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Octrooi Centrum
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54 **Carrier bicycle and frame.**

57 It is described a frame for a carrier bicycle having a rear frame part, a front frame part in order to carry a transport bin to be mounted thereon and coupling means for the frame parts. The rear frame part comprises a carrier for the crank axle, at least one frame tube, and a first steering tube carrying part being fixed to the crank axle carrier via the at least one frame tube. The first steering tube carrying part has an upper ball head end. The front frame part comprises carrying means for at least one front wheel, a second steering tube carrying part having a lower ball head end, and a carrying element fixed to the second steering tube carrying part to which carrying element the means for carrying the front wheel(s) are fixed. The first and second steering tube carrying parts are in line with one another, and the rear and front frame parts are joined at their first and second steering tube carrying parts by detachable coupling means which clamp the upper and lower ball head ends in a stable manner.

NL C 2010514

Dit octrooi is verleend ongeacht het bijgevoegde resultaat van het onderzoek naar de stand van de techniek en schriftelijke opinie. Het octrooischrift wijkt af van de oorspronkelijk ingediende stukken. Alle ingediende stukken kunnen bij Octrooi Centrum Nederland worden ingezien.

CARRIER BICYCLE AND FRAME

5 The present invention relates to a frame and to a carrier bicycle having such frame a whereon a transport bin is mounted, according to claims 1 and 10 respectively.

10 Such frames and carrier bicycles are generally known. Manufacturing of such carrier bicycles possibly having three or four wheels normally starts from specific designs which take account of the mechanical requirements, which are tailored to prescribed sizes and must have suitable steering facilities particularly when the transport bin is filled with weight from goods or persons.

15 As understood JP S51 34144 U discloses the features of the preamble of claim 1. In addition the known frame has specific designs for the front wheel construction under the transport bin of the carrier bicycle and for the steering tube.

20 These specific designs have disadvantages in terms of achievable cost-prizes, which leads to a reduced market acceptance.

25 It is a goal of the present invention to stay as close as possible to normal bicycle designs and layouts when designing and manufacturing carrier bicycles and frames there for, not only to reduce cost-prize but also for broadening the market and improving acceptance by the general public of carrier bicycles.

30 Thereto the frame according to the invention has the features outlined in claim 1 and the carrier bicycle has the features outlined in claim 10.

35 It is an advantage of the frame according to the

invention that at least part of an original bicycle frame can be used to assemble the frame for the carrier bicycle. In particular the rear frame part can be taken from an already normally available bike as a starting point to assemble a frame and carrier bicycle according to the invention. This leads to minimum starting and manufacturing costs.

5 It is further advantageous that the frame according to the invention allows for a separation and exchangeability of carrier frame parts. These frame parts are even reusable in another normal bicycle or in a frame for another carrier bicycle. Furthermore the coupling means for coupling the front and rear frame parts of the carrier bicycle are capable of clamping onto the upper and lower steering head ends thus allowing for a simple and effective coupling and uncoupling of the carrier frame parts on a first position.

10 In a further advantageous embodiment the coupling means which clamp the upper and lower ball head ends have a sectionally tapering adapter thus fitting in various types and diameters of standardized or not standardized ball head ends concerned. One can think of inner ball heads tubes of 1 inch, 1 1/8 inch, 25 mm, 1 1/4 inch such as for tandems or even 1 1/2 inch. Now all can be adapted too by only one such adapter.

25 An embodiment of the frame according to the invention which has the features of claim 4 has the advantage that a two-sided coupling, that is, also with further detachable coupling means can be realized. The rearwardly prolonged carrying element which is coupled to the first frame part at a second position on the crank axle carrier by means of further detachable coupling means provides additional mechanical stability. This embodiment is further practically specified by the embodying features of claim 5.

35

A preferred embodiment of the frame according to the invention has the features of claim 6.

A frame provided with such a mechanically stabile triangle provides increased stability to the whole frame and bicycle. In addition the sagging or bending of the at least one frame tube is reduced because of the reduced load thereon.

At present the frame and carrier bicycle according to the invention will be elucidated further together with their additional advantages while reference is being made to the appended drawing, wherein similar components are being referred to by means of the same reference numerals. In the drawings:

Fig. 1 shows a frame according to the invention having a rear frame part and a front frame part which are mutually detachably coupled by means not explicitly shown therein;

Figs. 2A and 2B schematically show a side view and a front view of the front frame part to be used in the frame according to fig. 1; and

Fig. 3 shows detailed lower half coupling means of figs. 2A and 2B.

Fig. 1 shows a frame 1 for a carrier bicycle having a rear frame part 2-1 and a front frame part 2-2. The front frame part 2-2 is for carrying thereon a transport bin -not shown- for transporting goods or for example children therein. The parts 2-1, 2-2 are mutually joined by detachable coupling means 14-1 or 14-1 and 14-2 to be described hereinafter.

The rear frame part 2-1 comprises: a crank axle carrier 4, in fig. 1 as shown two frame tubes 5-1 and 5-2, and a first steering tube carrying part 6-1 which is fixed to the crank axle carrier 4 through at least frame tube 5-1. The

first steering tube carrying part 6-1 has an (upper) ball head end 7-1 (see figs. 2A and 2B). The frame 1 may at wish have one sturdy frame tube or as shown two frame tubes 5-1, 5-2.

5 The front frame part 2-2 comprises front wheel 8 carrying means 9, a second steering tube carrying part 6-2, and a carrying element 10 which is at its rear end fixed to the second steering tube carrying part 6-2, and at its front end the element 10 has the means 9 for carrying the front
10 wheel 8 or possibly front wheels. The carrying element 10 is for supporting the transport bin. The second steering tube carrying part 6-2 has an (lower) ball head end 7-2.

 In assembled condition the first and second steering tube carrying parts 6-1 and 6-2 are inline with one another.
15 These parts are hollow such that they may encompass a steering axle 11 fixed to vehicle handle bars 12. As best shown in fig. 1 the bottom end of the steering axle 11 is coupled here with a steering lever mechanism 13 running under the transport bin to the at least one front wheel 8.

20 The rear and front frame parts 2-1, 2-2 are joined at their first and second steering tube carrying parts 6-1, 6-2 by detachable coupling means 14-1 which in this case clamp the upper and lower ball head ends 7-1, 7-2. The clamping is effected as best shown in fig. 2B by for example two, three
25 or four parallel threaded tension bars 15 running parallel to the through going steering axle 11, and the first and second steering tube carrying parts 6-1 and 6-2. The tension bars 15 press and hold the ball head ends 7-1, 7-2 together thus coupling the rear and front frame parts 2-1 and 2-2. The
30 tension bars 15 are fixed to transverse elements 16-1 and 16-2 which elements are fixed to the ball head ends 7-1 and 7-2 respectively.

 The lower detailed half of the coupling means 14-1 are shown in fig. 3. In assembled condition the means 14-1 clamp
35 the upper and lower ball head ends 7-1, 7-2 each have a

sectionally tapered adapter 3 fitting into the respective ball head end 7-1, 7-2. Consequently the coupling means 14-1 are generally applicable on various sizes and types of ball head ends concerned. The adapters 3 may be considered as possibly stepwise tapered or conical nuts which are fixedly pressed onto the ball head ends concerned.

In order to couple the frame parts 2-1, 2-2 in a mechanically stable way it is advisable to couple them in a second place too. Thereto the carrying element 10 is rearwardly prolonged in order to be coupled to the rear frame part 2-1 at the position of the crank axle carrier 4 by means of further detachable coupling means 14-2. In the embodiment as shown in the figures the coupling means 14-1 and the further coupling means 14-2 are each provided at ends of the at least one frame tube 5-1, 5-2.

For reasons of achieving mechanical stability and increased carrying capability a triangle (fig. 1) is formed embodied by the at least one frame tube 5-1, 5-2, the steering tube carrying part or parts 6-1, 6-2 concerned and the carrying element 10 which is rearwardly prolonged.

In case of two frame tubes 5-1 and 5-2 the rear frame part 2-1 comprises a saddle carrying tube 17. The upper frame tube 5-2 is then fixed between the first steering tube part 6-1 and the saddle carrying tube 17 for increased safety and mechanical reliability.

The carrier bicycle as a whole is very stabile if the transport bin is fixed preferably over the front wheel carrier means 9 against the front frame part 2-2 and to the first and/or second steering tube carrying part(s) 6-1, 6-2. This creates extra transport room in the transport bin above the front wheel 8.

CONCLUSIES

1. Frame voor een bakfiets met een achterste framedeel, een voorste framedeel om een daarop te monteren transportbak te dragen, en koppelmiddelen voor de beide framedelen, 5
waarbij het achterste framedeel omvat:
- een trapasdrager,
 - ten minste één framebuis, en
 - een via de ten minste ene framebuis met de 10 trapasdrager verbonden eerste stuurbuis draaggedeelte met een bovenste balhoofd einde,
- waarbij het voorste framedeel omvat:
- draagmiddelen voor ten minste één voorwiel,
 - een tweede stuurbuis draaggedeelte met een onderste 15 balhoofd einde, en
 - een aan het tweede stuurbuis draaggedeelte bevestigd draagelement waaraan ook de voorwiel draagmiddelen zijn bevestigd,
- waarbij eerste en tweede stuurbuis draaggedeelten in elkaar 20 verlengde liggen, en
- waarbij de achterste en voorste framedelen via hun eerste en tweede stuurbuis draaggedeelten zijn gekoppeld door de bovenste en onderste balhoofd einden inklemmende losneembare koppelmiddelen,
- 25 met het kenmerk dat de koppelmiddelen die de bovenste en onderste balhoofd einden inklemmen een in doorsnede verlopend en in het betreffende balhoofd einde universeel passend verloopstuk hebben.
- 30 2. Frame volgens conclusie 1, waarbij het verloopstuk een op het betreffende balhoofd einde te persen trapsgewijze verlopende moer is.
3. Frame volgens conclusie 1 of 2, waarbij de verloopstukken 35 aan de bovenste en onderste balhoofd einden op elkaar worden

geklemd door de van parallel aan de stuurbuis draaggedeelten lopende draadeinden voorziene koppelmiddelen.

5 4. Frame volgens een van de conclusies 1-3, waarbij het draagelement naar achteren is verlengd en ter plaatse van de trapasdrager door verdere losneembare koppelmiddelen is gekoppeld met het achterste framedeel.

10 5. Frame volgens een van de conclusies 1-4, waarbij de koppelmiddelen die de bovenste en onderste balhoofd einden inklemmen en de verdere koppelmiddelen elk aan uiteinden van de ten minste ene framebuis zijn aangebracht.

15 6. Frame volgens conclusie 4 of 5, waarbij de ten minste ene framebuis, de beide gekoppelde stuurbuis draaggedeelten en het naar achteren verlengde draagelement in gekoppelde toestand van de beide framedelen een mechanisch stabiele driehoek vormen.

20 7. Frame volgens één van de conclusies 1-6, waarbij de eerste framebuis tussen het eerste stuurbuis gedeelte en trapasdrager vastzit.

25 8. Frame volgens één van de voorgaande conclusies, waarbij het achterste framedeel twee framebuizen omvat.

30 9. Frame volgens conclusie 8, waarbij het achterste framedeel een zadel draagbuis omvat en de tweede framebuis tussen het eerste stuurbuis gedeelte en de zadel draagbuis vastzit.

35 10. Bakfiets, omvattende een frame volgens één van de voorgaande conclusies, en een op het voorste framedeel, bij voorkeur boven het ten minste ene voorwiel, gemonteerde transportbak die tegen het eerste en/of tweede stuurbuis draaggedeelte is vastgezet.

11. Bakfiets volgens conclusie 10, waarbij door de eerste en tweede stuurbuis draaggedeelten een met een voorwiel stuurmechaniek gekoppelde stuurstang loopt.

5

12. Bakfiets volgens conclusie 10 of 11, waarbij het stuurmechaniek voor het ten minste ene voorwiel onder de transportbak door naar het ten minste ene voorwiel loopt.

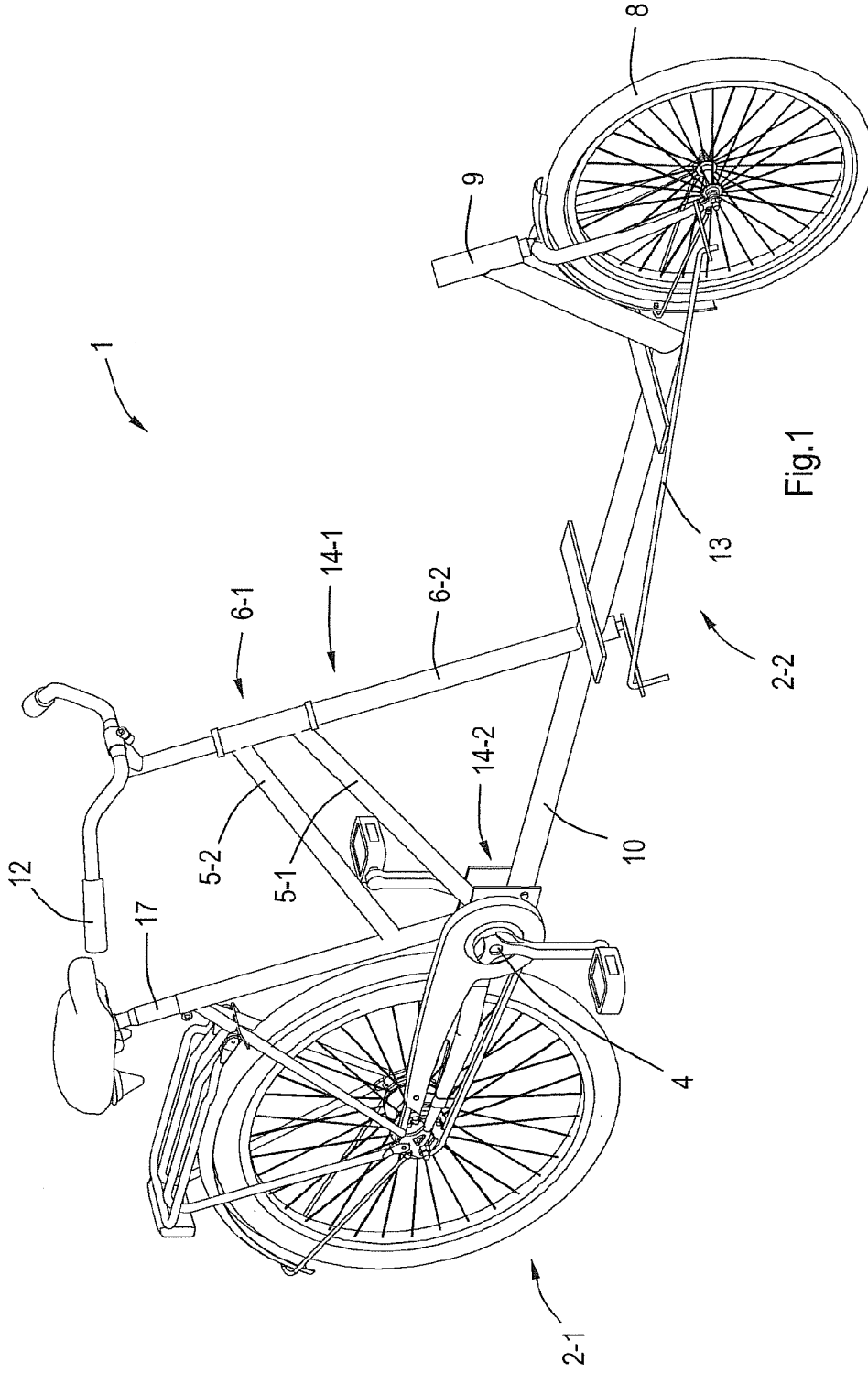


Fig.1

SAMENWERKINGSVERDRAG (PCT)

RAPPORT BETREFFENDE NIEUWHEIDSONDERZOEK VAN INTERNATIONAAL TYPE

IDENTIFICATIE VAN DE NATIONALE AANVRAGE	KENMERK VAN DE AANVRAGER OF VAN DE GEMACHTIGDE
	201.180
Nederlands aanvraag nr.	Indieningsdatum
2010514	25-03-2013
	Ingeroepen voorrangsdatum
Aanvrager (Naam)	
Bouman	
Datum van het verzoek voor een onderzoek van internationaal type	Door de Instantie voor Internationaal Onderzoek aan het verzoek voor een onderzoek van internationaal type toegekend nr.
01-06-2013	SN 60153
I. CLASSIFICATIE VAN HET ONDERWERP (bij toepassing van verschillende classificaties, alle classificatiesymbolen opgeven)	
Volgens de internationale classificatie (IPC)	
B62K7/04	B62K13/08
II. ONDERZOCHE GEBIEDEN VAN DE TECHNIEK	
Onderzochte minimumdocumentatie	
Classificatiesysteem	Classificatiesymbolen
IPC8	B62K
Onderzochte andere documentatie dan de minimum documentatie, voor zover dergelijke documenten in de onderzochte gebieden zijn opgenomen	
III. <input type="checkbox"/>	GEEN ONDERZOEK MOGELIJK VOOR BEPAALDE CONCLUSIES (opmerkingen op aanvullingsblad)
IV. <input type="checkbox"/>	GEBREK AAN EENHEID VAN UITVINDING (opmerkingen op aanvullingsblad)

**ONDERZOEKSRAPPORT BETREFFENDE HET
RESULTAAT VAN HET ONDERZOEK NAAR DE STAND
VAN DE TECHNIEK VAN HET INTERNATIONALE TYPE**

Nummer van het verzoek om een onderzoek naar
de stand van de techniek
NL 2010514

<p>A. CLASSIFICATIE VAN HET ONDERWERP INV: B62K7/04 B62K13/08 ADD.</p>		
<p>Volgens de Internationale Classificatie van octrooien (IPC) of zowel volgens de nationale classificatie als volgens de IPC.</p>		
<p>B. ONDERZOCHE GEBIEDEN VAN DE TECHNIEK</p>		
<p>Onderzochte minimum documentatie (classificatie gevolgd door classificatiesymbolen) B62K</p>		
<p>Onderzochte andere documentatie dan de minimum documentatie, voor dergelijke documenten, voor zover dergelijke documenten in de onderzochte gebieden zijn opgenomen</p>		
<p>Tijdens het onderzoek geraadpleegde elektronische gegevensbestanden (naam van de gegevensbestanden en, waar uitvoerbaar, gebruikte trefwoorden) EPO-Internal</p>		
<p>C. VAN BELANG GEACHTE DOCUMENTEN</p>		
<p>Categorie °</p>	<p>Geciteerde documenten, eventueel met aanduiding van speciaal van belang zijnde passages</p>	<p>Van belang voor conclusie nr.</p>
X	<p>JP S51 34144 U (SHOWADA) 13 maart 1976 (1976-03-13) * figuren 1-3 *</p>	<p>1-7, 11-13</p>
X	<p>----- CN 2 224 148 Y (ZHU FENGPU [CN]) 10 april 1996 (1996-04-10) * figuren 1-5 *</p>	<p>1,5-7,11</p>
X	<p>----- CN 2 188 540 Y (YAO JUNHUI [CN]) 1 februari 1995 (1995-02-01) * figuren 1-6 *</p>	<p>1,5-7,11</p>
X	<p>----- JP 3 051905 U (JP) 11 september 1998 (1998-09-11) * figuren 1-5 *</p>	<p>1</p>
A	<p>----- -/--</p>	<p>12,13</p>
<p><input checked="" type="checkbox"/> Verdere documenten worden vermeld in het vervolg van vak C. <input checked="" type="checkbox"/> Leden van dezelfde octrooifamilie zijn vermeld in een bijlage</p>		
<p>° Speciale categorieën van aangehaalde documenten</p>		
<p>*A* niet tot de categorie X of Y behorende literatuur die de stand van de techniek beschrijft</p>		<p>*T* na de indieningsdatum of de voorrangsdatum gepubliceerde literatuur die niet bezwarend is voor de octrooiaanvraag, maar wordt vermeld ter verheldering van de theorie of het principe dat ten grondslag ligt aan de uitvinding</p>
<p>*D* in de octrooiaanvraag vermeld</p>		<p>*X* de conclusie wordt als niet nieuw of niet inventief beschouwd ten opzichte van deze literatuur</p>
<p>*E* eerdere octrooi(aanvraag), gepubliceerd op of na de indieningsdatum, waarin dezelfde uitvinding wordt beschreven</p>		<p>*Y* de conclusie wordt als niet inventief beschouwd ten opzichte van de combinatie van deze literatuur met andere geciteerde literatuur van dezelfde categorie, waarbij de combinatie voor de vakman voor de hand liggend wordt geacht</p>
<p>*L* om andere redenen vermelde literatuur</p>		<p>*Z* lid van dezelfde octrooifamilie of overeenkomstige octrooipublicatie</p>
<p>*O* niet-schriftelijke stand van de techniek</p>		
<p>*P* tussen de voorrangsdatum en de indieningsdatum gepubliceerde literatuur</p>		
<p>Datum waarop het onderzoek naar de stand van de techniek van internationaal type werd voltooid</p> <p>28 november 2013</p>		<p>Verzenddatum van het rapport van het onderzoek naar de stand van de techniek van internationaal type</p>
<p>Naam en adres van de instantie</p> <p>European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016</p>		<p>De bevoegde ambtenaar</p> <p>Hutter, Manfred</p>

**ONDERZOEKSRAPPORT BETREFFENDE HET
RESULTAAT VAN HET ONDERZOEK NAAR DE STAND
VAN DE TECHNIEK VAN HET INTERNATIONALE TYPE**

Nummer van het verzoek om een onderzoek naar
de stand van de techniek
NL 2010514

C.(Vervolg). VAN BELANG GEACHTE DOCUMENTEN		
Categorie °	Geciteerde documenten, eventueel met aanduiding van speciaal van belang zijnde passages	Van belang voor conclusie nr.
X	US 2010/032925 A1 (EHRENREICH M; HOAG J; RHEE B) 11 februari 2010 (2010-02-11) * figuren 1-24 *	1-3,5

A	FR 2 964 937 A1 (INTERCYCLES SOC NOUV [FR]) 23 maart 2012 (2012-03-23) * figuren 1-6 *	1-13

A	DE 43 23 120 A1 (HASBERG JOSEF DIPL ING [DE]) 12 januari 1995 (1995-01-12) * figuren 1-9 *	1-13

A	FR 875 554 A (ACCESSOIRES EN TUBE POUR AUTOM) 28 september 1942 (1942-09-28) * figuren 1-3 *	1-7,11

**ONDERZOEKSRAPPORT BETREFFENDE HET
RESULTAAT VAN HET ONDERZOEK NAAR DE STAND
VAN DE TECHNIEK VAN HET INTERNATIONALE TYPE**

Informatie over leden van dezelfde octrooifamilie

Nummer van het verzoek om een onderzoek naar
de stand van de techniek

NL 2010514

In het rapport genoemd octrooigeschrift	Datum van publicatie	Overeenkomend(e) geschrift(en)	Datum van publicatie	
JP S5134144	U	13-03-1976	JP S5134144 U JP S5236351 Y2	13-03-1976 19-08-1977

CN 2224148	Y	10-04-1996	GEEN	

CN 2188540	Y	01-02-1995	GEEN	

JP 3051905	U	11-09-1998	GEEN	

US 2010032925	A1	11-02-2010	EP 2307265 A2 US 2010032925 A1 US 2011290065 A1 WO 2010017032 A2	13-04-2011 11-02-2010 01-12-2011 11-02-2010

FR 2964937	A1	23-03-2012	GEEN	

DE 4323120	A1	12-01-1995	GEEN	

FR 875554	A	28-09-1942	GEEN	



File No. SN60153	Filing date (<i>day/month/year</i>) 25.03.2013	Priority date (<i>day/month/year</i>)	Application No. NL2010514
International Patent Classification (IPC) INV. B62K7/04 B62K13/08			
Applicant Bouman			

This opinion contains indications relating to the following items:

- Box No. I Basis of the opinion
- Box No. II Priority
- Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- Box No. IV Lack of unity of invention
- Box No. V Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- Box No. VI Certain documents cited
- Box No. VII Certain defects in the application
- Box No. VIII Certain observations on the application

	Examiner Hutter, Manfred
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WRITTEN OPINION

Application number
NL2010514

Box No. I Basis of this opinion

1. This opinion has been established on the basis of the latest set of claims filed before the start of the search.
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - a sequence listing
 - table(s) related to the sequence listing
 - b. format of material:
 - on paper
 - in electronic form
 - c. time of filing/furnishing:
 - contained in the application as filed.
 - filed together with the application in electronic form.
 - furnished subsequently for the purposes of search.
3. In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

Box No. V Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty	Yes: Claims	4, 8-10
	No: Claims	1-3, 5-7, 11-13
Inventive step	Yes: Claims	8-10
	No: Claims	1-7, 11-13
Industrial applicability	Yes: Claims	1-13
	No: Claims	

2. Citations and explanations

see separate sheet

WRITTEN OPINION

Application number
NL2010514

Box No. VII Certain defects in the application

see separate sheet

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following documents:

- D1 JP S51 34144 U (SHOWADA) 13 maart 1976 (1976-03-13)
- D2 CN 2 224 148 Y (ZHU FENGPU [CN]) 10 april 1996 (1996-04-10)
- D3 CN 2 188 540 Y (YAO JUNHUI [CN]) 1 februari 1995 (1995-02-01)
- D4 JP 3 051905 U (JP) 11 september 1998 (1998-09-11)
- D5 US 2010/032925 A1 (EHRENREICH M; HOAG J; RHEE B) 11 februari 2010 (2010-02-11)
- D6 FR 2 964 937 A1 (INTERCYCLES SOC NOUV [FR]) 23 maart 2012 (2012-03-23)
- D7 DE 43 23 120 A1 (HASBERG JOSEF DIPL ING [DE]) 12 januari 1995 (1995-01-12)

1 Independent Claim 1

The present application does not meet the criteria of patentability, because the subject-matter of claim 1 is not new.

Document D1 discloses

een frame (figure 1) voor een bakfiets (figure 1) met een achterste framedeel (1), een voorste framedeel (figures 1 and 2 in combination with 3) om een daarop te monteren transportbak (18) te dragen, en koppelmiddelen (3, 7, and the shaft including implicit clamping means of the steering bar (2)) voor de beide framedelen, waarbij het achterste framedeel omvat:

- een trapsdrager (figure 1),
- ten minste één framebuis (figure 1, where (7) is clamped to), en
- een via de ten minste ene framebuis met de trapsdrager verbonden eerste stuurbuis (figure 1) draaggedeelte met een bovenste balhoofd einde (figure 1), waarbij het voorste framedeel omvat:
 - draagmiddelen (12) voor ten minste één voorwiel (11),
 - een tweede stuurbuis (6) draaggedeelte met een onderste balhoofd einde (in figure 2 between the numbers (3) and (6) and in combination with figure 1), en
 - een aan het tweede stuurbuis draaggedeelte bevestigd draagelement (4, 5,

13, 17) waaraan ook de voorwiel draagmiddelen zijn bevestigd, waarbij eerste en tweede stuurbuis draaggedeelten in elkaar verlengde liggen (figure 1), en waarbij de achterste en voorste framedelen via hun eerste en tweede stuurbuis draaggedeelten zijn gekoppeld door de bovenste en onderste balhoofd einden inklemmende losneembare koppelmiddelen (shaft of the steering bar has implicit clamping means clamping the steering head with the first steering tube; the lower steering head and (3) are at least clamped via (7) .

Besides, documents D2-D5 also disclose all features of claim 1.

2 Dependent Claims 2-7, and 11-13

Dependent claims 2-7, and 11-13 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of novelty and/or inventive step, the reasons being as follows:

- 2.1 Concerning claims 2-3, 5, and 11-13: the additional features of these claims are disclosed in at least on of the documents D1-D5.
- 2.2 Concerning claim 4: the additional features of this claim are generally known in the art, see e. g. D6 or D7.
- 2.3 The combination of the features of claims 2-7, and 11-13 appears as a mere juxtaposition of features providing neither synergistic nor unexpected effects.
- 2.4 It would be obvious to the skilled person to combine for the same purpose, in accordance with circumstances, the additional features of claims 2-7, and 11-13 with the known features of document D1, without the exercise of inventive skills.

3 Dependent Claims 8-10

The combination of the features of dependent claims 8-10 is neither known from, nor rendered obvious by, the available prior art. The reasons are as follows: Even if adaptors for steering tubes are known, it would not be obvious to use an universal adaptor for converting a standard bicycle into a transport vehicle.

Re Item VII

Certain defects in the application

The features of claims 1-13 are not provided with reference signs placed in parentheses.

Enclosures

JP 3051905U

Online translation from JPO

FULL CONTENTS

[Claims]

[Claim 1]A wheelchair conveyance bicycle comprising:

A rear wheel.

A saddle.

A pedal.

A bicycle body in which a steering wheel was provided by frame.

An installation stand where it connects with the aforementioned front bicycle body side, and a wheelchair for one set is placed.

It is arranged at right and left of the aforementioned installation stand, it coordinates with the aforementioned steering wheel, and is a pair of front wheel which can be steered.

[Claim 2][which fold up a guide frame, provide so that deployment is possible, land the tip on the aforementioned front installation stand side by an expanded state of the aforementioned guide frame, and follow the aforementioned installation stand / of inclined form / a guide passage and nothing], And the wheelchair conveyance bicycle according to claim 1 making a bumping post function of a wheelchair mounted serve a double purpose in the state of folding.

[Claim 3]The wheelchair conveyance bicycle according to claim 1 or 2, wherein the aforementioned installation stand is equipped with a parking brake.

[Claim 4]A wheelchair conveyance bicycle of any of Claims 1-3 characterized by comprising the following, or a description.

An electric motor for assistance which coordinates rotation driving force of the aforementioned pedal with a drive mechanism part transmitted to the aforementioned rear wheel, and rotates.

A battery of a frame which is suitably fixed to a position and supplies electric power to the aforementioned electric motor.

[Claim 5]one of Claims 1-4, wherein the number of rear wheels is two -- a wheelchair conveyance bicycle of a description.

[Claim 6]one of Claims 1-4, wherein a bicycle body and an installation stand are connected removably -- a wheelchair conveyance bicycle of a description.

[A detailed explanation of the device]

[0001]

[Industrial Application]

This device is related with a bicycle preferable for conveyance of the physically handicapped person who has got into [a wheelchair and this].

[0002]

[Description of the Prior Art]

When the person himself/herself who has got on moves with hand control or a care worker pushes from back, the wheelchair is moved as known well. In such a transportation device, there was a problem which can both perform only movement at a low speed as if restrictions are received in a behavior range by a care worker's tiredness etc.

[0003]

Although a means to move a wheelchair more electric was also provided in part to such a problem, for example, since this kind of electromotive wheelchair was not what is mass-produced at present, the wheelchair itself became very expensive and the utilization from a cost aspect was difficult for it.

[0004]

Then, for example, what adopted the bicycle as movement of a wheelchair is proposed by the early and electromotive thing rather than the movement speed by a help at JP,H2-83185,U as a transportation device which becomes inexpensive.

[0005]

However, there was also technical problem described below in the transportation device for wheelchairs currently disclosed in this gazette.

[0006]

[Problem(s) to be Solved by the Device]

That is, the bicycle which has the wheelbarrow currently disclosed in the above-mentioned gazette removes the front wheel of the usual bicycle, and moreover, it is the structure which combined the wheelchair with this portion disengageable, the whole is a thing of the Miwa structure, and this tri cycle is a rear drive, and has become front-wheel steering form.

[0007]

On the other hand, [a common manual control type wheelchair diffused in a hospital, the rehabilitation center, etc.] A front wheel makes it rotate by the hand of those who a caster and a rear wheel are wheels in which free rotation is possible, and get into [this], or by a right and left rotational variation. [order ** or] [make / the course / to change] Or it has the structure of the pushing force of those who push the pair of hand-pushed bar projected at the rear part of a wheelchair, and power where it puts in and condition performs order ** and a turn.

[0008]

Therefore, in the bicycle for wheelchairs shown in the above-mentioned gazette, the wheelchair itself must be changed in order to change the rear wheel of a wheelchair by handle operation, and it cannot apply to most existing wheelchairs.

[0009]

This design solves the above problem and the purpose is to provide the wheelchair conveyance bicycle which enabled it to carry without being accompanied by change of the existing wheelchair.

[0010]

[Means for solving problem]

This design is provided with the following in order to attain the above-mentioned purpose.

Rear wheel.

Saddle.

Pedal.

It is arranged at right and left of an installation stand where a steering wheel is connected with the aforementioned front bicycle body [which was provided by frame] and bicycle body side, and a wheelchair for one set is placed, and the aforementioned installation stand, it coordinates with the aforementioned steering wheel, and is a pair of front wheel which can be steered.

According to this composition, by the aforementioned bicycle, the existing wheelchair is installed on the installation stand provided to the body front part, and it can move and carry. A turn makes a steering wheel coordinate the front wheel provided on both sides of the installation stand, and can be turned.

To the aforementioned front installation stand side, in this design, fold up a guide frame, provide so that deployment is possible, and, [the expanded state of the aforementioned guide frame] By making the bumping post function of the wheelchair mounted serve a double purpose in the state of the guide passage of the inclined form which lands the tip and follows the aforementioned installation stand, nothing, and folding, a wheelchair can be got on and off smoothly, and omission from the installation stand of a wheelchair can be prevented at the time of conveyance, and safety can be improved.

In this design, the stability at the time of getting on and off of a wheelchair can be held by equipping the aforementioned installation stand with the parking brake.

[by having had the electric motor for assistance which this design coordinates the rotation driving force of the aforementioned pedal with the chain transmission machine style transmitted to the aforementioned rear wheel, and rotates, and the battery of a frame which is suitably fixed to a position and supplies electric power to the aforementioned electric motor] Materials handling operation can be performed by small power, without depending only on human power.

In this case, although it becomes somewhat comparatively high-priced compared with a human power bicycle, the drive mechanism of the electromotive bicycle was mass-produced, generally has spread, and can be attached comparatively inexpensive. About this design, by the number of rear wheels being two, it becomes a four-flower type bicycle and running stability improves.

About this design, by connecting the bicycle body and the installation stand removably, both can be separated and stored at the time of non-use, and if it connects at the time of use, it can be promptly used as a wheelchair conveyance bicycle further again.

[0011]

[The embodiment of a device]

With reference to appending Drawings, it describes in detail about the preferable embodiment of this design below.

Fig.1 and Fig.2 show one working example of the wheelchair conveyance bicycle concerning this design, Fig.1 is a side view and Fig.2 is a plan view.

[0012]

The bicycle shown in the figure consists of the wheelchair installation stand 12 arranged removably at the front part of the bicycle body 10 and the main part 10.

[0013]

The main part 10 has arranged the pair of rear wheel 14, the saddle 16, the pedal 18, and the steering wheel 20 on the frame 22, unlike the usual bicycle, is the structure which removed only the front wheel and arranges the front wheel 24 to the side part of the installation stand 12.

[0014]

The rear shaft frame 22a to which the frame 22 carries out the bearing of the axle of the aforementioned rear wheel 14 pivotable, The pipe state mainframe 22b which is connected in the center of this rear shaft frame 22a, and a vehicle body extends in forward/rearward direction, The saddle frame 22c of the pipe state which is in the mid-position of this mainframe 22b, and is extended to the slanting upper part, The schematic structure is carried out from the handle shaft frame 20e of the pipe state which connected the end with the upper end of this saddle frame 20c, and connected the lower end with the front part of 20 d of auxiliary frames which made and joined approximately triangular shape to the aforementioned rear shaft frame 22a, and the mainframe 22b aslant.

[0015]

The large diameter sprocket wheel 26 coordinated with the aforementioned pedal 18 is supported pivotable as well as a common bicycle by the lower part of the mainframe 22b, This sprocket wheel 26 is connected with the rear sprocket wheel 28 arranged at the rear wheel 14 via the chain 30, The rotational motion power of the pedal 18 is transmitted via these chain transmission machine style, and also the sprocket wheel

26 is coordinated with the assist motor drive unit 32 arranged at the lower part of the mainframe 22b.

[0016]

[by driving this drive unit 32 by electric supply from the battery pack 34 fixed to the rear part of the saddle frame 20c, and performing a chain drive in collaboration with people] When a driver's burden is eased and big load is generally added to a driver on a slope etc., it does not illustrate, but the torque sensor arranged at the crank rotating part of the pedal 18 detects this, drives a motor by this sensor output, and serves as the mechanism in which a driver's burden is made to ease.

[0017]

It is removable, and can charge repeatedly with a domestic battery charger, and the battery pack 34 which is a power supply can secure the daily source of power.

[0018]

The aforementioned installation stand 12 arranges the side plate 38, is what laid the wheel installation plate 40 integrally inside each side plate 38, and is enabling installation of one wheelchair at the both sides of the pipe frame 36 by which the framework was carried out to the rectangle.

[0019]

While setting up the aforementioned handle shaft frame 20e and the link frame 42 on a same axis and protruding the connected pipe 44 on that back end horizontally, [the rear part of this installation stand 12] This connected pipe 44 is supported by the pair of auxiliary frame 46 which makes triangular shape and recovers from the frame structure 36, and these are made removable to the aforementioned main part 10.

[0020]

Fig.3 and 4 show the connecting-shaft structure, and, [the upper end of the link frame 42] Have projected the connecting shaft 48 connected with the handle shaft 20a of the aforementioned handle 20 so that a slide is possible, and, [the periphery of this connecting shaft 48] It connects with the lock pin 52 projected from the slide groove 50 by which the opening was carried out to the inverted-L character form on the side surface of the link frame 42, This lock pin 52 is connected with the handle shaft 20a in an ascending position, and it is held in that connecting position by making it lock to the lock groove 50a horizontally continuous from the slide groove 50.

[0021]

It is connected by the axis 54 projecting to the back end of the connected pipe 44, and this axis 54 being inserted in the connected pipe 56 connected at a level with the tip side of the mainframe 22b, and inserting in the pin which is not illustrated to the pair of pin holes 54a and 56a by which the opening was carried out to both.

[0022]

Therefore, at the time of needlessness, the installation stand 12 and the main part 10 are separated completely, and can be stored, and it can be used as a wheelchair

conveyance bicycle by connecting both if needed.

[0023]

At the time of non-use, changing for the usual front wheel is also possible, and it can be used as a usual tri cycle with motor power in this case.

[0024]

In [as especially the lower end side of the aforementioned connecting shaft 48 is shown in Fig.2] the lower part side of the installation stand 12, It has connected with the link lever 58, and has coordinated with this link lever 58 via transmission mechanisms, such as the parallel link 60 and the lever 62, at the bell crank 64 for a turn of the aforementioned front wheel 24, and the front wheel 24 can be turned into right and left according to the steering direction of the aforementioned steering wheel 20.

[0025]

The guide frame 68 folds up via the axis 66, and it connects with the front installation stand 12 side so that deployment is possible. The guide plate 70 is unified inside this guide frame 68, and in the expanded state of the guide frame 68, that tip installs in surface of the earth, and forms the inclined plane which becomes flat-tapped [the back end] at the tip of the aforementioned installation plate 40.

[0026]

A fold-up angle exhibits in Fig.1 the function as a bumping post of the illustrated wheelchair which profit restriction is carried out and is installed here. What is necessary is just to adopt a ratchet mechanism etc. as a mechanism for locking in this angular position.

[0027]

At the tip of the guide frame 68, the handle 72 is provided integrally, and in a folded position, a boarding attitude is held at it because a wheelchair passenger holds this by hand.

[0028]

Although Fig.1 and the code 74 in two are the stand brakes attached to the side part of the installation stand 12 via the axis 76 so that tilting was possible and the details are omitted, Like the stand brake in the usual bicycle, two positions of a handstand state and a horizontal state are taken by reversal of a spring, and it has the function to hold the main part 10 and the installation stand 12 in the position, at the time of a stop.

[0029]

Next, the using form of the wheelchair conveyance bicycle of the above composition is described using Fig.5. First, as shown in (a), when carrying the wheelchair 78 on the installation stand 12, the guide frame 68 is developed. The stand brakes 74 are applied at this time, caregiver [**] makes the wheelchair 78 backward in this state of stopping a vehicle body, and it is passenger [**].

** -- if it pulls up to the installation stand 12 side, along the inclined plane of the guide

plate 70, the wheelchair 78 will move back, and where the order ring is set, it will be installed on the installation plate 40. After folding up the guide frame 6 as shown in (b), locking in this state and releasing the stand brake 74 in this state, the wheelchair 78 is carriable, when caregiver [**] rides on the main part 10 and rows a pedal. At the place which requires the load of a slope etc., it can move with the auxiliary power of the motor driving unit 32 for assistance, without feeling particular load.

[0030]

In an working example, although the description of indispensable general tools was omitted on a brake and other bicycles, it cannot be overemphasized except the essential part of this design that equipment equivalent to the usual bicycle or a tri cycle is made.

[0031]

[Effect of the Device]

As mentioned above, as described in detail in the working example, according to the wheelchair conveyance bicycle concerning this design. Since this can be freely carried by a bicycle and what is necessary is to convert only the front bicycle or tri cycle side in manufacture, without changing the existing wheelchair in any way, a manufacturing cost is inexpensive and flexibility can be increased.

[Brief Description of the Drawings]

[Drawing 1] It is a side view showing one working example of the wheelchair conveyance bicycle concerning this design.

[Drawing 2] It is a plan view of the bicycle.

[Drawing 3] It is a fragmentary perspective view showing the connection structure of the main part of the bicycle, and an installation stand.

[Drawing 4] It is the A section expansion explanatory view in Fig.3.

[Drawing 5] (a) and (b) are the explanatory views showing condition of use.

[Explanations of letters or numerals]

10 Bicycle body

12 Wheelchair installation stand

14 Rear wheel

16 Saddle

18 Pedal

20 Steering wheel

22 Frame

24 Front wheel

32 Motor driving unit

68 Guide frame

74 Brake stand

78 Wheelchair

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A kind of single wheel drive pedicab after turning over bucketly, are made up of tipping bucket, tipping bucket chassis, bicycle frame and trailing wheel, contain two wheels under the tipping bucket chassis, the tipping bucket chassis crosses a fore axle tube of bicycle frame and links with bicycle frame through a connecting shaft, and can regard connecting shaft as axial rotation. The tipping bucket is installed on the tipping bucket chassis, the fore of the tipping bucket chassis has axial troughs of degree of lip-rounding of a pair of cards, there is a radical axis in the front of tipping bucket bottom, this axle locates in the axial trough of degree of lip-rounding of card on the tipping bucket chassis, wheel drive after the whole device. Can also install the seat after unloading the tipping bucket. This utility model is simple in construction, the fabrication cost is low, apt to go into operation, the market is broad.

This utility model involves a kind of pedicab, especially a kind of single wheel drive pedicab after looking through bucketly.

Our country returns one-wheel plank car and two-wheel of employment in mass and pulls cart small in the countryside at present, push car and person, should bear car, value 1/4 of the weight except walking, very arduous. The purpose of this utility model lies in overcoming the above-mentioned shortcoming in the prior art, offer one can both carry passenger and state thing and help single wheel drive pedicab translate bucket, to unload thing.

This utility model is realized like this: A kind of single wheel drive pedicab after turning over bucketly, are made up of tipping bucket, tipping bucket chassis, bicycle frame and trailing wheel, contain two wheels under the tipping bucket chassis, the fore axle tube of bicycle frame is installed for the above-below direction, the tipping bucket chassis is a steel frame, cross the fore axle tube of bicycle frame and link with bicycle frame through a connecting shaft, and can regard connecting shaft as axial rotation, shape and commonly used small handcart car hopper of general construction site of the tipping bucket, flat bottom high, have push handle handle above the back, push handle handle, lieutenant general of utility model, this change into annular, the tipping bucket is installed on the tipping bucket chassis, the fore of the tipping bucket chassis has axial troughs of degree of lip-rounding of a pair of cards, there is a radical axis in the front of tipping bucket bottom, what this axle put into the tipping bucket chassis is in axial trough of degree of lip-rounding of card, can fix the tipping bucket on tipping bucket chassis behind the tipping bucket through a series of steel locking gear, turn on the locking gear, can rotate and turn up up the tipping bucket with its forward axle of bottom as the axis; Turn on the locking gear, it can withdraw the forward axle of

tipping bucket bottom from the axial trough of degree of lip-rounding of card on the tipping bucket chassis, thus unload the tipping bucket; Can also install the seat after unloading the tipping bucket, there is an axle too in the seat lower side, put this axle into axial trough of degree of lip-rounding of card on the tipping bucket chassis, can fix the seat on tipping bucket chassis behind the seat through a series of steel locking gear. Wheel drive after the whole device.

Fig. 1 is a final assembly schematic diagram of this utility model;

Fig. 2 is that a utility model hit the schematic diagram of tipping bucket;

Fig. 3 is that a utility model hit the seat schematic diagram;

Fig. 4 is that a utility model hit the chassis schematic diagram;

Fig. 5 is that a utility model hit some schematic diagram of bicycle frame.

Fig. 6 is that a utility model hit the schematic diagram of landing gear.

Among them: 1-tipping bucket, 2-chassis, 3 draw wheel son (two bring axle) while being little, 4-bicycle stand, 5-bicycle trailing wheel, 6-rectangular holes, 7-tipping pivot, 8-hole of the seat, 9-axle of the seat, 10-T-shaped cards, 11-chassis hole, 12-connect with the bracket, 13-axle block, 14-axial trough, 15-L hole, 16-connecting shaft, 17-landing gear hole, 18-landing gear, 19-brake at the shaped steel plate.

Combine figures and a utility model and an Example and give a further explanation to this utility model as follows.

Such as figure 1, 2, 3, 4, 5, 6, this utility model is by the tipping bucket (1), the chassis (2), dolly draw wheel (3), bicycle frame (4), bicycle trailing wheel (5) to make up. The tipping bucket is similiar to the small handcart car hopper of construction site, it is annular to make the handle into. A rectangular hole (6) has chassis (2) of two knuckle spindles (7) to take the form of frame to play back welding above, weld by angle steel, equip with T card above, bottom equip with axle block (13) back end foraminiferous (11) and weld, have, connect bracket (12) with, take and make the foraminiferous (8) on the chair, weld knuckle spindle (9); The bicycle frame (4) removes the bicycle front wheel and tap, make the forward end shank into the vertical direction. Wear from bottom to top with connecting shaft (16) install, bicycle frame forward end shank (upper and lower both ends contain steel ball) top put the L-type hem (15) in fix by shaft guard, use nut anchorage. Inject the lower end of the connecting shaft (16) into connecting with the bracket (16), make on the L-type hem the hole (15) is aimed at the chassis hole (11), one bunch of upper screws, use butterfly nut anchorage. Embed in the tipping pivot on the chassis in the axial trough (14) and make the T-shaped card (10) cross the rectangular hole (6), it rotates 90 to be pairs of getting fixed tipping bucket T-shaped card (10). Fix two wheels in the axle block through the axle. The trailing wheel installs such whole car to finish loading as bicycle. The brake brakes for

the trailing wheel as proper motion. Rotate, 90 can turn up and unload T-shaped card the tipping bucket. Can take down too certainly. Embed in seat axle (9) axial trough (14) make hole the screw is fixed at the (8) mating hole (11) bunch, finish holding the seat, can be manned.

Take down the blind nut on fly nut and connecting shaft on the L-type hem, can turn on the front and back two parts of this utility model. Screw fix fetch the first half part cross, connect bracket (12) with, make hole (17) mating hole add filling piece, string landing gear (18) together in the middle of the (11) from bottom to top, become the small handcart. The latter half can act as the use of bicycle while changing bicycle front wheel and tap.

This utility model brakes and installs the (19) in the bicycle frame (4) to put the beams in place the forward end.

[Claims]

1, A kind of single wheel drive pedicab after turning over bucketly, are made up of tipping bucket, tipping bucket chassis, bicycle frame and trailing wheel, characterized in that: Contain two wheels under the tipping bucket chassis, the tipping bucket chassis crosses a fore axle tube of bicycle frame and links with bicycle frame through a connecting shaft, and can regard connecting shaft as axial rotation, the tipping bucket is installed on the tipping bucket chassis, the fore of the tipping bucket chassis has axial troughs of degree of lip-rounding of a pair of cards, there is a radical axis in the front of tipping bucket bottom, this axle locates in the axial trough of degree of lip-rounding of card on the tipping bucket chassis, wheel drive after the whole device.