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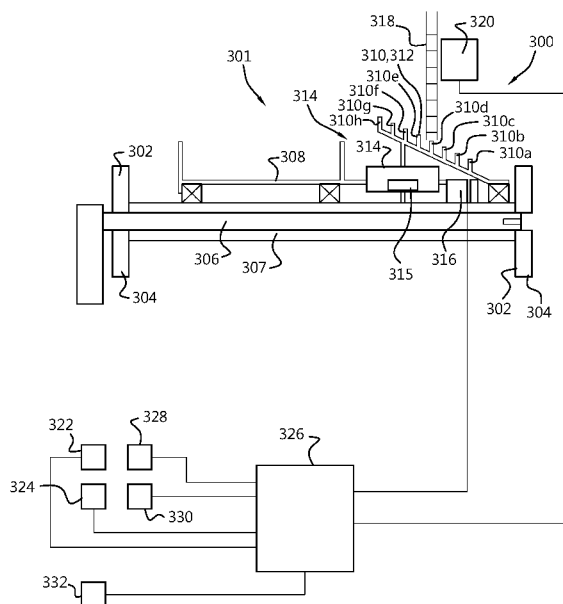
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Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

(54) Title: TRANSMISSION SYSTEM

Fig. 13



(57) Abstract: A transmission system, such as for a two wheeled bicycle, including an axle assembly including a set of sprockets, a transmission unit having an input coupled to the set of sprockets and an output arranged to be coupled to a wheel. The transmission unit includes a transmission operable according to a first transmission ratio and a second transmission ratio, a clutch or brake system for switching from the first to the second transmission ratio under load, and a first actuator for controlling the clutch or brake for coupling or decoupling. The transmission system including a second actuator for selecting one of the sprockets for transmission of torque to the axle assembly, and a controller configured to receive a first shift signal and/or a second shift signal, and configured to control the first actuator and/or the second actuator in response to the first or second shift signal.



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INTERNATIONAL SEARCH REPORT

International application No
PCT/NL2019/050705

A. CLASSIFICATION OF SUBJECT MATTER
INV. B62M25/08 B62M9/122 B62M11/16
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)
B62M

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)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 045 475 A (YOO MOON-SOO [KR]) 4 April 2000 (2000-04-04)	1-3
Y	column 3 - column 4; figures 1-5	4-10,24, 25
X	----- EP 2 426 043 A1 (CANYON BICYCLES GMBH [DE]) 7 March 2012 (2012-03-07) paragraph [0036] - paragraph [0041]; figure 1	1-3
Y	----- US 2016/272281 A1 (TSAI SZU-FANG [TW]) 22 September 2016 (2016-09-22)	4-10,24, 25
A	paragraph [0027] - paragraph [0033]; figure 1	1
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Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier application or patent but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "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

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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"&" document member of the same patent family

Date of the actual completion of the international search 10 March 2020	Date of mailing of the international search report 26/06/2020
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Verdelho, Luís
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INTERNATIONAL SEARCH REPORT

International application No
PCT/NL2019/050705

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2003/160420 A1 (FUKUDA MASAHIKO [JP]) 28 August 2003 (2003-08-28)	25
A	paragraph [0022] - paragraph [0028]; claim 1; figure 7	1
X	----- US 2014/284897 A1 (BETTIN KARSTEN [DE]) 25 September 2014 (2014-09-25) paragraph [0088]; figure 8	1
A	----- US 2008/312799 A1 (MIGLIORANZA FEDERICO [IT]) 18 December 2008 (2008-12-18) paragraph [0192]; figures 2-5	1,4-10, 24,25
X	----- US 4 400 999 A (STEUER WERNER [DE]) 30 August 1983 (1983-08-30) column 2 - column 3; figure 1	1
X	----- EP 0 687 622 A1 (MBI CO LTD [KR]) 20 December 1995 (1995-12-20) the whole document	1

INTERNATIONAL SEARCH REPORT

International application No.
PCT/NL2019/050705

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

3. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-10, 24, 25

Remark on Protest

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-10, 24, 25

A transmission system for a two wheeled bicycle including a controller configured to shift in response to signals.

2. claims: 11-23, 26-43

Axle assembly with a set of sprockets and transmission gears with a predetermined ratio difference and a an arrangement of clutches and transmission elements.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/NL2019/050705

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/NL2019/050705

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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