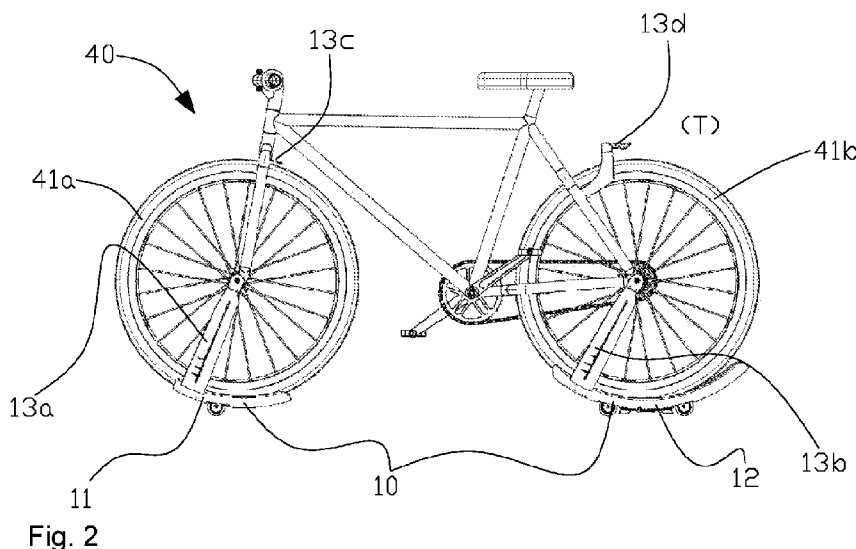




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(54) Title: PROTECTION AND TRANSPORT DEVICE



(57) Abstract: A protection, transport and parking device (10) for a vehicle (40) with two or more wheels comprises front mudguard means (11) to cover at least partially the front wheel (41a) of the two-wheel vehicle (40), rear mudguard means (12) to cover at least partially the rear wheel (41b) of the two-wheel vehicle (40), connecting means (13a, 13b, 13c, 13d) to connect the mudguard means (11,12) to a structure of said two-wheel vehicle (40); the protection and transport device (10) further includes rolling means (14a, 14b, 14c) provided on the mudguard means (11,12); the mudguard means (11,12) and the connecting means (13a, 13b, 13c, 13d) are configured so as to provide two different use configurations (P,T) of the protection and transport device (10). The two different use configurations include a protection position (P) in which the mudguard means (11,12) is arranged so as to protect the user from splashes and/or debris coming from the wheels of the vehicle (40), and a transport position (T) in which the mudguard means (11, 12) is arranged so as to permit the transport of the two-wheel vehicle (40) along a surface like a floor via said rolling means (14a, 14b, 14c) so as to



RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH,  
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prevent the wheels (41a, 41b) of the vehicle (40) coming into contact with, and dirtying, the floor.

## **Protection and transport device**

### **Background of the invention**

5 [0001] The present invention relates to a device for a vehicle with two or more wheels, in particular for protecting said vehicle with two or more wheels from the dirt present on the wheels, from the possible presence of water, and for the facilitated transport and the parking in a vertical and stand-alone position of said vehicle with two or more wheels.

### **Prior art**

10 [0002] The widespread use of means of transport like bicycles or other vehicles with two or more wheels is known. Sustainable means of transport are today particularly suitable for urban journeys. In particular, bicycles (electric and non-electric) provide an excellent compromise between sustainability, cost and speed of travel in an urban environment. For this reason, today, bicycles are no longer just a hobby but have become real means of transport just like the car, and it is in fact increasingly common to see people going to work  
15 on their own bicycle, whether electrically assisted or not.

[0003] However, the bicycles known nowadays have evident criticalities related to the difficulty of storage, especially at home.

[0004] It is in fact known that scooters and bicycles can be parked easily owing to the stand with which many of them are fitted. Despite this, it would be desirable to also permit  
20 secure storage inside locked places (for example a dwelling or a workplace) of the aforesaid vehicles without however radically changing their structure.

[0005] It is in fact known that when a bicycle is placed in domestic storage it brings all the dirt present on the wheels inside the dwelling. Further, a bicycle has significant problems of easy handling.

25 [0006] In the light of what has been set out above, the need is thus felt to provide a solution that enables to overcome the drawbacks or limits that have been pointed out above.

### **Objects of the invention**

[0007] One object of the present invention is to provide a device for protection transport and for vertical and independent parking for a two-wheel vehicle that enables the drawbacks  
30 of the prior art to be overcome and promotes urban journeys and not just urban journeys by bicycle, eliminating the problem of parking the means outside.

[0008] Another object of the present invention is to provide a technical solution that permits the vehicle to be transported and stored without its wheels touching the ground, so

as to eliminate undesired risks of dirtying of the latter, in particular in domestic environments.

5 [0009] A further object of the present invention is to offer a protection and transport device for a two-wheel vehicle that also acts as a collector of water and/or mud and/or debris during storage.

[0010] Another object of the present invention is to provide a protection and transport device for a two-wheel vehicle that protects the user from splashes and/or debris coming from the wheels of the vehicle.

10 [0011] Another object of the present invention is to provide a protection and transport device for a two-wheel vehicle that makes it possible to store the vehicle inside closed places without dirtying and without the need to rest the vehicle against walls and/or parts of the furnishings.

#### **Brief description of the invention**

15 These and other objects and advantages are achieved by a device for protecting from the dirt present on the wheels, from the possible presence of water, and for facilitating transport and parking of a vehicle with two or more wheels, as defined in the appended claims.

#### **Brief description of the drawings**

20 [0012] The invention can be better understood and implemented with reference to the appended drawings that illustrate an embodiment thereof by way of non-limiting example, in which:

figure 1 is a side view of a protection, transport and parking device according to the present invention, fitted to a two-wheel vehicle, and arranged in a protection configuration;

25 figure 2 is a side view of the protection, transport and parking device according to the present invention, arranged in a transport configuration;

figure 3 is an exploded view of an embodiment of rear mudguard means according to the present invention;

figure 4 is an exploded view of an embodiment of front mudguard means according to the present invention;

30 figure 5 is a perspective view of the rear mudguard means according to the present invention;

figure 6 is a perspective view of an embodiment of a stand unit, included in the protection, transport and parking device according to the present invention, wherein

the stand unit comprises an oblong body arranged in a retracted position.

figure 7 is a detail of figure 6 in which some components are more visible of the stand unit when the oblong body is in the retracted position;

figure 8 is a perspective view of the stand unit, according to the present invention,  
5 wherein the oblong body is in a protruding position;

figure 9 is a detail of figure 8 in which some components are more visible of the stand unit when the oblong body is in the protruding position.

### **Detailed description**

10 [0013] The general features of the present invention will be illustrated below through an embodiment provided by way of non-limiting example.

[0014] With reference to figures 1 and 2, a protection, transport and parking device 10 is disclosed for a vehicle with two or more wheels 40 comprising front mudguard means 11, rear mudguard means 12 and connecting means 13a,13b,13c,13d for connecting said mudguard means 11,12 to a structure of the two-wheel vehicle 40. The mudguard means  
15 11,12 is of a shape and measurement such as to cover, respectively, at least partially the front wheel 41a and the rear wheel 41b of the two-wheel vehicle 40. The mudguard means can be made of plastics, for example of polypropylene. Nevertheless, other desired materials can be chosen provided that they are suitable for the use for which they are intended.

[0015] As visible in detail in figures 3 and 4, the connecting means 13a,13b,13c,13d  
20 comprises arm means 13a,13b and hook means 13c,13d. In particular, the arm means 13a,13b is fixed at one end to the respective mudguard means 11,12 and at the other end to respective hub hooking units 15a,15b. The arm means 13a,13b includes shelf means 16a,16b that, as explained below, are of help to a user for moving the mudguard means from a protection position to a transport position.

25 [0016] The geometric configuration and positioning of the arm means 13a,13b and of the hook means 13c,13d can be chosen in a desired manner depending on specific needs and the geometry of the vehicle for which they are intended.

[0017] The hook means can be configured for releasable elastic coupling of the snap-fit type. Other embodiments of hook means are possible, for example, of magnetic type or other  
30 types of removable connection.

[0018] As visible in figure 2, the hook means 13c,13d is intended to be positioned respectively under the fork and under the rear brakes of the two-wheel vehicle 40.

[0019] The hub hooking units 15a,15b are configured to permit a connection of rotatable

type and to permit locking in determined position of the device 10.

[0020] According to a possible non-limiting embodiment the hub hooking units 15a,15b include preload springs (not shown).

[0021] The mudguard means is further provided with rolling means 14a,14b,14c, the function of which is to permit the transport of the vehicle when the mudguard means is arranged in the transport position T.

[0022] The rolling means, in particular, comprises transport wheels 14a,14b,14c.

[0023] The rolling means, in particular the transport wheels 14a,14b,14c, are housed in blind recesses 21a,21b,21c obtained on the mudguard means 11,12 itself, as visible in figure 5. The transport wheels 14a,14b,14c can be, for example, rotatable around respective rotation axes Ra,Rb,Rc that, during use, are parallel to the rotation axes of the wheels 41a,41b of the two-wheel vehicle 40. In particular, as visible in the attached figures, two rear transport wheels 14b,14c, which are positioned on the rear mudguard means 12, and a front transport wheel 14a, positioned on the front mudguard means 11, are present.

[0024] Lastly, as visible in figures 6 and 8, the protection and transport device 10 includes a stand unit 17 arranged on the rear mudguard means 12. The stand unit 17 has the function of enabling the vehicle to be placed and parked in a vertical and stand-alone position.

[0025] With reference to figures 7 and 9, the stand unit 17 comprises a movable oblong body 18 and corresponding retaining means 19 that can be, for example, of mechanical and/or magnetic type. The oblong body 18, in particular, is rotatably movable around a pin 20 and includes foot elements 22.

[0026] The arrangement of the stand unit 18 and of the transport wheels 14a,14b,14c enables the overall dimensions of the mudguard means 11,12 to be optimized, and in this manner the drivability of the vehicle 40 not to be compromised.

[0027] In particular, the connecting means 13a,13b,13c,13d is configured so as to provide two different usage configurations of the protection and transport device 10, i.e. a protection position P and a transport position T. The arm means 13a,13b in fact connects the mudguard means 11,12 to the hubs of the two-wheel vehicle 40 by hub hooking units 15a,15b so as to permit rotation of the mudguard means 11,12 from the protection position P to the transport position T.

[0028] When the protection and transport device 10 is in the protection position P (figure 1), the mudguard means 11,12 is arranged so as to protect the user from splashes

and/or debris coming from the wheels of the vehicle 40 during normal usage of the vehicle, i.e. during travel; in other words, the protection and transport device 10 performs the function commonly performed by a mudguard. During pedalling, the two mudguard means 11,12 are kept stationary in that position by the preloaded springs (not shown) included in the hub hooking units 15a,15b and by the hook means 13c,13d that perform a retaining, for example elastic, action.

**[0029]** Otherwise, when the protection and transport device 10 is oriented in the transport position T (figure 2), the mudguard means 11,12 is arranged so as to permit the transport of said two-wheel vehicle 40 along a surface like a floor via the transport wheels 14a,14b,14c so as to prevent the wheels 41a,41b of the vehicle 40 coming into contact with, and dirtying, the floor. The transport wheels 14a,14b,14c, in fact, are housed inside blind recesses 21a,21b,21c (which are visible in figure 5) so as to enable the mudguard means 11,12 to act as water and/or mud and/or debris collectors when arranged in the transport position T.

**[0030]** The rotation of the mudguard means 11,12 from the protection position P to the transport position T is achieved by a thrust exerted by the user on the shelf means 16a,16b so as to oppose and overcome the urging exerted by the hook means 13c,13d and by the preload springs (not shown). The mudguard means 11,12 is maintained in the transport position T by the weight force of the two-wheel vehicle 40 itself.

**[0031]** In order to avoid having to rest the two-wheel vehicle 40 on a wall and/or part of the furnishings, the protection and transport device 10 includes a stand unit 17 configured to support the vehicle 40 vertically in the transport position T. The oblong body 18, in fact, can be arranged in a retracted position R (visible in figures 6 and 7), in which the oblong body 18 is contained in the overall transverse dimensions of the rear mudguard means 12, and a protruding position A (visible in figures 8 and 9), in which the oblong body 18 on the other hand projects transversely to the rear mudguard means 12. In particular, the retaining means 19 included in the stand unit is configured so as to retain the oblong body 18 in the retracted position R during pedalling.

**[0032]** Lastly, when the oblong element is arranged in the protruding position A, the foot means 22 projects to the floor from both sides of the rear mudguard means so as to make vertical positioning of the two-wheel vehicle 40 during storage more stable.

**[0033]** From what has been set out above, it is clear that the protection and transport device according to the invention successfully achieves all the set objects mentioned

previously.

**[0034]** What has been disclosed and shown in the attached drawings has been provided by way of example of the innovative features of the protection and transport device.

**[0035]** In practice, the materials, as far as they are compatible with the specific use and  
5 with the respective single components for which they are intended, can be chosen appropriately in function of the required requisites and in function of the available prior art. Possible variations on and additions to what has been disclosed and illustrated in the attached drawings are possible.



CLAIMS

1. Protection and transport device (10) for a vehicle (40) with two or more wheels comprising:
  - 5 - front mudguard means (11) for covering at least partially the front wheel (41a) of said two-wheel vehicle (40),
  - rear mudguard means (12) for covering at least partially the rear wheel (41b) of said two-wheel vehicle (40),
  - 10 - connecting means (13a,13b,13c,13d) for connecting said mudguard means (11,12) to a structure of said two-wheel vehicle (40),  
characterized in that it further comprises rolling means (14a,14b,14c) provided on said mudguard means (11,12), and in that said mudguard means (11,12) and said connecting means (13a,13b,13c,13d) are configured so as to provide two different use configurations (P,T) of said protection and transport device (10), wherein said two use configurations comprise a protection position (P) in which said mudguard means (11,12)  
15 is arranged so as to protect the user from splashes and/or debris coming from the wheels of the vehicle (40), and a transport position (T) in which said mudguard means (11,12) is arranged so as to permit the transport of said two-wheel vehicle (40) along a surface like a floor by said rolling means (14a,14b,14c) so as to prevent the wheels (41a,41b) of  
20 said vehicle (40) coming into contact with, and dirtying, the floor.
2. Protection and transport device (10) according to claim 1, wherein said connecting means (13a,13b,13c,13d) is configured to enable said mudguard means (11,12) to move from said protection position (P) to said transport position (T).
3. Protection and transport device (10) according to claim 2, wherein said connecting  
25 means (13a,13b,13c,13d) includes arm means (13a,13b) configured to connect said mudguard means (11,12) to the hubs of said two-wheel vehicle (40) by hub coupling groups (15a,15b) and to enable said mudguard means (11,12) to be rotated from said protection position (P) to said transport position (T).
4. Protection and transport device (10) according to claim 3, wherein said connecting  
30 means (13a,13b,13c,13d) includes hook means (13c,13d) and said hub coupling groups (15a,15b) includes preload springs for urging said mudguard means (11,12) to said protection position (P).

5. Protection and transport device (10) according to claim 4, wherein said hook means (13c,13d) is configured to perform a retaining action elastically.
6. Protection and transport device (10) according to claim 4 or 5, wherein said arm means (13a,13b) includes shelf means (16a,16b) that is suitable for receiving a thrust from the user to oppose the stress exerted by said hook means (13c,13d) and said preload springs and permit movement of said mudguard means (11,12) from said protection position (P) to said transport position (T).
7. Protection and transport device (10) according to any one of the preceding claims, wherein said rolling means is housed in blind recesses (21a,21b,21c) obtained on said mudguard means (11,12) such that said mudguard means (11,12) fulfills, when arranged in said transport position (T), also the function of water and/or mud and/or debris collectors.
8. Protection and transport device (10) according to any one of the preceding claims, wherein said rolling means (14a, 14b, 14c) is transport wheels.
9. Protection and transport device (10) according to claim 8, wherein said transport wheels (14a,14b,14c) are rotatable around respective rotation axes (Ra,Rb,Rc) that, during use, are arranged parallel to the rotation axes of the wheels (41a,41b) of the two-wheel vehicle (40).
10. Protection and transport device (10) according to claim 8 or 9, wherein said transport wheels (14a,14b,14c) comprises two rear transport wheels (14b,14c) positioned on said rear mudguard means (12) and a front transport wheel (14a) positioned on said front mudguard means (11).
11. Protection and transport device (10) according to any one of the preceding claims, wherein said protection and transport device (10) includes a stand unit (17) for parking said vehicle, said stand unit (17) being configured to support, in said transport position (T), said two-wheel vehicle (40) in a vertical position without the need to rest on a wall and/or furnishing part.
12. Protection and transport device (10) according to claim 11, wherein said stand unit (17) is arranged on said rear mudguard means (12).
13. Protection and transport device (10) according to claim 12, wherein said stand unit (17) comprises an oblong body (18) that is movable between a retracted position (R), in which said oblong body (18) is contained in the transverse overall dimensions of said rear mudguard means (12), and a protruding position (A), in which said oblong body

(18) projects transverse to said rear mudguard means (12) so that said stand unit (17) supports said two-wheel vehicle (40) in a vertical position.

14. Protection and transport device (10) according to claim 13, wherein said stand unit (17) includes retaining means (19) so as to retain said oblong body (18) in said retracted position (R).
- 5
15. Protection and transport device (10) according to claim 14, wherein said retaining means (19) is of mechanical and/or magnetic type.
16. Protection and transport device (10) according to claim 13, wherein said oblong body (18) is movable through rotation around a pin (20) so as to project transversely from both sides of said rear mudguard means (12), when said oblong body (18) is arranged in said protruding position (A).
- 10
17. Protection and transport device (10) according to claim 16, wherein said oblong body (18) includes foot elements (22) that project to the floor from both sides of said rear mudguard means (12) when said oblong body (18) is arranged in said protruding position (A), so as to make the vertical positioning of said two-wheel vehicle (40) more stable.
- 15
18. Protection and transport device (10) according to any one of the preceding claims, wherein said mudguard means (11,12) is made of plastics.
19. Protection and transport device (10) according to any one of the preceding claims, wherein said mudguard means (11,12) is made of polypropylene.
- 20



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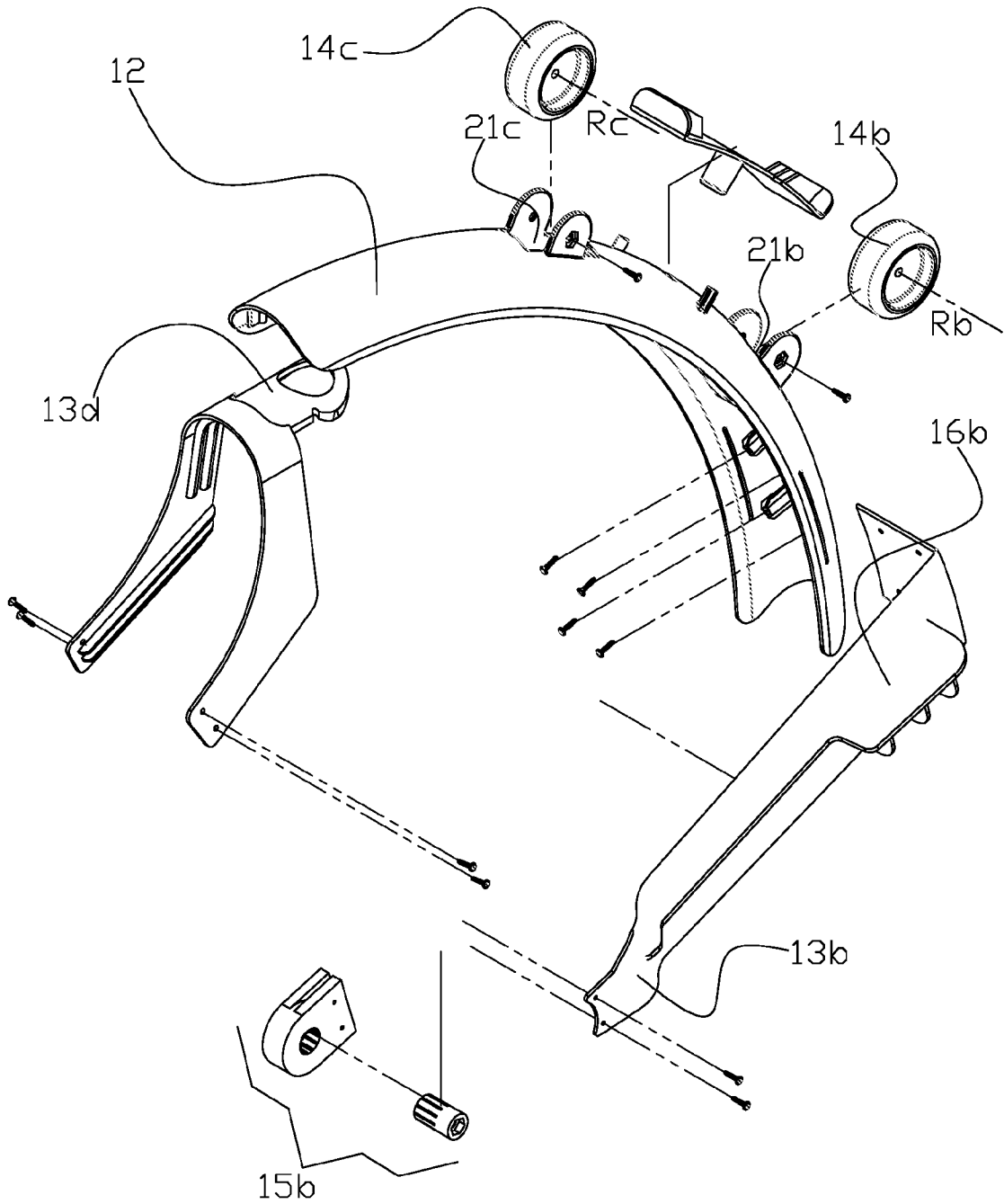


Fig. 3

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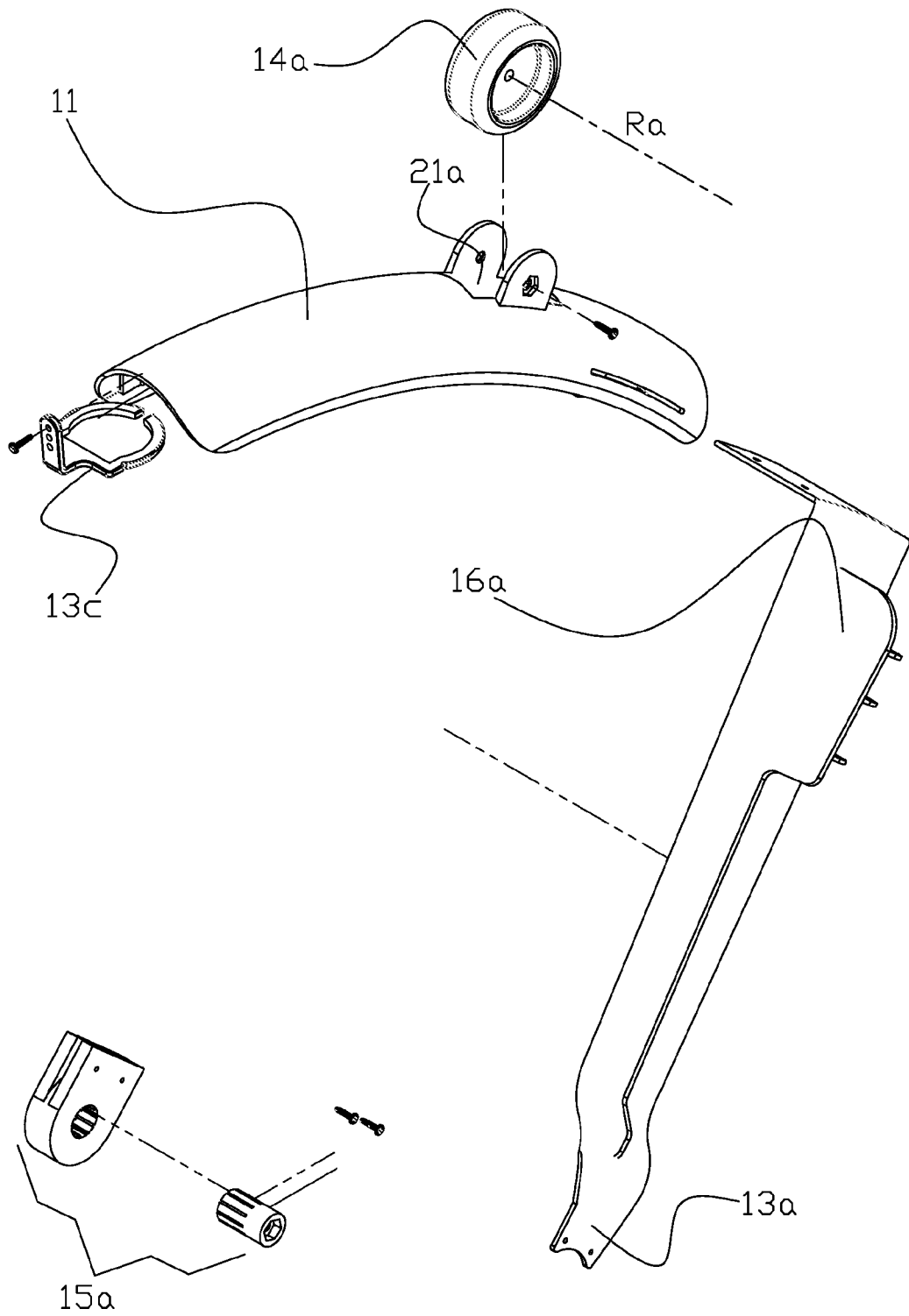


Fig. 4

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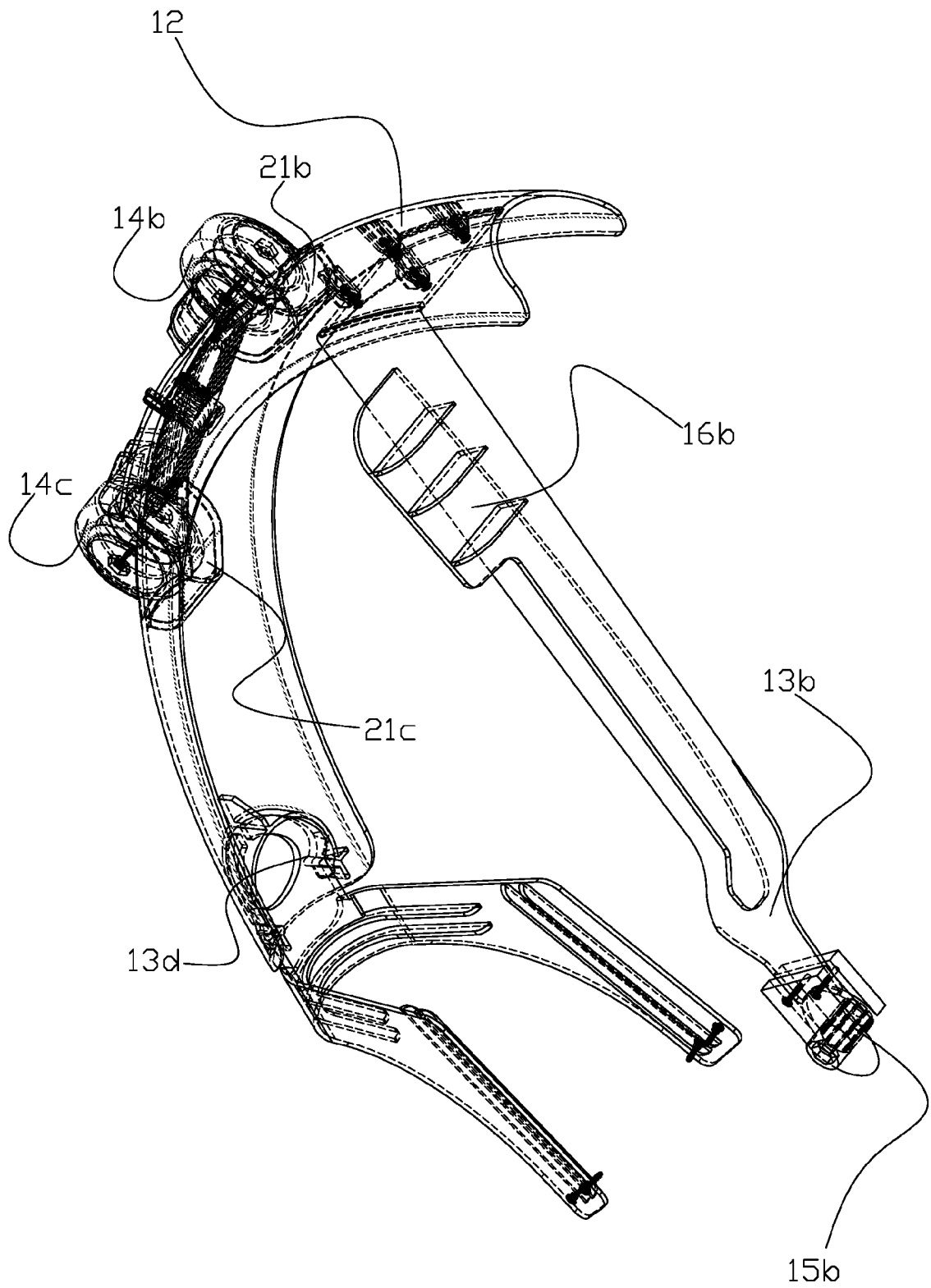


Fig. 5

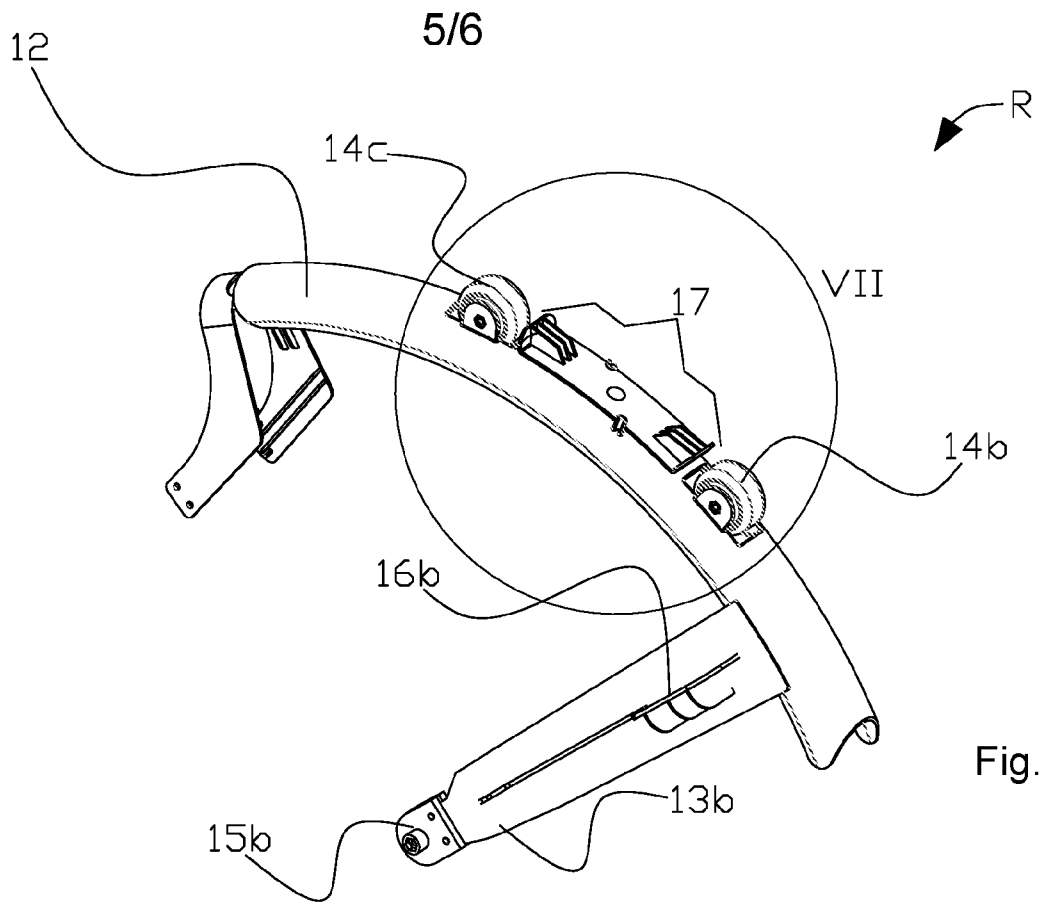


Fig. 6

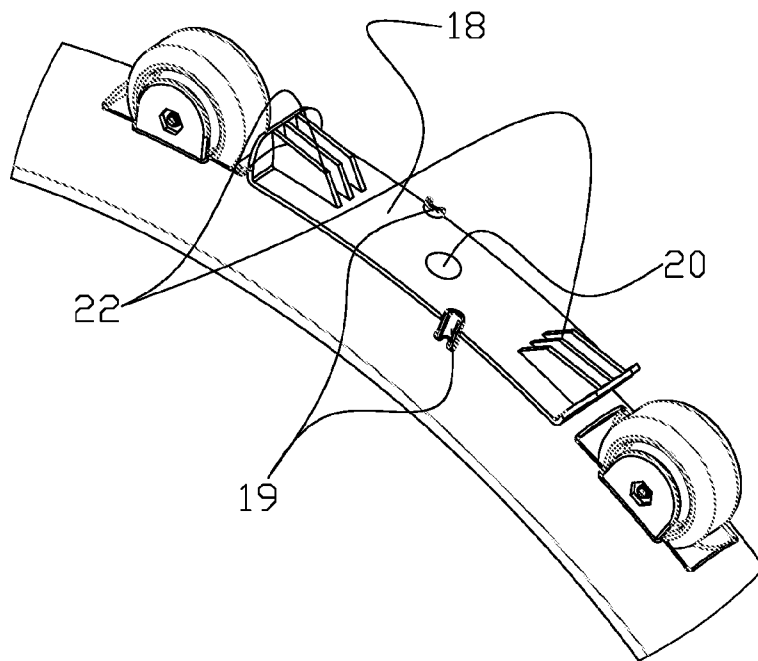


Fig. 7



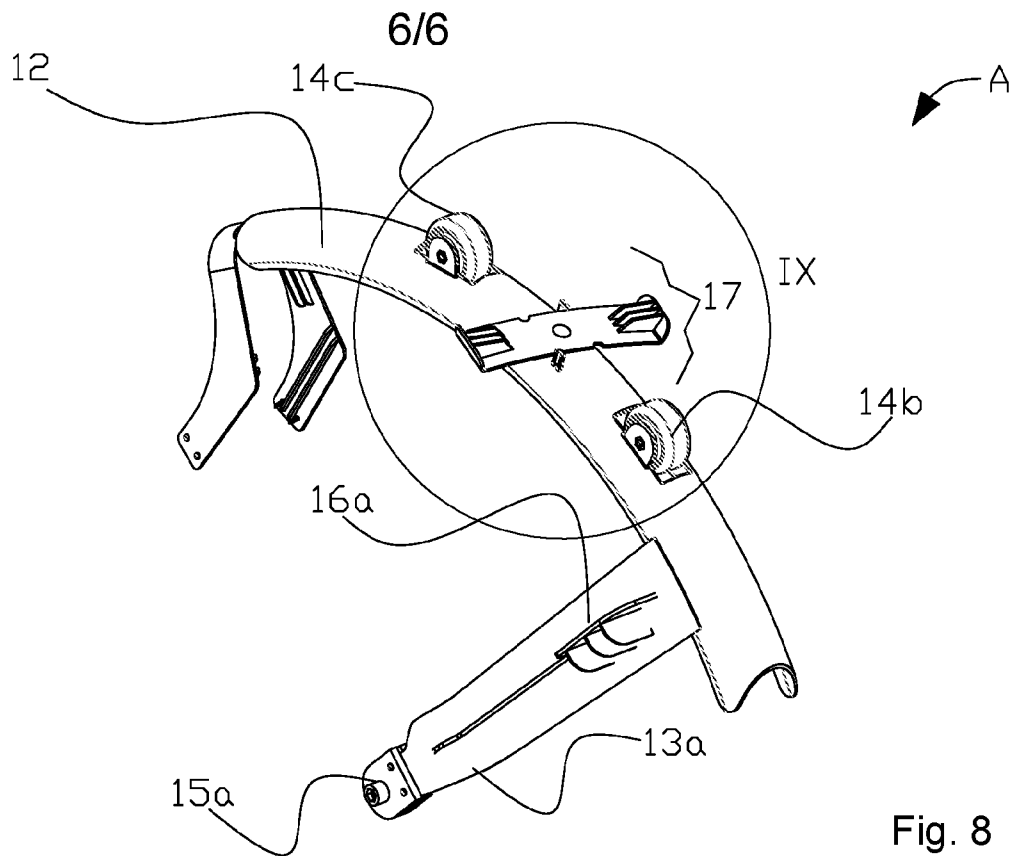


Fig. 8

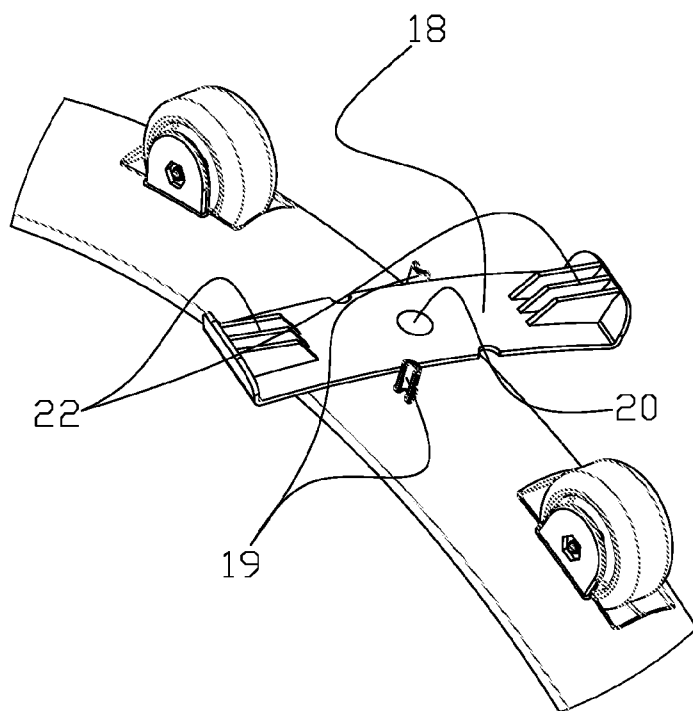


Fig. 9

**INTERNATIONAL SEARCH REPORT**

International application No  
**PCT/IB2023/054074**

**A. CLASSIFICATION OF SUBJECT MATTER**  
**INV. B62H1/00 B62J15/00**  
**ADD.**

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)  
**B62J B62H**

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

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

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**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
<b>X</b>	<b>GB 2 464 940 A (BOAM PATRICK [GB]; BOAM ANGELA [GB]) 5 May 2010 (2010-05-05)</b>	<b>1-3, 7-10, 18, 19</b>
<b>Y</b>	<b>abstract; claims; figures 1-7</b>	<b>4, 5, 11, 12</b>
<b>A</b>	-----	<b>6, 13-17</b>
<b>X</b>	<b>WO 2017/116280 A1 (VOROBYOV DMITRY IVANOVICH [RU]) 6 July 2017 (2017-07-06)</b>	<b>1, 2, 7-10, 18, 19</b>
<b>A</b>	<b>abstract; claims; figures 1-12</b>	<b>3-6, 11-17</b>
<b>Y</b>	<b>CN 2 883 130 Y (CAO JINSHAN [CN]) 28 March 2007 (2007-03-28)</b>	<b>4, 5, 11, 12</b>
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Further documents are listed in the continuation of Box C.

See patent family annex.

\* Special categories of cited documents :

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Date of the actual completion of the international search

Date of mailing of the international search report

**12 July 2023**

**19/07/2023**

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Authorized officer  
  
**Szekeres, Gábor**

## INTERNATIONAL SEARCH REPORT

International application No  
PCT/IB2023/054074

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 2017/021885 A1 (MONTAGUE DAVID [US]) 26 January 2017 (2017-01-26) abstract; claims; figures 1-20 -----	1-12
A	WO 2014/075171 A1 (LUNO INC [CA]; RIDERPLAST [FR]) 22 May 2014 (2014-05-22) abstract; claims; figures 1-11 -----	1-12
A	CN 108 116 534 B (PHOENIX TIANJIN BICYCLE CO LTD) 10 July 2020 (2020-07-10) abstract; claims; figures 1-5 -----	1-12

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No <b>PCT/IB2023/054074</b>
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date																
<b>GB 2464940</b>	<b>A</b>	<b>05-05-2010</b>	<b>NONE</b>																
<hr style="border-top: 1px dashed black;"/>																			
<b>WO 2017116280</b>	<b>A1</b>	<b>06-07-2017</b>	<b>NONE</b>																
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<b>CN 2883130</b>	<b>Y</b>	<b>28-03-2007</b>	<b>NONE</b>																
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