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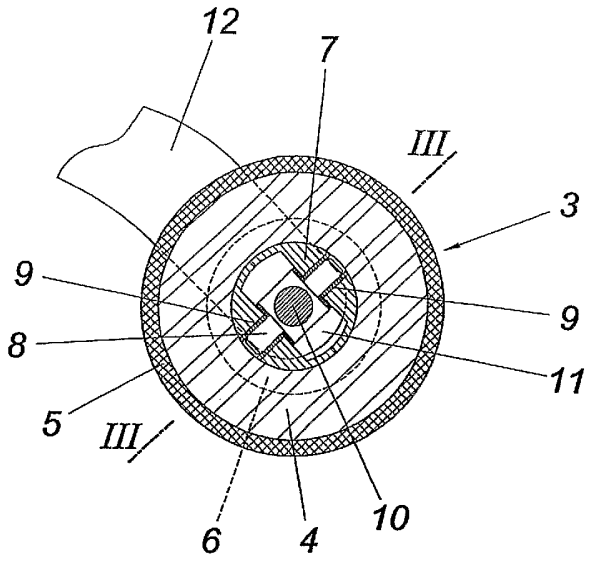
Declarations under Rule 4.17:

— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ,*

[Continued on next page]

(54) Title: UNDERCARRIAGE FOR A ROLLER SKATE FOR A SKATEBOARD/SCOOTER BOARD



(57) Abstract: The description refers to an undercarriage for a roller skate (1) or a skateboard/scooter board with at least one steering axle (7) which pivots on a swivelling axis (8) provided in a retaining framework (2). The swivelling axis slants in or against the direction of travel. In order to provide advantageous design data, it is suggested that the swivelling axis, (8) which is integrated in the steering axle, is placed on a bearing fork (13) of the retaining framework support (10). The support is axially retained in the steering axle (7) in a recess (11) which is vertically positioned to the swivelling axis (8) and which provides clearance for the steering turn.

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EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for the following designation US*

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

UNDERCARRIAGE FOR A ROLLER SKATE OR A SKATEBOARD/ SCOOTER BOARD

FIELD OF THE INVENTION

The invention refers to an undercarriage for a roller skate or a skateboard / scooter board with at least one steering axle which pivots on a swivelling axis provided in a retaining framework. The swivelling axis slants in or against the direction of travel.

BACKGROUND OF THE INVENTION

In order to achieve easy steering of, for example a skateboard / scooter board, an undercarriage (AT 005006 U1) exists with at least one steering axle pivoted on a swivelling axis provided in a retaining framework. The swivelling axis slants in or against the direction of travel and goes with a radial distance to the steering axis. Due to the slant of the swivelling axis, a swivelling of the foot board around a longitudinal axis causes an additional swivelling adjustment of the steering axle that is supported on the ground by wheels on both sides, around an axle which is positioned in vertical position to the ground, resulting in a corresponding deflection of the steering mechanism. For a better control of this steering mechanism, the rotation of the steering axle, starting from the position for the straight ahead drive and going to both stop sides, takes place against an elastic force originating from a leaf spring which is in parallel position to the steering axle. The leaf spring sustains a sliding piece which is assigned to a retaining framework taking up the swivelling axis. This existing design requires a two track undercarriage that, due to its overall width, can only be fitted to scooters or skateboards / scooter boards.

SPECIFIC OF THE INVENTION

The invention is intended to provide an undercarriage design of the above mentioned kind that is aimed at an importantly reduced overall width and road performance, mainly comparable to a one track undercarriage.

The invention solves this problem in the way that the swivelling axis, which is integrated in the steering axle, is arranged on a support forming part of a bearing fork. The support is axially retained in the steering axle in a recess which is vertically positioned to the swivelling axis and provides clearance for the steering turn.

Since, due to these arrangements, the swivelling axis within the steering axle is arranged on a support, which is axially retained in the steering axle, the steering axle can be of reduced length, since it is required to only take up the bearing of at least one wheel that encloses the steering axle and the swivelling axis and is integrated in the bearing fork for the support of the swivelling axis. The recess in the steering axle for the retention of the support of the swivelling axis must, however, allow a horizontal-swing of the support determining the deflection of the steering mechanism in relation to the steering axle. Under these conditions, a simple, narrow overall width results for the undercarriage which allows it to be used not only for skateboards / scooter boards, but also for roller skates. If a single wheel is provided, the overall width is mainly determined by the width of its rest. If two wheels are provided, the overall width is mainly determined by their axial distance. The width of the wheel rest and the axial distance of the wheels respectively are dictated by the support of the steering axis on the ground needed for the steering and for tilt resistance. This can already be achieved with a comparably short wheel width or a small distance of the wheels, thereby achieving a road performance that can otherwise only be achieved by one-track undercarriages.

If only a single wheel is used for the tilt resistant support of the steering axle on the ground, it is recommended to design the wheel with a basically cylindrical coating. In order to achieve, in spite of a compact design, an adequate axial length of the cylindrical coating, the length of the wheel coating may exceed the axial length of the steering axle, thus the wheel coating juts out on both sides over the face of the steering axle. The reduced length of the steering axle, which is set back to the wheel coating, allows, in spite of its restricted diameter, enough steering movement in relation to the support which is retained in the steering axle within the provided clearance between the support of the steering axle and the steering axle recess taking up the support.

In order to obtain a neutral steering performance of the undercarriage, the geometrical axes of the swivelling axis and the steering axle may cut across each other. Such an arrangement can do without the reset forces during a steering action, whereas of course, the corresponding reset forces can be provided, for example by spring elements between the support for the swivelling axis and the steering axle.

BRIEF DESCRIPTION OF THE DRAWINGS

The drawing shows an example of the object of invention.

Fig. 1 an undercarriage according to the invention for a roller skate in a simplified, partial cross section view

Fig 2 a larger scale profile of the undercarriage in the area of the swivelling axis

Fig. 3 a section according to line III-III of fig. 2

Fig. 4 a front view of a wheel and its running carriage according to the invention in steering lock position

Fig 5 a skateboard / scooter board with an undercarriage according to the invention in a simplified lateral view

ENBODIMENTS

According to fig. 1 the undercarriage assembled on a roller skate 1 (graphically illustrated with dot dashed lines) shows a retaining framework 2 that takes up a front and rear wheel 3. These wheels consist of a wheel body 4 with a basically cylindrical coating 5 of elastic rubber material. As especially shown in fig. 2 and 3, the wheel body 4 pivots by means of two bearings 6 on a steering axle 7, which itself can be swivelled around a swivelling axis 8. The steering axle 7 retains the swivelling axis 8 in the bushings 9. The swivelling axis is assembled on a support 10 which is retained in the steering axle 7 in a recess 11 vertically positioned to the swivelling axis 8 while providing sufficient clearance to swivel steering axle 7 around the swivelling axis 8 for a steering turn without obstruction by support 10. Support 10 itself is retained in the lateral sides 12 of a fork 13 forming part of the retaining framework 2.

Since the swivelling axis 8 slants in relation to the direction of travel, as especially illustrated by fig. 2, a horizontal-swing of the retaining framework around an axis going in the direction of travel causes a swivelling adjustment of the steering axle around the swivelling axis 8, since the steering axle 7 which is supported on the ground by means of wheel 3 cannot join in the swivelling movement of the swivelling axis 8 which is fixed on the support. The only possible compensation of movement is a turn of the steering axle 7 around an axis positioned vertically to the ground as graphically illustrated in fig. 4. A steering movement, for the front as well as for the rear wheel 3, can be produced by a bending movement to the sides of the retaining framework 2 by means of the roller skate 1. It is probably unnecessary to particularly stress that not both wheels 3 have to be supported on a steering axle. If only one steering axle is used, an inclination to the sides of the retaining framework 2 must be provided. This can be guaranteed by an unguided wheel that allows an inclination to the sides or by a wheel that is supported with limited swivelling clearance in relation to the support around an axis in the direction of travel.

Since the steering movement of the steering axle depends on its tilt resistant support to the ground, wheel 3 of each steering axle 7 could be replaced by two conventional wheels, the axial distance of which corresponds with the length of the contact area of the cylindrical coating 5 of one single wheel 3.

As can be seen from fig. 5, the use of the undercarriage according to the invention is not only restricted to roller skates. Undercarriages according to the invention can also be used with advantage for skateboards / scooter boards where the stepboard 14 is provided at both ends with a steering axle 7, as described above. For this purpose, the undercarriage is formed by two separate retaining frameworks 2 that are fixed to the bottom side of the stepboard 14 and form a fork to carry the support 10 as described in correlation with fig. 1 to 4.

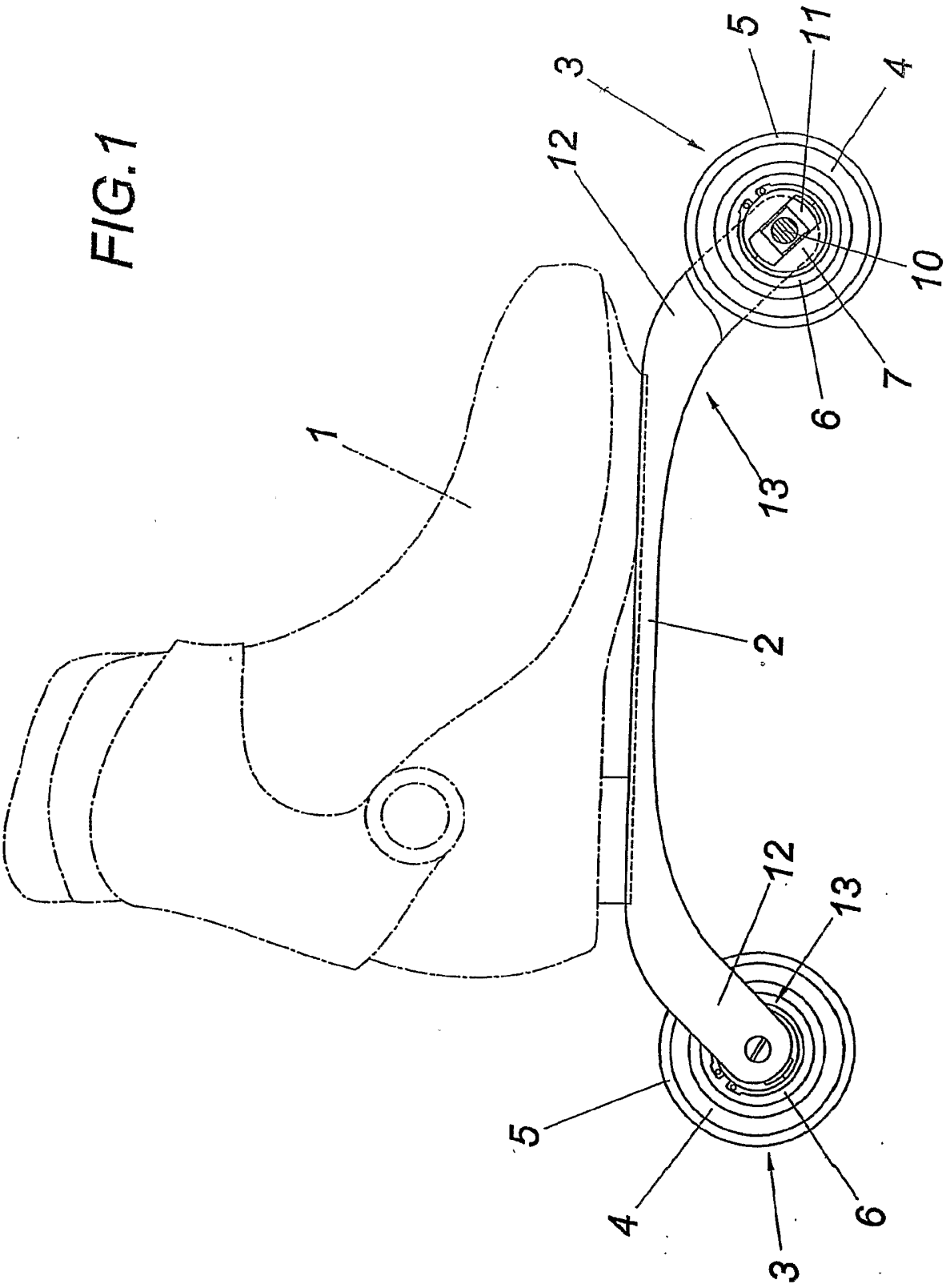
claims

1. An undercarriage for a roller skate or a skateboard / scooter board with at least one steering axle which pivots on a swivelling axis provided in a retaining framework. The swivelling axis slants in or against the direction of travel. The undercarriage is characterized in the way that the swivelling axis (8), which is integrated in the steering axle, is placed on a bearing fork (13) of the retaining framework support (10). The support is axially retained in the steering axle (7) in a recess (11) which is vertically positioned to the swivelling axis (8) and which provides clearance for the steering turn.

2. Undercarriage according to claim 1 characterized in the way that a wheel (3) being positioned on the steering axle is provided with a basically cylindrical coating (5) with an axial length exceeding the axial length of the steering axle.

3. Undercarriage according to claim 1 or 2 characterized in the way that the two geometrical axes of the swivelling axis (8) and the steering axle (7) cut across each other.

FIG.1



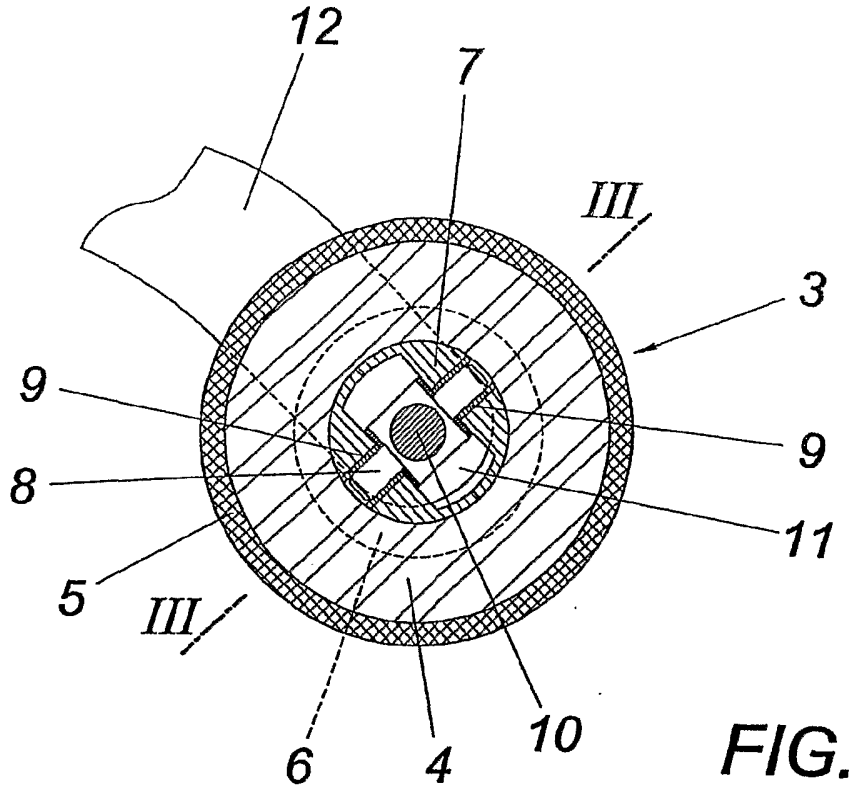


FIG.2

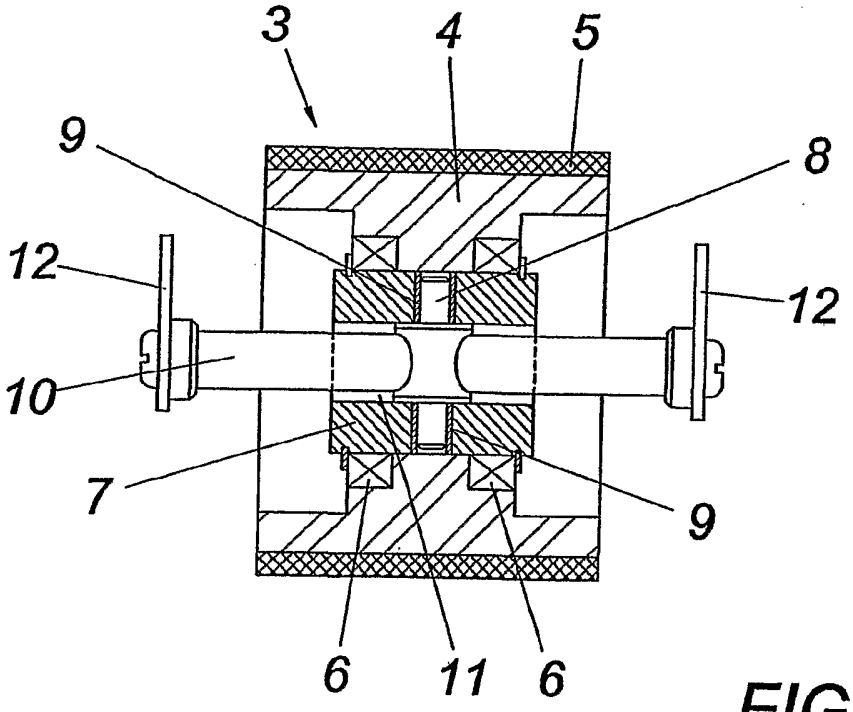


FIG.3

FIG.4

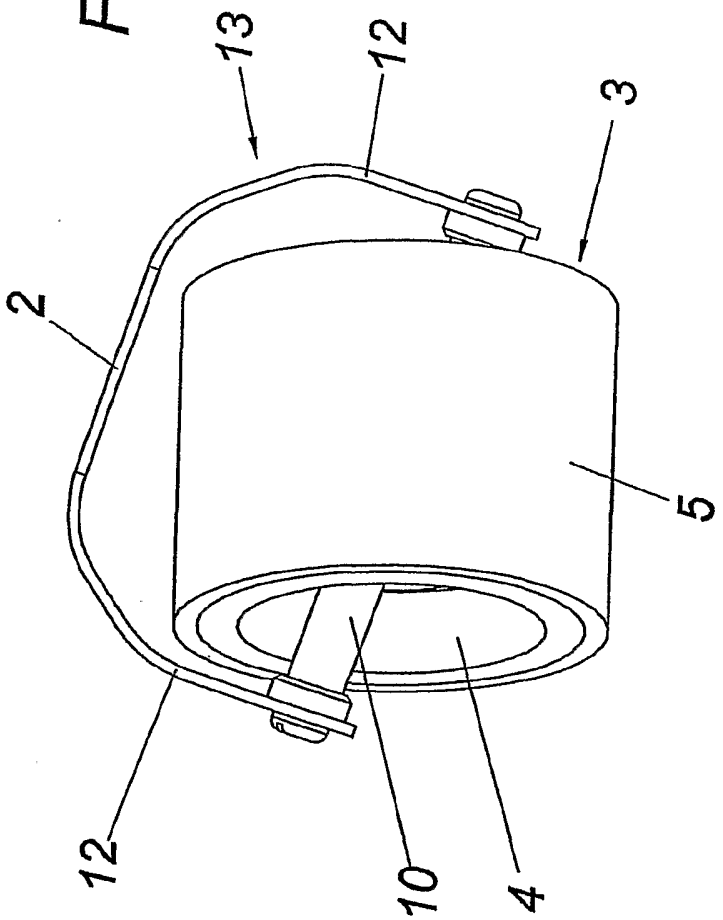
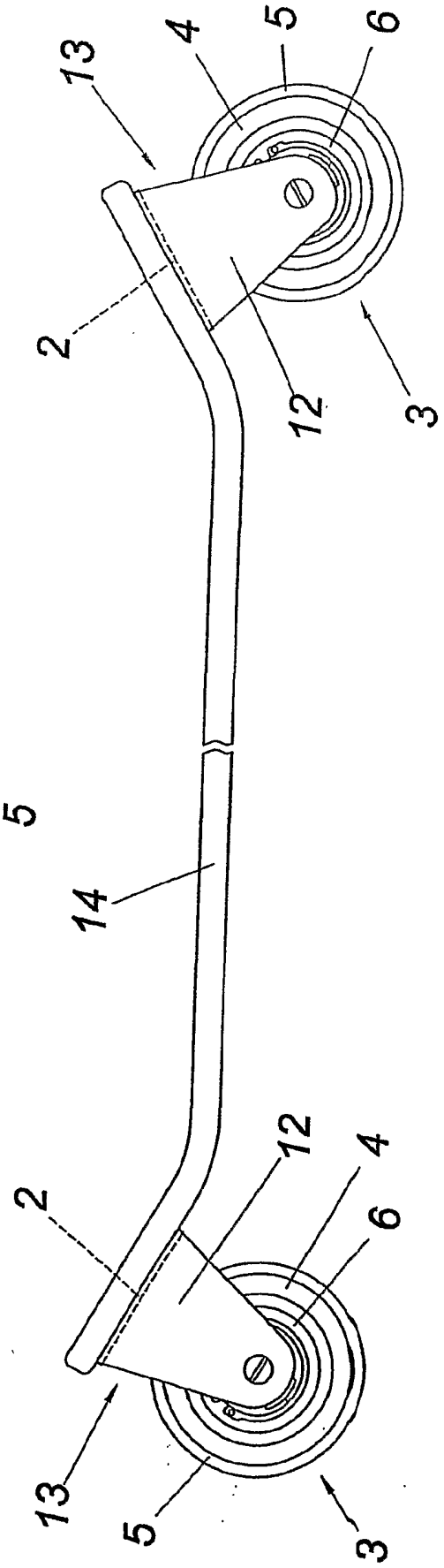


FIG.5



INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2005/000732

A. CLASSIFICATION OF SUBJECT MATTER

IPC[7] A63C 17/00

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[7] A63C

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

Chinese patents, CAJ fulltext database

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

WPI, EPODOC, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CN, A, 1195566 (MU, Weiping) 14.Oct. 1998 (14.10.1998) Whole document	1-3
A	US, A, 5263725 (GESMER D et al) 23.Nov. 1993 (23.11.1993) Whole document	1-3
A	US,A, 4138127 (MATSUSHITA ELEC IND CO LTD) 6.Feb. 1979 (06.02.1979) Whole document	1-3
A	JP, A, 9168628 (TECNICA SPA) 30.Jun. 1997 (30.06.1997) Whole document	1-3
A	AT, U, 005006 (ZEUG-DESIGN G.M.B.H. et al) 25.Feb. 2002 (25.02.2002) Whole document	1-3

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"&"document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
5.Jul. 2005 (05.07.2005)	04 · AUG 2005 (04·08·2005)
Name and mailing address of the ISA/CN The State Intellectual Property Office, the P.R.China 6 Xitucheng Rd., Jimen Bridge, Haidian District, Beijing, China 100088 Facsimile No. 86-10-62019451	Authorized officer WANG Sen Telephone No. 86-10-62084766

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2005/000732

CN, A, 1195566	14.Oct. 1998 (14.10.1998)	None	
US, A, 5263725	23.Nov. 1993 (23.11.1993)	EP, A, 0557872	1.Sep.1993 (01.09.1993)
US,A, 4138127	6.Feb. 1979 (06.02.1979)	None	
JP, A, 9168628	30.Jun. 1997 (30.06.1997)	None	
AT, U, 005006	25.Feb. 2002 (25.02.2002)	None	