment to a terminus of a straight handlebar for a bicycle; the bar end comprising:

- a. a clamp section having a forward and a rear and including means for clamping to the terminus;
- b. a rear tube, affixed to the rear, including a downward portion extending downward and rearward at a first angle from the clamp section and a horizontal portion extending rearward from the downward portion; and
- c. a forward tube, affixed to the forward, including an upper portion, having an inner side and an outer side, extending upwards and forwards at a second angle from the clamp section and an inwards portion extending forwards and inwards at a third angle from the upper portion.

The grip and handlebars combination is designed and shaped to allow riders to ride in several different erect positions, or several different crouched down positions, or in a crouched down position with arm support, at will. The grip comprises in a single integral unit: a central portion, a downward portion extending downward and rearward from the central portion, a horizontal portion extending

4

rearward from the downward portion, an upper portion extending upwards and forwards at an angle from the central portion, and an inwards portion extending forwards and inwards at an angle from the upper portion. The grip is attached at right angles to the end of the handlebars at the central portion.

5 Preferably, attachment may be made by a clamp so that grips in accordance with this invention may be affixed to existing handlebars. Alternatively, attachment may be made permanently thereby creating a new type of handlebars for assembly into bicycles.

10 An appreciation of the other aims and objectives of the present invention and a more complete and comprehensive understanding of it may be achieved by referring to the accompanying drawings and studying the following description of the best mode of carrying out the invention.

BRIEF DESCRIPTION OF DRAWINGS

15 Figure 1 is a perspective view of the preferred embodiment of this invention as attached to the straight-across handlebars of a mountain bicycle;

Figure 2 illustrates the preferred method of attachment for this invention;

Figure 3 shows side views of several alternate configurations of this invention;

Figure 4 illustrates in several perspective views how this invention is used; and

20 Figure 5 illustrates an alternate embodiment of this invention in which up-and-down grips are permanently fixed to the ends of a straight-across handlebars.

DISCLOSURE OF THE INVENTION

Figure 1 shows a perspective view of the preferred embodiment of this invention 10 as attached to the straight-across handlebars 15 of a mountain bicycle

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20. It can be seen that this invention 10 has two configurations, which are mirror images of each other: the right configuration 10a and the left configuration 10b. Throughout this specification an "a" suffix to the reference number will be used to designate the right side and a "b" suffix will be used to designate the left side.

5 The invention 10 comprises in one integral unit several component parts. The primary component is a relatively short central portion 30. The central portion 30 may be considered to have an up-down axis 35 and a forward-rear axis 40. Since the grip 10 is one integral unit, the axes apply equally to the entire grip 10 as well as its central portion 30. A downward portion 50 extends downward and rearward from
10 the central portion 30 and a horizontal portion 55 extends rearward, approximately parallel to the forward-rear axis 40.

 Extending upwards and forwards at an angle from the central portion 30 is an upper portion 60. The upper portion 60 is considered to have an inner side 65 and an outer side 70. Finally, there is an inner portion 75 which extends forwards and
15 inwards at an angle from the upper portion 60.

 The grip 10 may be attached to the end 25 of the handlebars 15 by any convenient means. The attachment point is at the central portion 30. In Figure 1, the central portion 30 is shown so that its front-rear axis 40 is approximately horizontal. Obviously, the grip 10 can rotate about the end 25 of the handlebars 15.
20 Thus the grip 10 can be fastened at varying angles to the handlebars 15.

 The downward 50 and upper 60 portions may be straight and extend from the central portion 30 at any desired angle. The preferred angle of extension is about

45 degrees. Alternatively, the downward portion 50 may be U-shaped as in racing handlebars.

The grip 10 is preferably made from 7/8 inch (2.2 cm) diameter aluminum tubing. The preferred dimensions of the grip 10 are: downward portion 50 - approximately 4 1/2 inches (11.4 cm) long; horizontal portion 55 - approximately 3 1/2 inches (8.9 cm) long; upper portion 60 - approximately 4 1/2 inches (11.4 cm) long; and inwards portion 76 - approximately 3 1/2 inches (8.9 cm) long. Additionally the grip 10 can be covered with a rubberized cushion or with handlebars wrapping tape.

Figure 2 illustrates the preferred means of attaching the grip 10 to the handlebars 15. Only a right-hand grip 10a is shown in Figure 2. The preferred means is to incorporate a circumferential clamp 110a into the central segment 30a of the grip 10a. A circumferential clamp 110a is formed so that it wraps almost entirely around the member to which it is to be attached: a small gap 115a is left. This gap is bridged by a bolt or screw 120a which can be tightened into a threaded socket. When the bolt or screw 120a is tightened, the circumference of the clamp 110a is uniformly reduced so that the clamp grips the member to which it is to be attached. Since such clamps are capable of applying tremendous clamping force, they are commonly used in bicycle design and manufacture.

While a circumferential clamp 110 may be the preferred method of attachment it will be obvious to those skilled in the art to which this invention pertains that other methods of attachment will work equally well.

Figure 3 simply illustrates that variations of the grip 10 can be created by varying the shape, size and angular relationships of the various segments of the invention 10.

Figure 4 illustrates different ways the grip 10 can be used when riding the bicycle 20. The hands 80 can be placed in the "normal" position on the ends 25 of the handlebars 15. See Figure 4A. Alternatively, the hands 80 can be placed on: the horizontal portion 55, as shown in Figure 4B; the downward segment 50, as shown in Figure 4C; the upper segment 60 as shown in Figure 4D; or the inwards segment 75, as shown in Figure 4E. Placing the hands 80 on the inwards portion 75 allows support of the forearm on the ends 25 of the handlebars 15. Placing the hands 80 on the different segments of the grip 10 will allow the rider to take up a more erect or more hunched over position to accommodate his or her desire for speed or comfort.

While the preferred embodiment of this invention 10 comprises a grip 10 for variable attachment to handlebars 15 for ultimate flexibility, that is attachment of the grip 10 at different angles to the handlebars 15, it is obvious that complete handlebars with integral up-and-down end grips 10 can easily be fabricated. In other words it would be easy to weld or otherwise permanently fasten the grips 10 to the ends 25 of a crossbar. In this version, however, the angular relationship of the grips 10 to the crossbar would not be adjustable at will. Thus some flexibility will be sacrificed. But bicycle designers can easily determine the optimum angle of attachment to satisfy the needs of most riders.

Figure 5 illustrates just such a complete handlebars 45. The handlebars 45 comprises in one integral unit several component parts. The central component is the crossbar 85. The crossbar 85 may be considered to have a front 90, a rear 95, an up surface 100 and a down surface 105. The crossbar has two ends 25. At right angles to the crossbar 85 at each end 25 is attached a grip 10. Each grip 10 has several segments.

A downward segment 50 extends downward and rearward from the crossbar 85 and a horizontal segment 55 extends rearward, approximately horizontally, from this downward segment 50. Extending upwards and forwards at an angle from the crossbar is an upper segment 60. The upper segment 60 is considered to have an inner side 65 and an outer side 70. Finally, there is an inner segment 75 which extends forwards and inwards at an angle from the upper segment 60.

The downward 50 and upper 60 segments may be straight and extend from the crossbar 85 at any desired angle. The preferred angle of extension is about 45 degrees. Alternatively, the downward segment 50 may be U-shaped as in racing handlebars.

The complete handlebars 45 are attached to the bicycle 20 by conventional means. The complete handlebars 45 can have the various shapes of grips 10 as shown in Figure 3. Its use would be entirely the same as the methods of use shown in Figure 4.

The handlebars 45 are preferably made from 7/8 inch (2.2 cm) diameter aluminum tubing. The preferred dimensions of the grip 10 are: downward segment 50 - approximately 4 1/2 inches long (11.4 cm), horizontal segment 55 - approximately

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3 1/2 inches (8.9 cm) long; upper segment 60 - approximately 4 1/2 inches (11.4 cm) long; and inwards segment 76 - approximately 3 1/2 inches (8.9 cm) long. Additionally the handlebars can be fully or partially covered with an elastomeric material with enhanced frictional properties such as rubber cushioning or handlebars wrapping tape.

The up-and-down grip 10 and up-and-down handlebars 45 have been described with reference to a particular embodiment. However, it should be obvious to those skilled in the art to which this invention pertains that other modifications and enhancements can be made without departing from the spirit and scope of the claims that follow.

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List of Reference Numbers

- 10 Up-and-down grip
- 15 Straight-across handlebars
- 5 20 Bicycle
- 25 End of handlebars
- 30 Central segment of grip
- 35 Up-down axis of grip
- 40 Front-rear axis of grip
- 10 45 Complete up-and-down handlebars
- 50 Downward segment of grip
- 55 Horizontal segment of grip
- 60 Upwards segment of grip
- 65 Inner side of upwards segment
- 15 70 Outer side of upwards segment
- 75 Inwards segment of grip
- 80 Hand
- 85 Crossbar
- 90 Front of crossbar
- 20 95 Rear of crossbar
- 100 Upper surface of crossbar
- 105 Lower surface of crossbar
- 110 Circumferential clamp

- 115 Gap in circumference of circumferential clamp
- 120 Tightening bolt or screw

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The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A bar end for attachment to a terminus of a straight handlebar for a bicycle; said bar end comprising:

- a. a clamp section including a means for clamping to said terminus, a forward projection and a rear projection;
- b. a rear tube affixed to said rear projection; said rear tube including a downward portion extending downward and rearward at a first angle from said clamp section and a horizontal portion extending rearward from said downward portion; and
- c. a forward tube affixed to said forward projection; said forward tube including an upper portion, having an inner side and an outer side, extending upwards and forwards at a second angle from said clamp section and an inwards portion extending forwards and inwards at a third angle from said upper portion.

2. A bar end as claimed in claim 1 further comprising a means for angular adjustment, incorporated where said forward tube is affixed to said forward projection, whereby said second angle may be varied in the vertical plane.

3. A bar end as claimed in claim 1 in which said first angle is 45 degrees.

4. A bar end as claimed in claim 1 in which said downward portion is U-shaped.

5. A bar end as claimed in claim 1 in which said forward tube is affixed to said forward projection and said rear tube is affixed to said rear projection with adhesive.

6. A bar end as claimed in claim 5 in which said forward projection and said rear projection further include grooves adapted to receive said adhesive.

7. A bar end as claimed in claim 1 in which said forward tube is welded to said forward projection and said rear tube is welded to said rear projection.

8. A bar end as claimed in claim 1 in which said forward tube is brazed to said forward projection and said rear tube is brazed to said rear projection.

9. A bar end for attachment to a terminus of a straight handlebar for a bicycle; said bar end comprising:

- a. a clamp section having a forward and a rear and including means for clamping to said terminus;
- b. a rear tube, affixed to said rear, including a downward portion extending downward and rearward at a first angle from said clamp section and a horizontal portion extending rearward from said downward portion; and
- c. a forward tube, affixed to said forward, including an upper portion, having an inner side and an outer side, extending upwards and forwards at a second angle from said clamp section and an inwards portion extending forwards and inwards at a third angle from said upper portion.

10. A bar end as claimed in claim 9 further comprising a means for angular adjustment, incorporated where said forward

tube is affixed to said forward projection, whereby said second angle may be varied in the vertical plane.

11. A bar end as claimed in claim 9 in which said first angle is 45 degrees.

12. A bar end as claimed in claim 9 in which said downward portion is U-shaped.

13. A bar end as claimed in claim 9 in which said forward tube is affixed to said clamp section and said rear tube is affixed to said clamp section with adhesive.

14. A bar end as claimed in claim 13 in which said forward projection and said rear projection further include grooves adapted to receive said adhesive.

15. A bar end as claimed in claim 9 in which said forward tube is welded to said clamp section and said rear tube is welded to said clamp section.

16. A bar end as claimed in claim 9 in which said forward tube is brazed to said clamp section and said rear tube is brazed to said clamp section.

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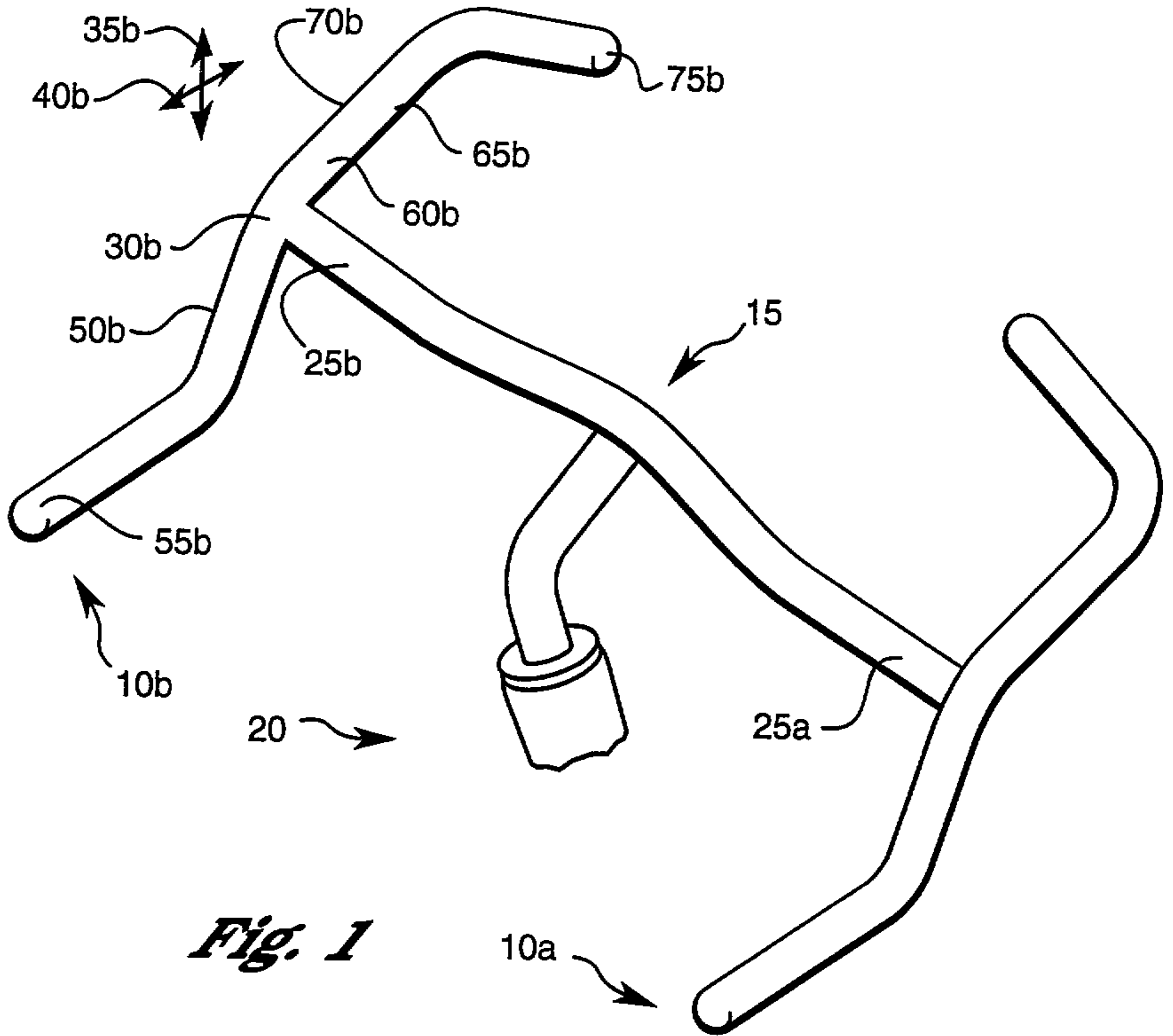


Fig. 1

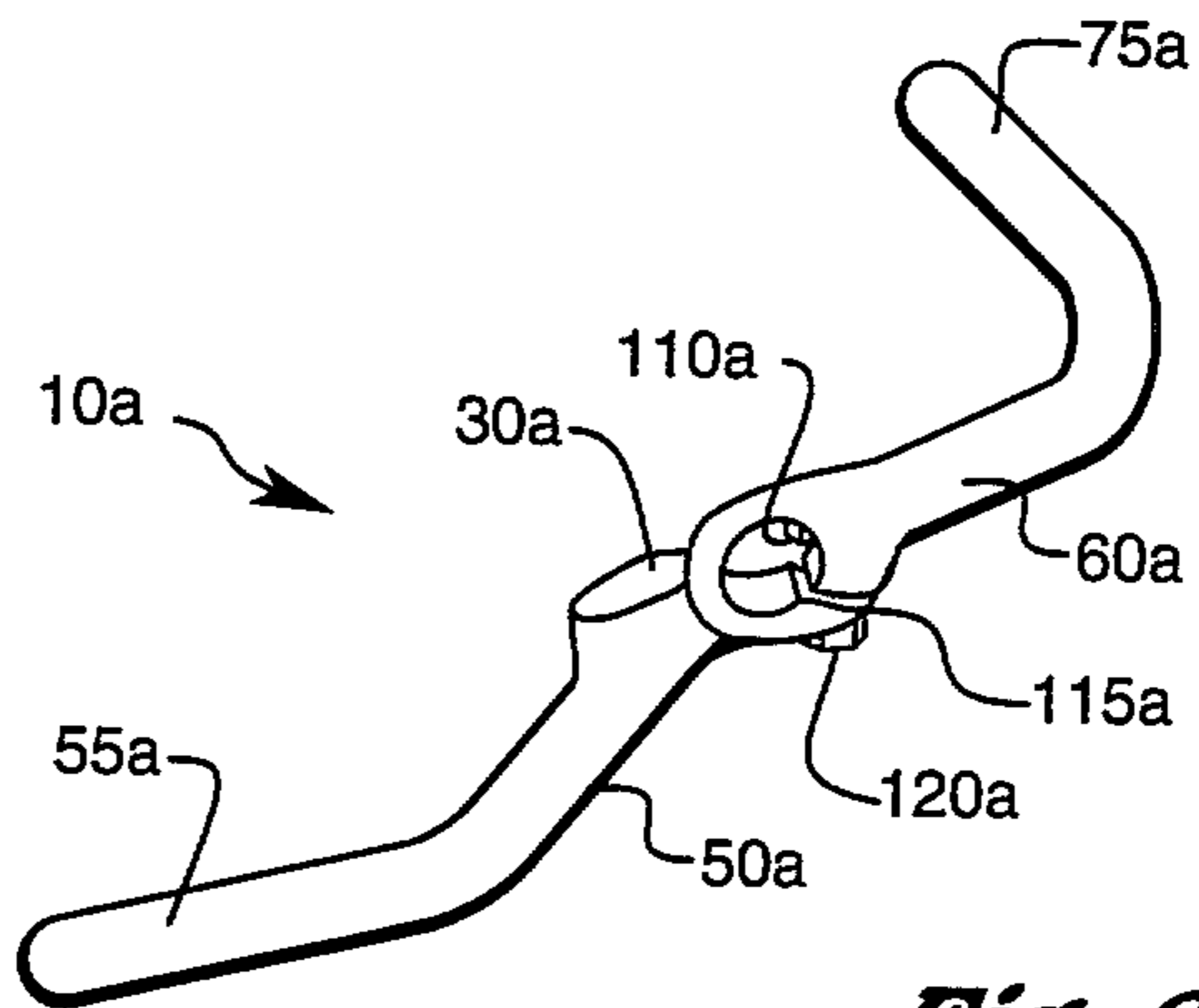


Fig. 2

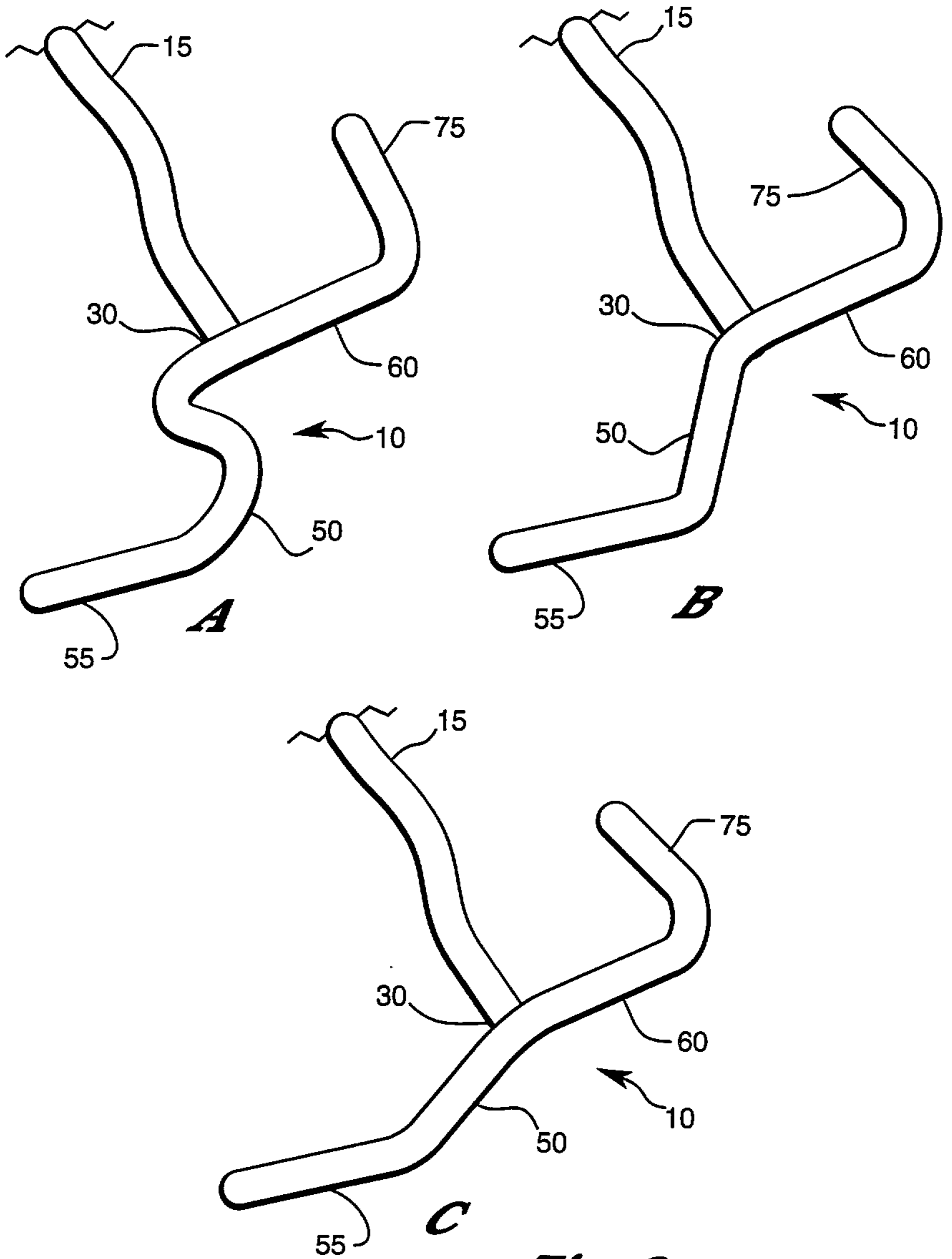


Fig. 3

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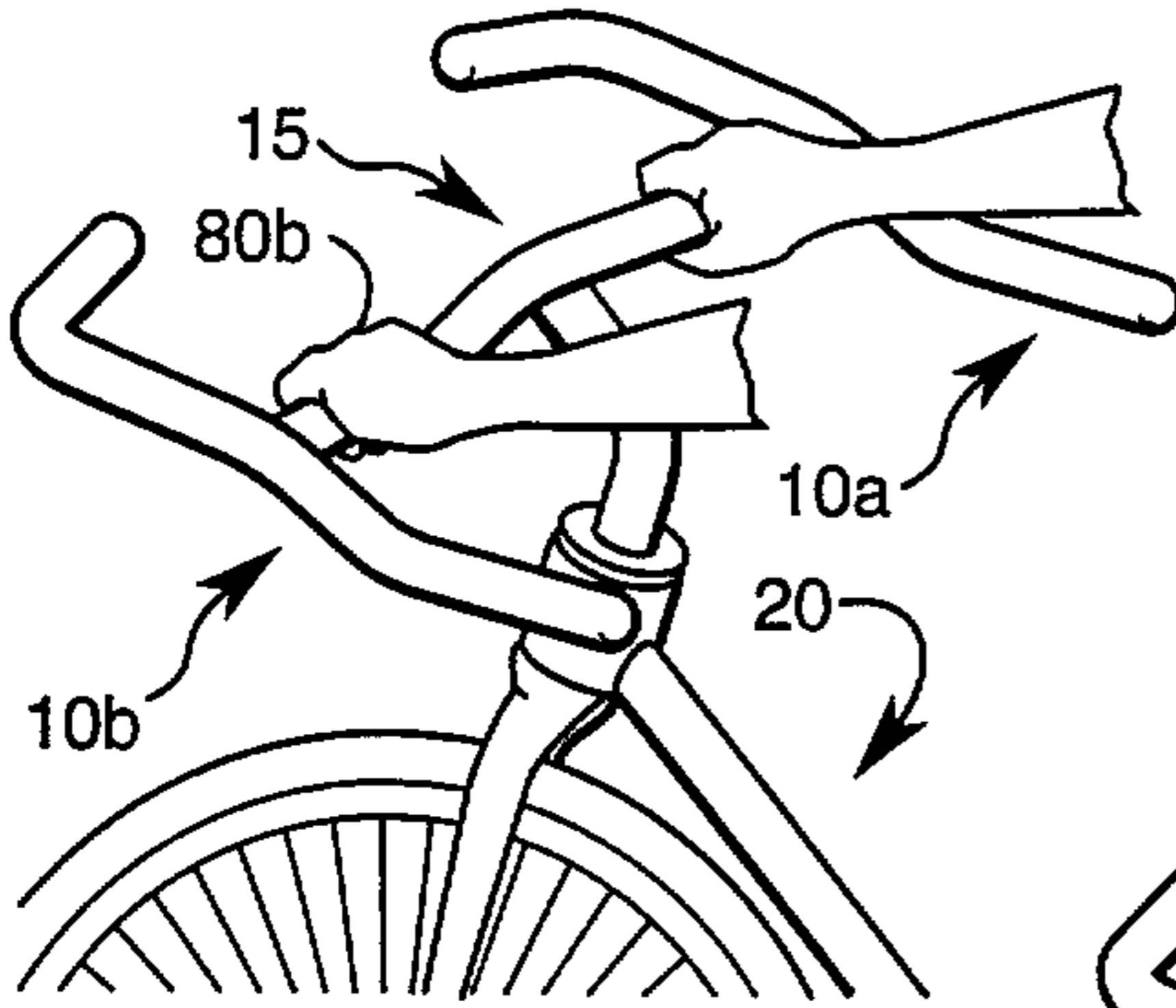


Fig. 4A

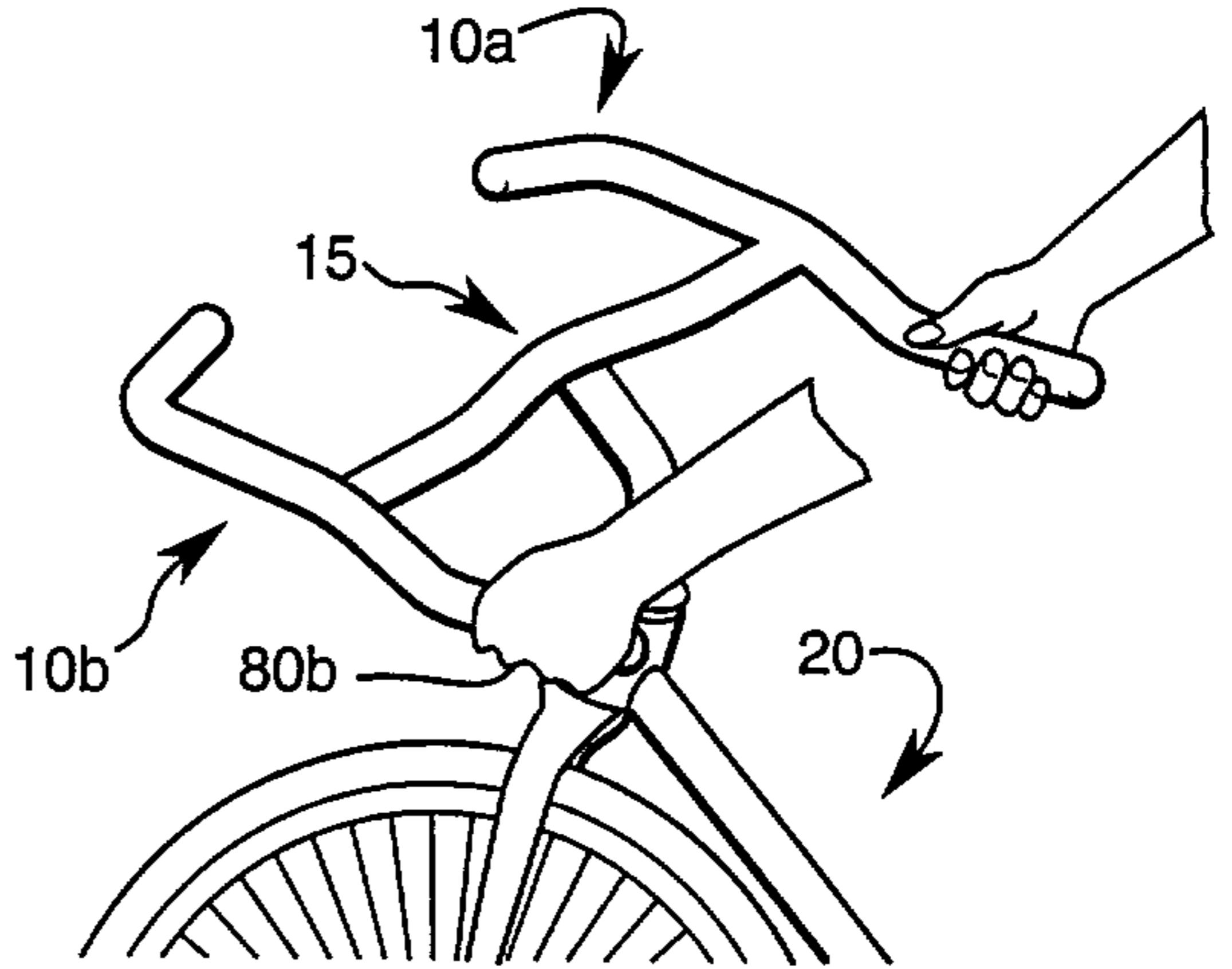


Fig. 4B

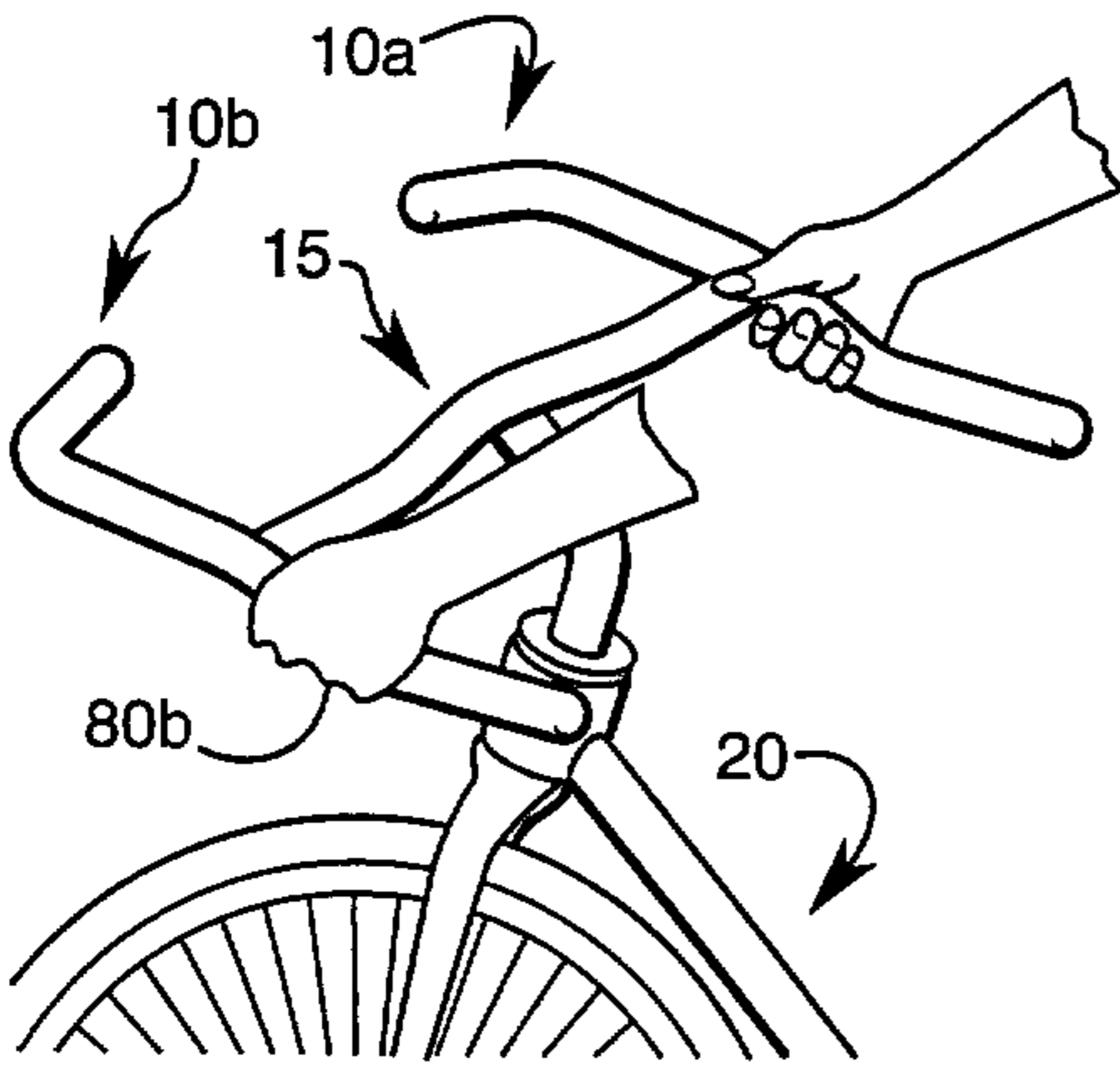


Fig. 4C

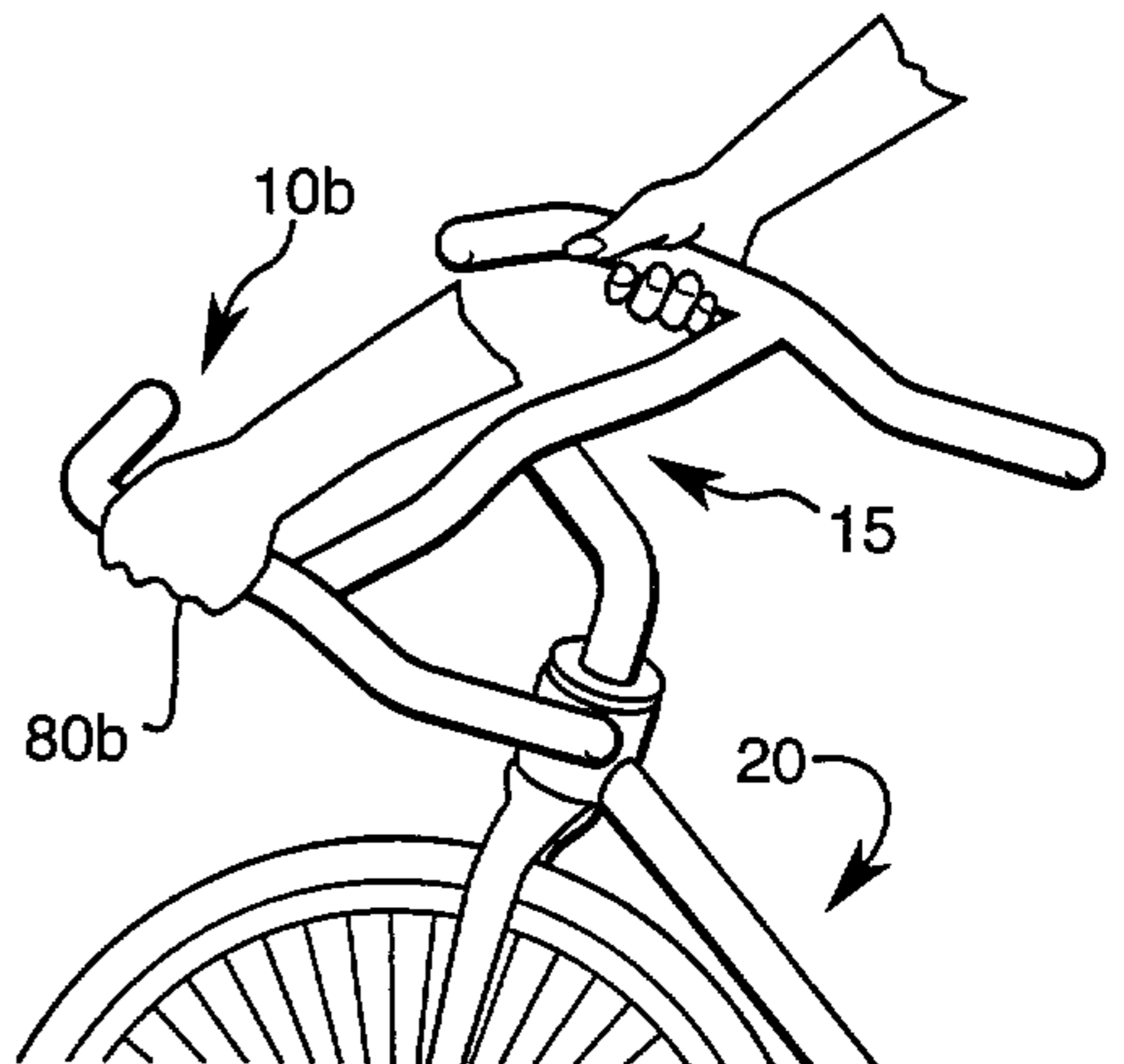


Fig. 4D

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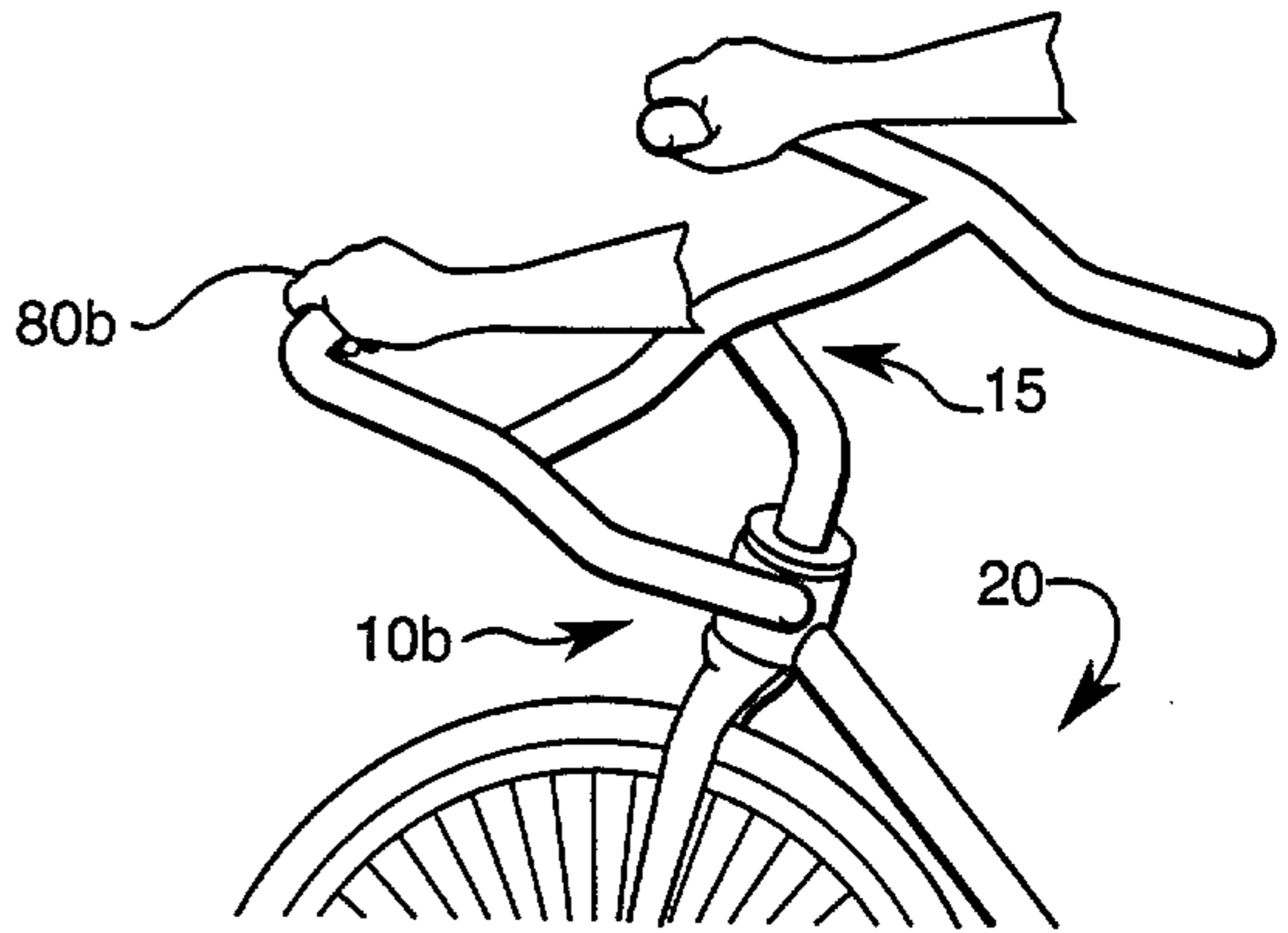


Fig. 4E

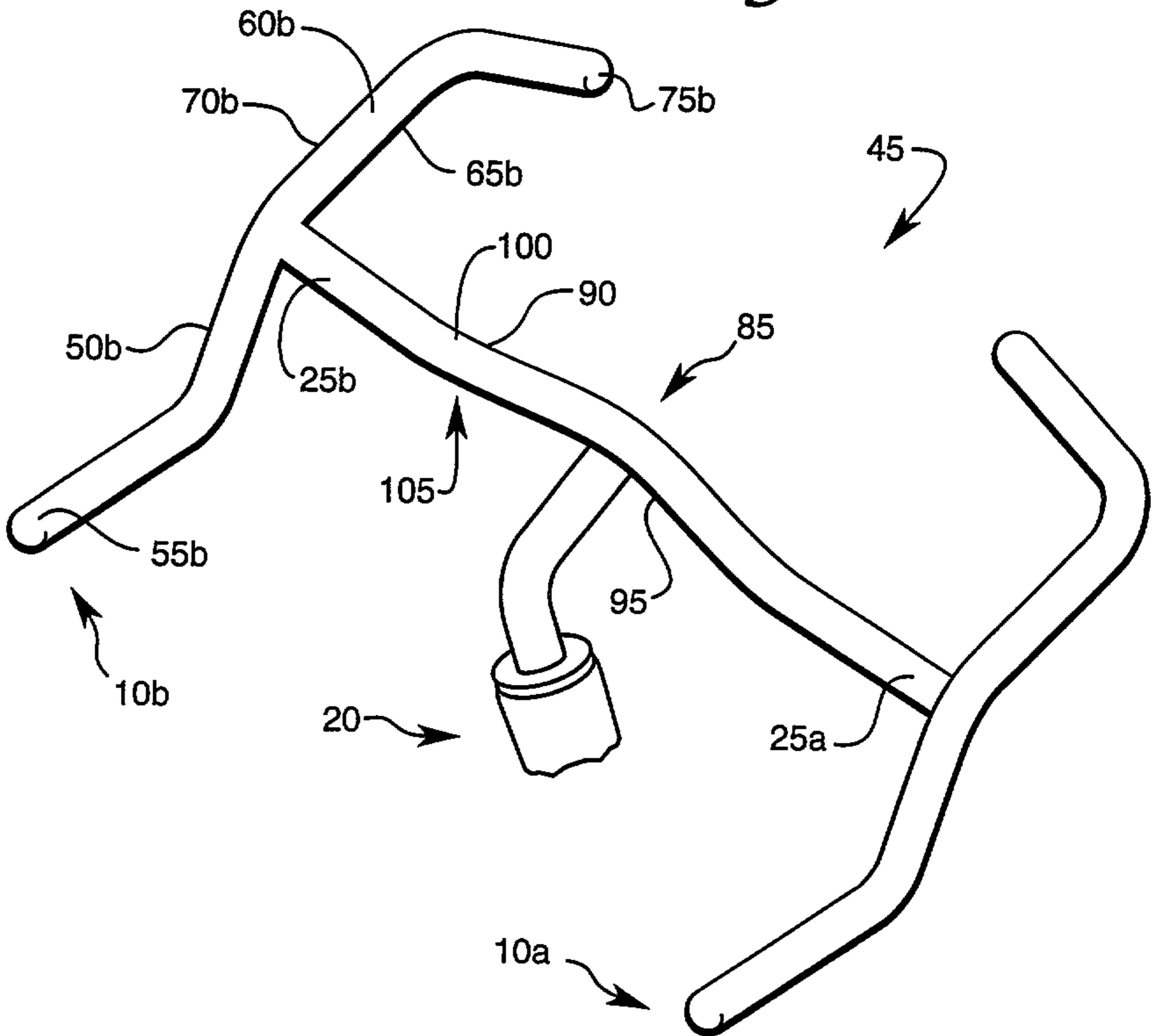


Fig. 5

