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(54) **Title:** BICYCLE CONNECTOR

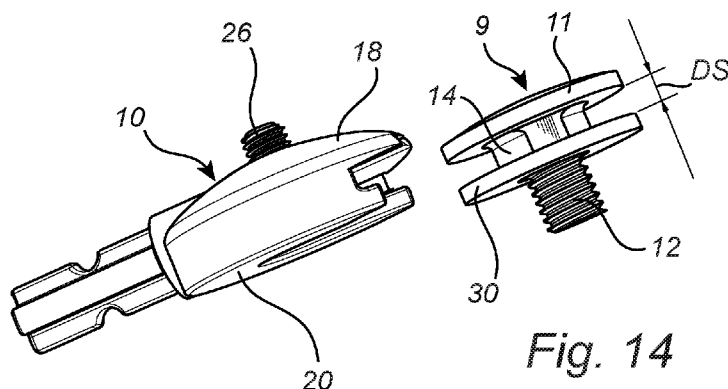


Fig. 14

(57) **Abstract:** The invention concerns a bicycle connector (8; 108) for connecting appliances (3, 4, 5, 6, 7; 106) to a bicycle (1). The bicycle connector (8; 108) comprises a first connector element (9), a second connector element (10, 25; 110) and a fastener. The first connector element (9) is to be fixed to the bicycle (1). The second connector element (10, 25; 110) is fixed to an appliance (3, 4, 5, 6, 7; 106) and is to be slid onto the first connector element (9). The first connector element (9) and the second connector element (10, 25; 110) are held together by means of the fastener.

BICYCLE CONNECTOR

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Technical Field

The present invention concerns a bicycle connector for connecting different appliances to a bicycle.

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Background

It is common to furnish a bicycle with different appliances, such as baskets, carriers and extra seats. The appliances are fastened to the bicycle in different positions, such as at the front, at the rear or on the sides. Each such appliance has normally its own specific arrangement for fasten it to the bicycle. Thus, if one wants or needs to replace an existing appliance one often also has to replace the fastening means.

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For some type of appliances, such as different types of baskets, it is often desirable to take them along when leaving the bicycle. Therefore it is beneficial if the appliances are relatively easy to attach to and remove from the bicycle. Still the appliances should be held at the bicycle in a secure way. By applying one single type of connector for different appliances, the appliances can be provided with standardized connection means for fastening to the connector.

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Summary

In view of the above one object of the present invention is to provide a bicycle connector, by means of which different types of appliances can be fastened to the bicycle in an easy and secure way. The connector should be possible to use for different types of appliances to be fastened to the bicycle.

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According to one aspect of the invention a bicycle connector for connecting appliances to a bicycle, comprises a first connector element, a second connector element and a fastener. The first connector element is to be fixed to the bicycle and the second connector element is to be slid onto the first connector element. The first connector element comprises a disc and a threaded shaft protruding from the centre of one side of the disc. The first connector element and the second connector element are held together by means of the fastener, which fastener is a bolt in one embodiment. By means of the current bicycle connector an appliance may be connected to the bicycle in a simple and yet efficient and safe manner.

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Further objects and advantages of the present invention will be obvious to a person skilled in the art when reading the detailed description below of at present preferred embodiments.

5 Brief Description of the Drawings

Fig. 1 is a perspective view of a bicycle, with which the bicycle connector of the present invention may be used,

Figs. 2a-2e are perspective views of different appliances that can be fastened to a bicycle by means of bicycle connectors of the present invention,

10 Fig. 3 is a perspective view of one embodiment of the bicycle connector of the present invention,

Fig. 4 is a side view of the bicycle connector of Fig. 3,

Fig. 5 is an exploded view of the bicycle connector of Figs. 3 and 4,

15 Fig. 6 is a perspective view of one embodiment of a first element of the bicycle connector,

Fig. 7 is a perspective view of the element of Fig. 6 from a different angle,

Fig. 8 is a perspective view of one embodiment of a second element of the bicycle connector,

Fig. 9 is a perspective view of the element of Fig. 8 from a different angle,

20 Fig. 10 is a plan view of the element of Figs. 8 and 9,

Fig. 11 is a perspective view of an alternative embodiment of the second element of the bicycle connector,

Fig. 12 is a perspective view of a bolt to be used in the bicycle connector of the present invention,

25 Fig. 13 is a perspective view of the bolt of Fig. 12 from a different angle,

Fig. 14 is a perspective view of the bicycle connector of the present invention, illustrating one fixation stage,

Fig. 15 is a perspective view of the bicycle connector of Fig. 14 in a later fixation stage,

30 Fig. 16 is a cross-sectional view and illustrates the bicycle connector in a mounted state,

Fig. 17a illustrates an appliance having a second connector element according to an alternative embodiment,

35 Fig. 17b illustrates the second connector element of Fig. 17a as seen in an alternative angle, and

Fig. 17c illustrates the second connector element of Figs. 17a-17b when mounted to a first connector element.

Detailed Description

5 As used in this description the expressions "outer", "inner" and similar expressions are in relation to the bicycle after mounting, whereby "inner" refers to a position closer to the bicycle than "outer".

The bicycle 1 shown in Fig. 1 has a number of connection points 2 to receive bicycle connectors 8 (see Figs. 3-4), and more particularly, and as will be described in
10 more detail hereinafter, respective first connector elements 9 of the bicycle connectors 8 are to be mounted to the connection points 2 and are adapted to receive respective second connector elements 10 of the bicycle connectors 8, for different types of appliances.

In Figs. 2a-2e some examples of such appliances are indicated and said Figs.
15 show a container 3, a basket 4, a further basket 5, a front luggage carrier 6 and a rear luggage carrier 7.

The rear luggage carrier 7 shown in Fig. 2e is provided with four support struts 7', 7'', 7''', 7'''' each of which is provided with a second connector element 10 of a connector 8.

20 The bicycle connector 8 of the present invention comprises, as is best illustrated in Figs. 4 and 5, the first connector element 9 and the second connector element 10. The first connector element 9 is to be fixed to the bicycle 1 at one of the connection points 2 of the bicycle 1.

Each connection point 2 of the bicycle 1 is, as shown in an enlarged portion of
25 Fig. 1, provided with an opening 2' with an inner thread for fastening of the respective first connector element 9. The second connector element 10, which is mounted to an appliance, for example one of the appliances 3-7, is then to be mounted to the first connector element 9, by sliding the second connector element 10 onto the first connector element 9, as will be described in more detail hereinafter.

30 As illustrated in Figs. 6 and 7, the first connector element 9 has a circular disc 11. On one side of the disc 11 a threaded shaft 12 projects from the centre of the disc 11. The threaded shaft 12 has an outer thread, and the threaded shaft 12 is adapted to be screwed into a threaded opening 2' of the respective connection point 2. On the side of the disc 11 opposite the threaded shaft 12 a circular opening 13 is provided in the centre
35 of the disc 11. The threaded shaft 12 is placed on a raised part 14 at the disc 11, which

raised part 14 has a curved part 15 closest to the disc 11. The raised part 14, including the curved part 15, has two cut surfaces 16 at opposite sides. The two cut surfaces 16 are intended to form contact surfaces for, e.g., an open end wrench, that is used for screwing the threaded shaft 12 into the threaded opening 2' of the respective connection point 2.

As illustrated in Figs. 8 and 9 the second connector element 10 has a connection shaft 17 projecting from a main part 10' having a generally circular outer part 18, as seen in plan view. In the centre of the circular outer part 18 a through opening 19 is provided. Said through opening 19 has an inner thread. The main part 10' of the second connector element 10 has further an inner part 20. The outer and inner parts 18, 20 of the second connector element 10 are arranged in such a way that a space 21 is formed between them. A wall 22 extends between the outer and inner parts 18, 20 at a part of the circumference of the main part 10'. In plan view the inner part 20 has the form of a partial ring. The partial ring has a mouth 20' at the side of the inner part 20 placed opposite to the connection shaft 17. A recess 23 is formed on the side of the outer part 18 facing the inner part 20. Said recess 23 of the outer part 18 has a generally rectangular form and goes from the outer edge of the outer part 18 into and slightly past the through opening 19. The placement of the mouth 20' of the partial ring forming the inner part 20 coincides with the recess 23 of the outer part 18. The connection shaft 17 projects from the wall 22 between the outer and inner parts 18, 20 of the second connector element 10 opposite the recess 23 of the outer part 18. The connection shaft 17 has the form of a cross as seen in end view, with four legs placed at right angles to each other. On each of two opposite legs of the cross of the connection shaft 17 a recess 24 is provided, which recesses 24 are used for connection to the respective appliance 3-7. For example, in case of the luggage carrier 7 illustrated in Fig. 2e, the respective connection shaft 17 may be inserted into a respective hollow strut 7', 7'', 7''', 7'''' and be fastened therein by, for example, an adhesive, or by making mechanical indent/-s in the strut 7', 7'', 7''', 7'''' at the recess/-es 24 of the connection shaft 17 to fix the hollow strut to the second connector element 10.

Fig. 11 illustrates an alternative embodiment in the form of a second connector element 25 having two connection shafts 17. In all other respects the second connector element 25 having two connection shafts 17 corresponds with the previously described second connector element 10. It will therefore not be described further here. The two connection shafts 17 of the second connector element 25 may, for example, be used for attaching two struts 7', 7''' of an appliance.

A person skilled in the art realizes that the exact form of the connection shafts 17 may vary and are adapted to the type of fastening means of the appliances 3-7.

The first and second connector elements 9, 10 are connected to each other by means of a fastener, which in this embodiment is a bolt 26, having a generally
5 cylindrical form, as is best shown in Figs. 12 and 13. The bolt 26 has an outer thread 27. The bolt 26 has a head 28 at one end and an opening 29 for receiving a spanner at an opposite end. In the shown embodiment the opening 29 has a hexagonal interior for co-operation with a hex-key (also known as Allen key) type of spanner. A person skilled in the art realizes that openings and co-operating spanners with other number of sides may
10 be used. The thread 27 of the bolt 26 goes all the way between the head 28 at one end and the opposite end of the bolt 26. The outer diameter of the head 28 of the bolt 26 is larger than the inner diameter of the through opening 19 of the second connector element 10. The bolt 26 is screwed into the through opening 19 from the side facing the inner part 20 of the second connector element 10, whereby the bolt 26 may be screwed
15 into the opening until the head 28 abuts the outer part 18 of the second connector element. The head 28 will therefore function as a stopper, which prevents the bolt 26 from falling out of the opening 19, when the second connector element 10 has been connected to the first connector element 9.

Normally a washer 30 is placed between the bicycle 1 and the first connector
20 element 9, wherein the washer 30 embraces the threaded shaft 12. When the first connector element 9 has been mounted to the opening 2' of the connection point 2, illustrated in Fig. 1, the washer 30 will rest against the raised part 14, illustrated in Fig. 7, of the first connector element 9, whereby the washer 30 will be placed at a distance DS from the disc 11 of the first connector element 9, as is best illustrated in Fig. 14.

25 In use one or more of the first connector elements 9, preferably with a washer 30, is/are each fastened to the bicycle 1 in a respective connection point 2. The threaded shaft 12 of each first connector element 9 is screwed into the opening 2' of the respective connection point 2, until the washer 30 abuts the connecting point 2. The second connector element 10, which is mounted to the appliance, for example mounted
30 to one of the support struts 7', 7'', 7''', 7'''' of the rear luggage carrier 7 shown in Fig. 2e, is then slid onto the first connector element 9. Before the second connector element 10 is slid onto the first connector element 9, the bolt 26 is screwed into the through opening 19 of the second connector element 10 until the head 28 of the bolt 26 abuts the outer part 18 of the second connector element 10, the head 28 thereby preventing the bolt 26
35 from falling out of the opening 19. In said position the bolt 26 will not hinder the

second connector element 10 from being slid onto the first connector element 9. In Fig. 14 the second connector element 10 is shown just before being slid onto the first connector element 9, whereby the bolt 26 projects above the outer part 18 of the second connector element 10.

5 The second connector element 10 is slid onto the first connector element 9 in such a way that the disc 11 of the first connector element 9 is received in the space 21 between the outer and inner parts 18, 20 of the second connector part 10 and the inner part 20 of the second connector element 10 is placed between the washer 30 and the disc 11 of the first connector part 9. The raised part 14 at the threaded shaft 12 of the first
10 connector part 9 is received in the mouth 20', best shown in Figs. 9 and 10, of the inner part 20 of the second connector part 10. The second connector element 10 is slid onto the first connector element 9 until the disc 11 of the first connector element 9 abuts the wall 22 between the outer and inner parts 18, 20 of the second connector element 10. When the disc 11 abuts the wall 22, the through opening 19 of the second connector
15 element 10 will be in line with the opening 13 of the first connector element 9. In Fig. 15 the bicycle connector 8 is shown with the second connector element 10 slid onto the first connector element 9 and with the bolt 26 still projecting above the outer part 18 of the second connector element 10.

Fig. 16 is a cross-section and illustrates the second connector element 10 after
20 being slid onto the first connector element 9. The connection shaft 17 of the second connector element 10 is fixed to the support strut 7' by means of mechanical indents 32 made in the support strut 7' in locations corresponding to the recesses 24. The first connector element 9 has been mounted to the connection point 2 by means of the threaded shaft 12 being screwed into the opening 2' having an inner thread 34. As can
25 be seen from Fig. 16 the raised part 14 presses the washer 30 towards an upper surface 36 of the connection point 2.

With the second connector element 10 slid onto the first connector element 9, the bolt 26 is then screwed downwards, whereby the head 28 of the bolt 26 will go into the opening 13 of the first connector element 9. Thereby, as shown in Fig. 16, the
30 second connector element 10 is locked to the first connector element 9, meaning that the appliance, in this case the rear luggage carrier 7 illustrated in Fig. 2e, is locked to the connection point 2 of the bicycle 1 illustrated in Fig. 1. The bolt 26 is preferably to be screwed down until the head 28 of the bolt 26 abuts the bottom 38 of the opening 13 of the first connector element 9. When the head 28 of the bolt 26 abuts the bottom 38 of
35 the opening 13 the opposite end of the bolt 26 will be flush with, or lower than, the

upper edge of the through opening 19 of the second connector element 10, and in such a state the second connector element 10 is securely fastened to the first connector element 9. As the head 28 of the bolt 26 is placed between the first and second connector elements 9, 10 after mounting, the bolt 26 cannot accidentally fall out of its position.

5 Figs. 17a-c illustrate two second connector elements 110 according to an alternative embodiment. The second connector elements 110 are integrated into an appliance in the form of a front luggage carrier 106. The second connector elements 110 have a common connection plate 117 which connects the second connector elements 110 to a rear fence 107 of the luggage carrier 106. The connection plate 117 also forms
10 an outer part 118 of each second connector element 110. Each outer part 118 is provided with a through opening 119 having an inner thread. Each second connector element 110 has an inner part 120 formed in a mounting plate 110', which is parallel with and connected to the common connection plate 117. The outer and inner parts 118, 120 of the second connector element 110 are arranged in such a way that a space 121 is formed
15 between them with walls 122 extending between the outer and inner parts 118, 120. Each inner part 120 is provided with an open mouth 120' having the shape of a keyhole, having its smallest end in an upper end thereof, and its largest end at a lower end thereof, as illustrated in Fig. 17b.

Fig. 17c illustrates a bicycle connector 108 obtained by connecting the second
20 connector elements 110 described in Figs. 17a-b to two first connector elements 9 of the type described hereinabove and illustrated in, e.g., Fig. 14. The two first connector elements 9 each has the threaded shaft 12, and the washer 30, and is mounted to a bicycle 1, for example to two connection points 2 formed above each other at a front side of a head tube 1' (see Fig. 1) of the bicycle 1. For clarity of illustration the first
25 connectors 9 are shown without the bicycle 1 in Fig. 17c. When connecting the first connector elements 9 to the second connector elements 110 the respective disc 11 (see Figs. 6, 7 and 14) of the respective first connector element 9 is inserted into the larger, lower part of the open mouth 120' having the shape of a keyhole, and then the front luggage carrier 106 is lowered, making the smaller, upper part of the open mouth 120'
30 having the shape of a keyhole of the respective second connector element 110 slide onto the raised part 14 (see Fig. 14) of the respective first connector element 9. Thereby, the respective disc 11 of the respective first connector elements 9 are held in the space 121 between the outer and inner parts 118, 120 of the second connector element 110.

Fasteners in the form of bolts 26, preferably of the type illustrated in Figs. 12
35 and 13, are also used to connect the first and second connecting elements 9, 110 of the

alternative embodiment. With the second connector elements 110 slid onto the first connector elements 9, respective bolt 26 is screwed into the through openings 119 from the side facing the inner part 120 of the second connector element 110, is then screwed downwards, whereby the head 28 of the respective bolt 26 will go into the opening 13 of the respective first connector element 9 in a manner similar to that described hereinabove with reference to Fig. 16. Thereby the respective second connector elements 110 are locked to the respective first connector elements 9, meaning that the appliance, in this case the front luggage carrier 106, is locked to the connection points 2 of the head tube 1' of the bicycle 1 illustrated in Fig. 1.

CLAIMS

1. A bicycle connector (8; 108) for connecting appliances (3, 4, 5, 6, 7; 106) to a bicycle (1), wherein the connector (8; 108) comprises a first connector element (9), a second connector element (10, 25; 110) and a fastener, wherein the first connector
5 element (9) is to be fixed to the bicycle (1), wherein the second connector element (10, 25; 110) is to be fixed to an appliance (3, 4, 5, 6, 7; 106) and is to be slid onto the first connector element (9) and wherein the first connector element (9) and the second connector element (10, 25; 110) are held together by means of the fastener,
characterized in that the first connector element (9) comprises a disc (11) and a
10 threaded shaft (12) protruding from the centre on one side of the disc (11).

2. The bicycle connector (8; 108) of claim 1, wherein the threaded shaft (12) has an outer thread, and that the disc (11) has an opening (13) in the centre on the side opposite to the threaded shaft (12), wherein the opening (13) is adapted to receive the fastener.

15 3. The bicycle connector (8; 108) of claim 1 or 2, wherein the threaded shaft (12) of the first connector element (9) is placed on a raised part (14) at the disc (11), wherein the threaded shaft (12) is to be screwed into the bicycle (1), said raised part (14) being adapted for creating a distance between the bicycle (1) and the disc (11) to enable that the second connector element (10, 25; 110) slides onto the disc (11).

20 4. The bicycle connector (8, 108) of claim 3, wherein the raised part (14) is circular in plan view with two cut surfaces (16) on opposite sides.

5. The bicycle connector (8; 108) of any of the previous claims, wherein the second connector element (10, 25; 110) comprises an outer part (18; 118), an inner part (20; 120) and a wall (22; 122) between the outer and inner parts (18, 20; 118, 120),
25 whereby a space (21; 121) is formed between the outer part (18; 118) the inner part (20; 120) and the wall (22; 122).

6. The bicycle connector (8; 108) of claim 5, wherein the outer part (18; 118) of the second connector element (10, 25; 110) has a through opening (19; 119) in the centre, which through opening (19; 119) has an inner thread and is adapted for having
30 the fastener, having the form of a bolt (26), screwed therein.

7. The bicycle connector (8) of claim 6, wherein a recess (23) is formed on the side of the outer part (18) of the second connector element (10, 25) facing the inner part (20), which recess (23) begins at a periphery of the outer part (18) and covers the through opening (19) of the outer part (18).

8. The bicycle connector (8) of anyone of claims 5-7, wherein the inner part (20) of the second connector element (10, 25) has the general form of a partial ring in plan view, which partial ring has a mouth (20') adapted to receive the first connector element (9).

5 9. The bicycle connector (8) of anyone of claims 5-8, wherein the second connector element (10, 25) comprises one or more connection shafts (17) protruding from at least one of the outer part (18), the inner part (20) and the wall (22) of the second connector element (10, 25), the one or more connection shafts (17) being adapted for fixing the second connector element (10) to the appliance (7).

10 10. The bicycle connector (108) of anyone of claims 1-6, wherein an outer part (118) of the second connector element (110) is formed in a first plate (117) and an inner part (120) of the second connector element (110) is formed in a second plate (110'), a wall (122) connecting the first and second plates (117, 110'), wherein a space (121) is formed between the first and second plates (117, 110') and is adapted for receiving a
15 disc (11) of the first connector element (9).

11. The bicycle connector (108) of claim 10, wherein the inner part (120) of the second connector element (110) is provided with an open mouth (120') having the shape of a keyhole and being adapted for being slid onto the first connector element (9).

20 12. The bicycle connector (108) of claim 10 or 11, wherein the first plate (117) is connected to the appliance (106).

13. The bicycle connector (8; 108) of any one of claims 6-12, wherein the fastener has a head (28) at one end and an opening (29) at an opposite end, which opening (29) is adapted to receive a spanner and wherein the fastener is screwed into the through opening (19; 119) of the second connector element (10, 25; 110) from the side
25 of the outer part (18; 118) of the second connector element (10, 25; 110) facing the inner part (20; 120) of the second connector element (10, 25; 110).

14. The bicycle connector (8; 108) of claim 2 and any of the claims 6-13, wherein with the second connector element (10, 25; 110) slid onto the first connector element (9) the disc (11) of the first connector element (9) is placed in the space (21; 121) of the second connector element (10, 25; 110), defined by the outer and inner parts (18, 20; 118, 120) and the wall (22; 122), and the through opening (19; 119) of the second connector element (10, 25; 110) is in line with the opening (13) of the first connector element (9).

35 15. The bicycle connector (8; 108) of claim 3 and claim 8 or 11 and any one of claims 2, 4-7, 9-10 and 12-14, wherein the raised part (14) of the first connector element

(9) is received in the mouth (20'; 120') at the inner part (20; 120) of the second connector element (10, 25; 110).

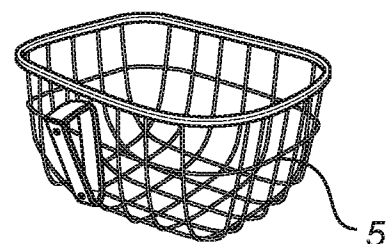
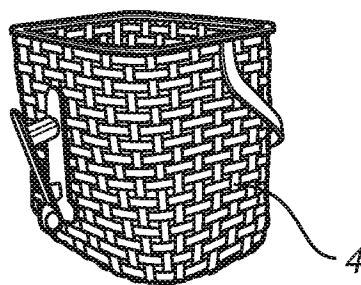
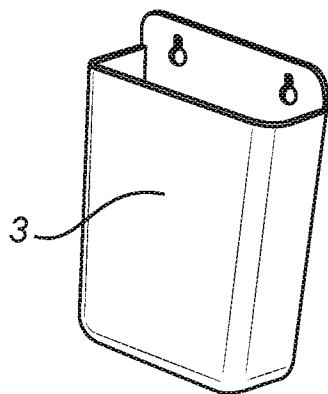
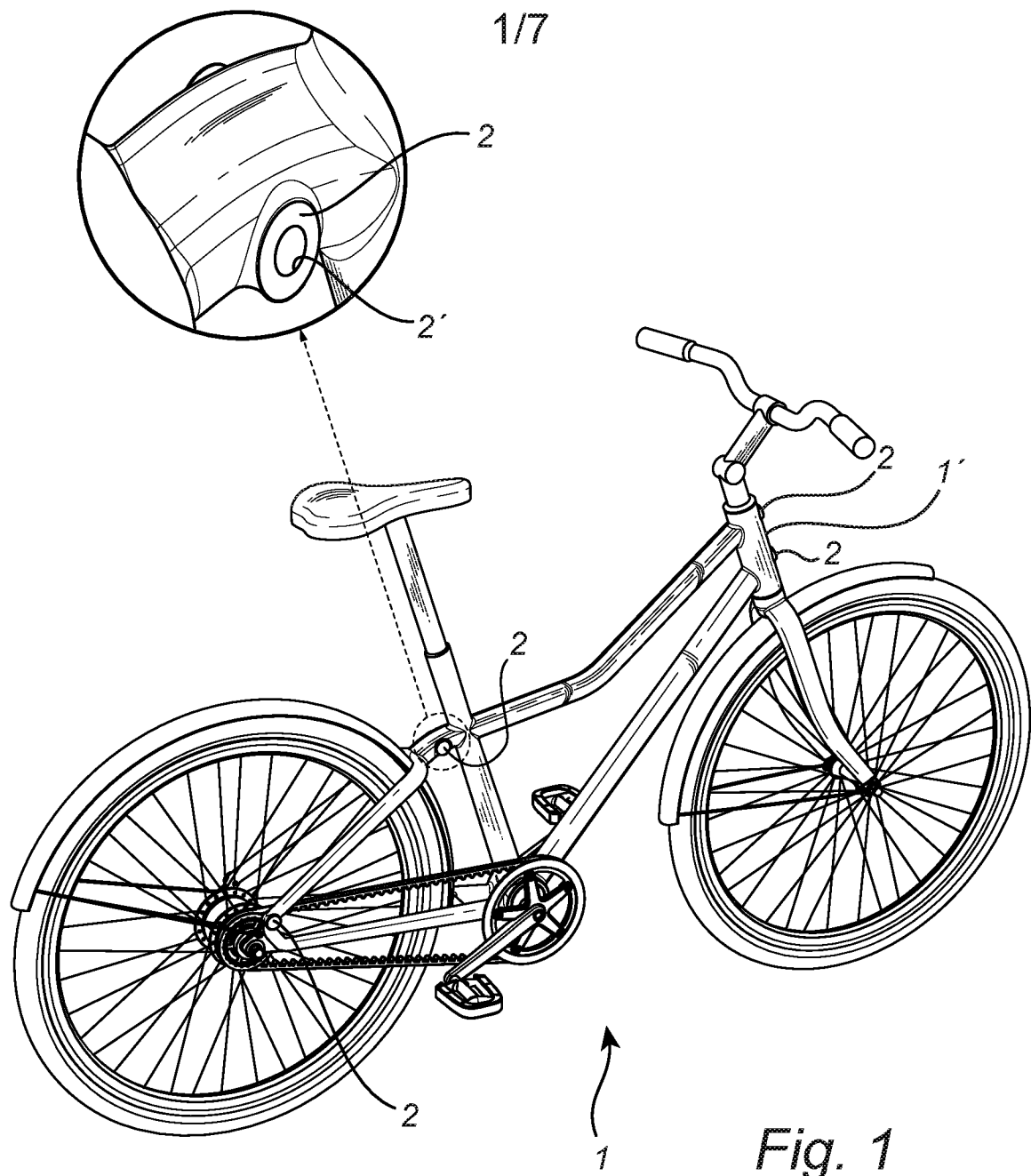
16. The bicycle connector (8; 108) of any one of the preceding claims, wherein a head (28) of the fastener is to be screwed down into an opening (13) of the first
5 connector element (9) when the second connector element (10, 25; 110) is slid onto the first connector element (9) to lock the second connector element (10, 25; 110) to the first connector element (9).

17. The bicycle connector (8; 108) of any one of the preceding claims, wherein the disc of the first connector element (9) is a circular disc (11).

10 18. The bicycle connector (8; 108) of any one of claims 3-17, wherein the connector (8; 108) further comprises a washer (30) to be placed on the threaded shaft (12) of the first connector element (9) and wherein an inner diameter of the washer (30) is smaller than an outer diameter of the raised part (14) of the first connector element (9).

15 19. A bicycle (1) to which one or more bicycle connectors (8; 108) according to any of the previous claims are fastened at one or more connection points (2) of the bicycle (1) to connect one or more appliances (3, 4, 5, 6, 7; 106) to the bicycle (1), wherein each connection point (2) is provided with an opening (2') with an inner thread.

20 20. A bicycle (1) according to claim 19, wherein a first connector element (9) has been fixed to the bicycle (1) by screwing the threaded shaft (12) of the first connector element (9) into an opening (2') of the connection point (2).



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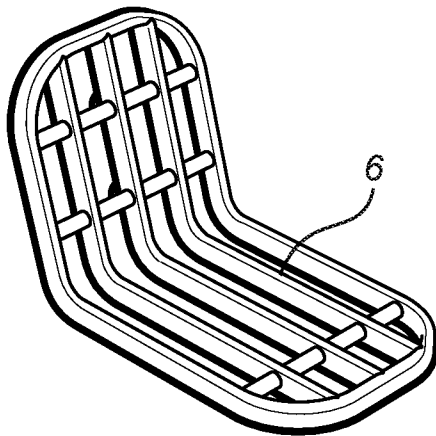


Fig. 2d

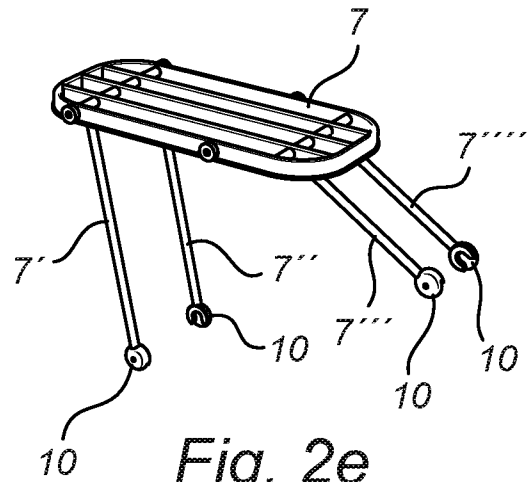


Fig. 2e

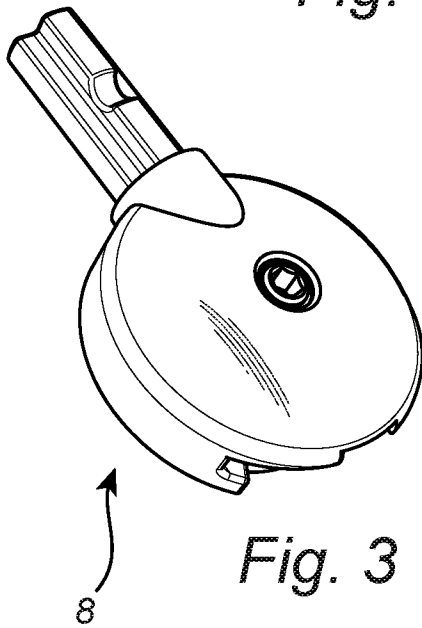


Fig. 3

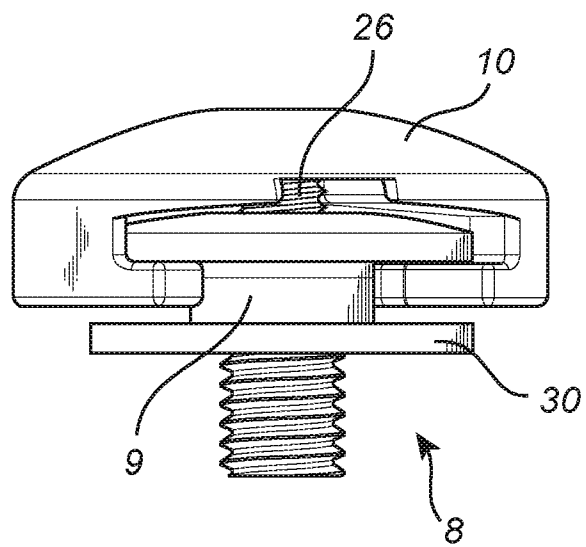


Fig. 4

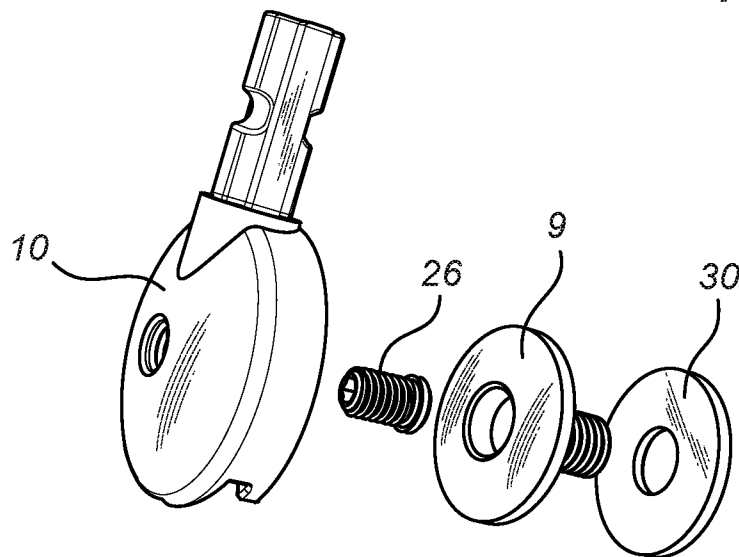
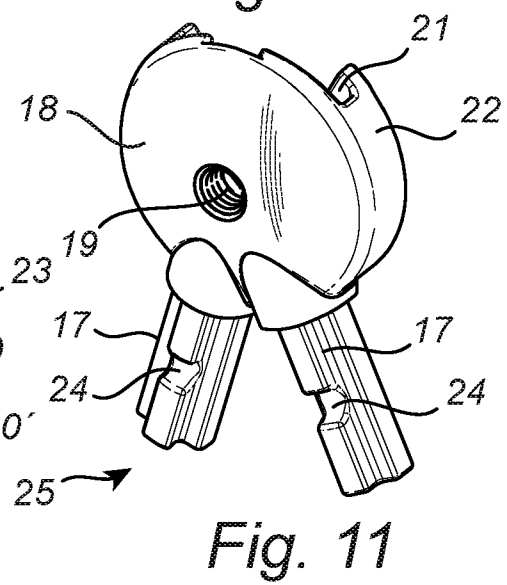
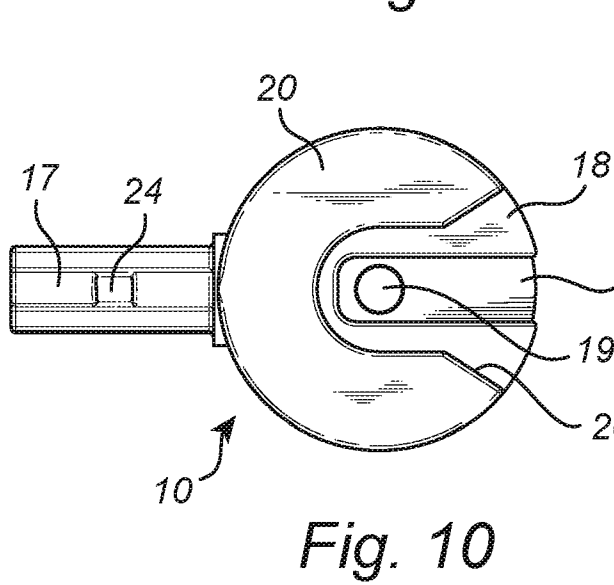
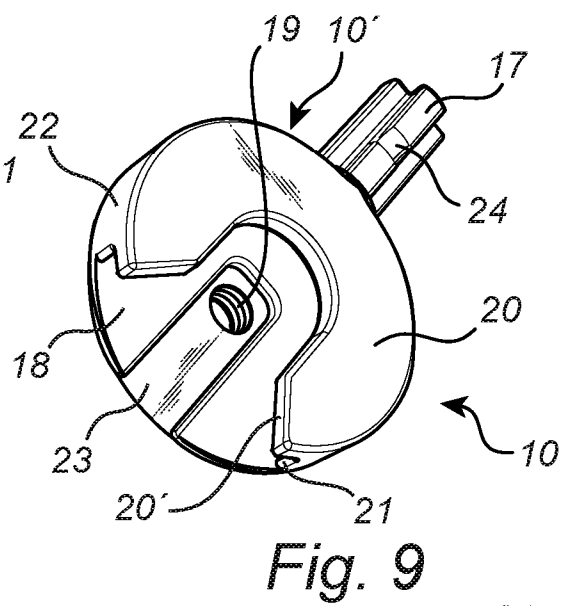
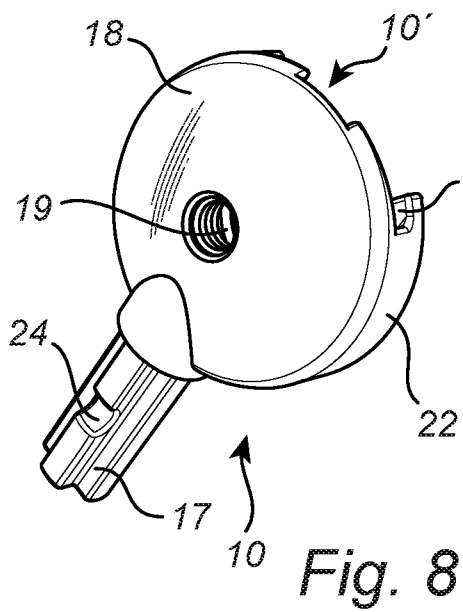
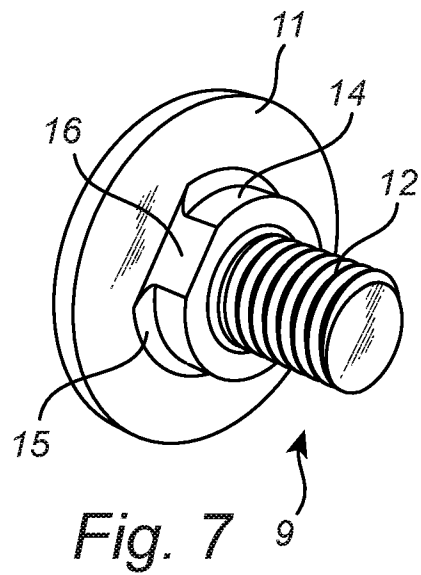
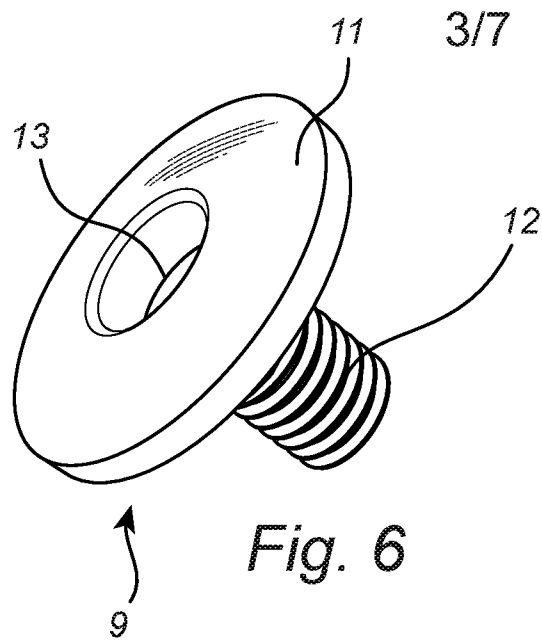


Fig. 5



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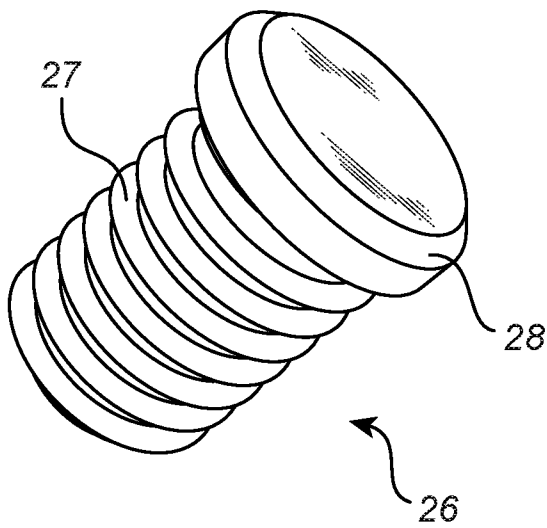


Fig. 12

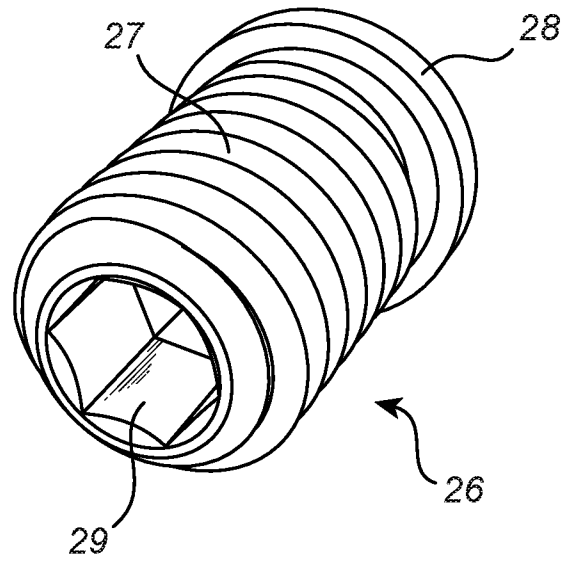


Fig. 13

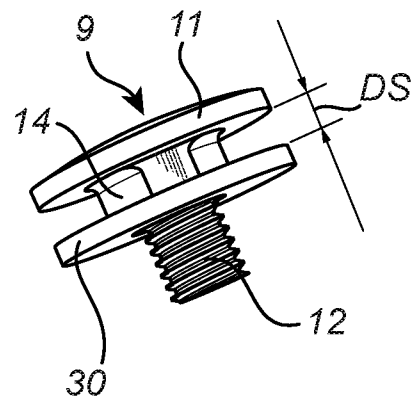
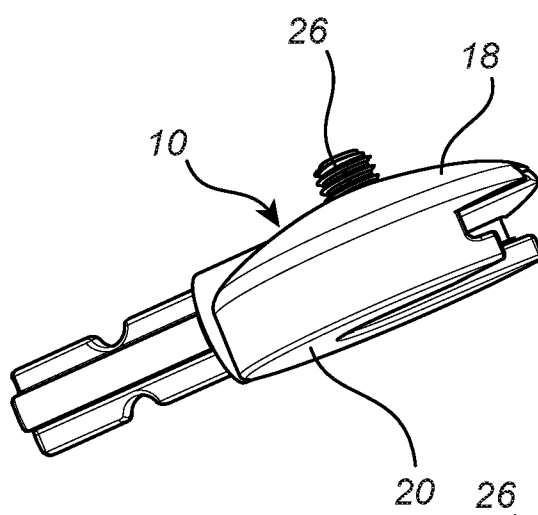


Fig. 14

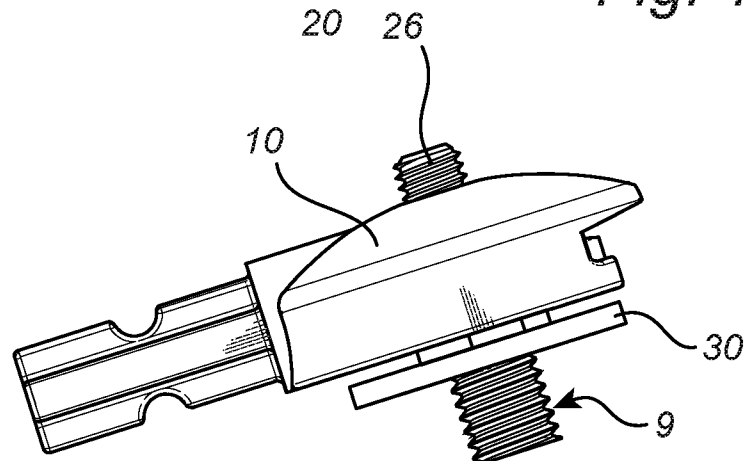
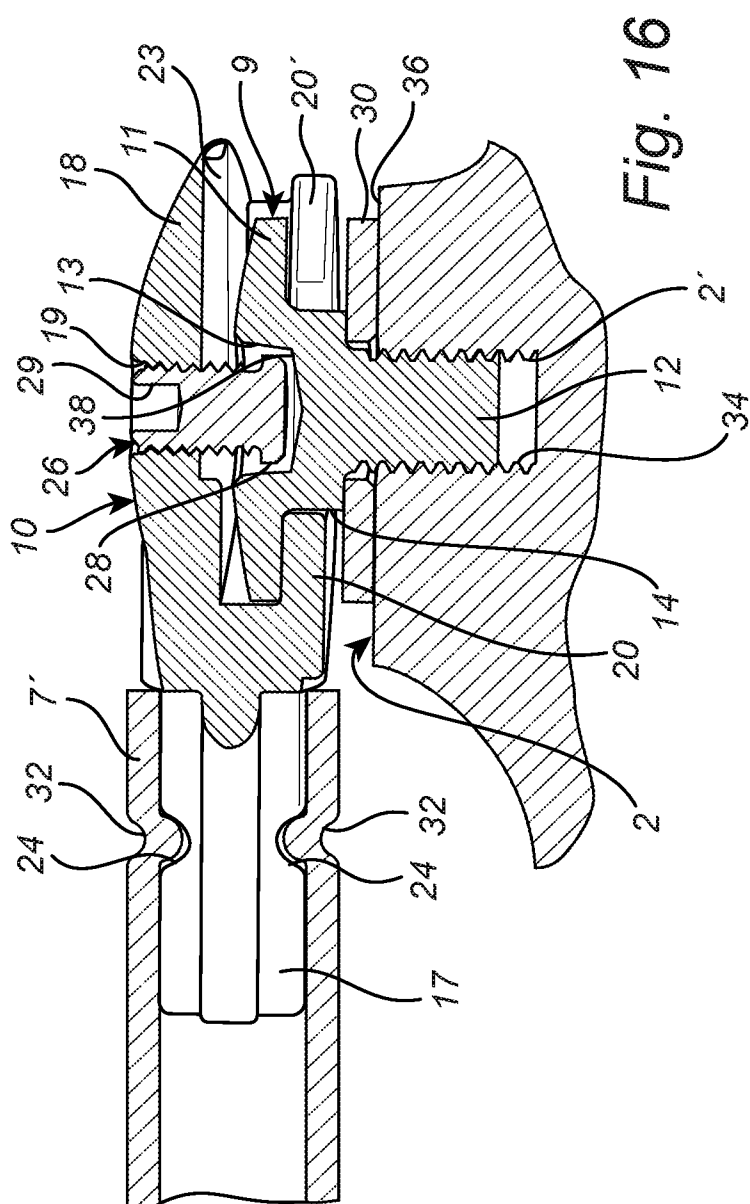


Fig. 15



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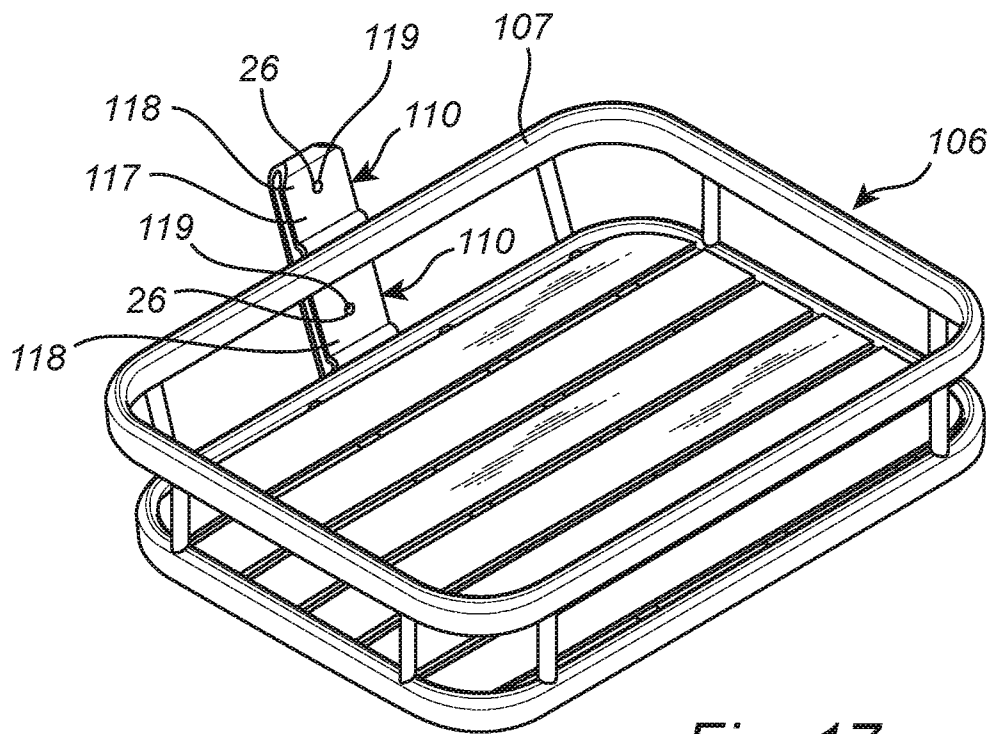


Fig. 17a

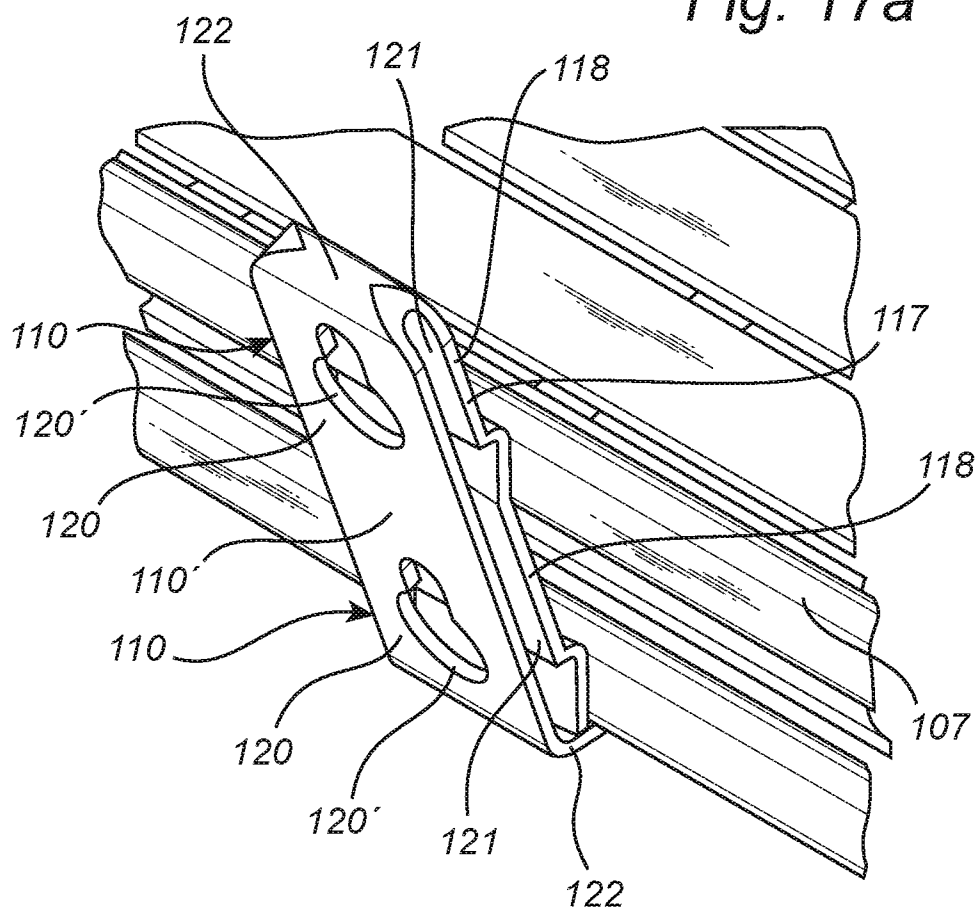


Fig. 17b

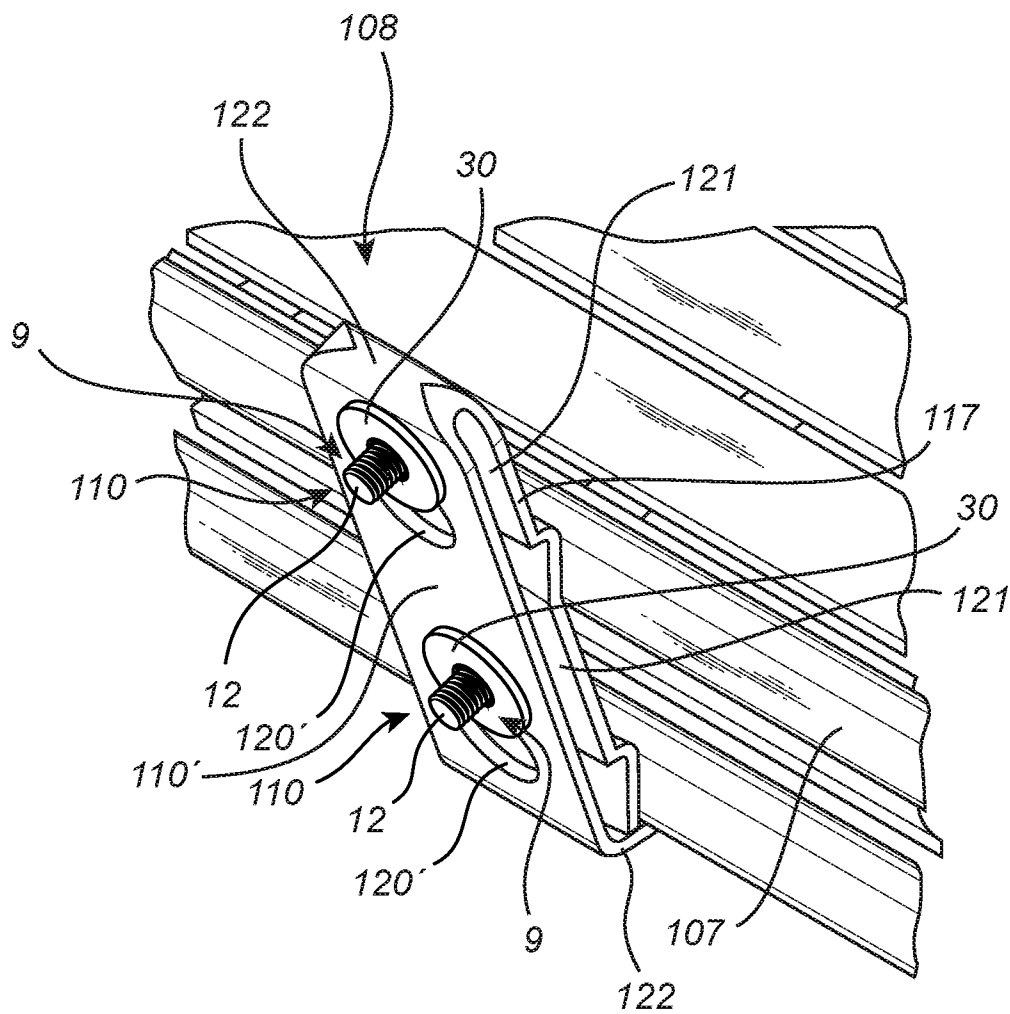


Fig. 17c

INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE2016/050544

A. CLASSIFICATION OF SUBJECT MATTER

IPC: see extra sheet

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC: B62J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE, DK, FI, NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, PAJ, WPI data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 4318167 A1 (INTERSENG HARDWARE CO LTD), 8 December 1994 (1994-12-08); whole document --	1-20
A	US 20100127030 A1 (MUEHLBERGER ALOIS), 27 May 2010 (2010-05-27); whole document --	1-20
A	US 8931795 B1 (GU BLACK), 13 January 2015 (2015-01-13); whole document --	1-20
A	US 20100237120 A1 (MUEHLBERGER ALOIS), 23 September 2010 (2010-09-23); whole document --	1-20

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

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“O” document referring to an oral disclosure, use, exhibition or other means

“P” document published prior to the international filing date but later than the priority date claimed

“T” later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

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“&” document member of the same patent family

Date of the actual completion of the international search

18-08-2016

Date of mailing of the international search report

18-08-2016

Name and mailing address of the ISA/SE

Patent- och registreringsverket

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE2016/050544

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 20080111344 A1 (CHUANG LOUIS), 15 May 2008 (2008-05-15); whole document -- -----	1-20

Continuation of: second sheet
International Patent Classification (IPC)
B62J 11/00 (2006.01)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/SE2016/050544

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			EP	2081815 A1	29/07/2009
			WO	2008006577 A1	17/01/2008
US	8931795 B1	13/01/2015	NONE		
US	20100237120 A1	23/09/2010	NONE		
US	20080111344 A1	15/05/2008	US	7654550 B2	02/02/2010