(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 679 102 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
12.07.2006 Bulletin 2006/28

(51) Int Cl.:
A63C 17/12 *(2006.01)*

(21) Application number: **06075034.6**

(22) Date of filing: **06.01.2006**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI SK TR
Designated Extension States:
AL BA HR MK YU

(30) Priority: **10.01.2005 NL 1027984**

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(54) Recreation vehicle

(57) A recreation vehicle (1) is described, comprising a base frame (2) provided with at least three guide members (3, 4) for guidance relative to a ground, a drive unit (10) tiltably coupled to the base frame (2) about two mutually perpendicular axes, provided with a rotatable drive member (17) with a circular bottom surface (19), which drive unit (10) has a neutral position wherein the rotation axis (16) of the drive member (17) is substantially directed perpendicular relative to the ground, wherein the drive member (17) is free from the ground, and wherein the bottom surface (19) is situated at short distance from the ground, and drive means (18) for rotating the drive member (17).

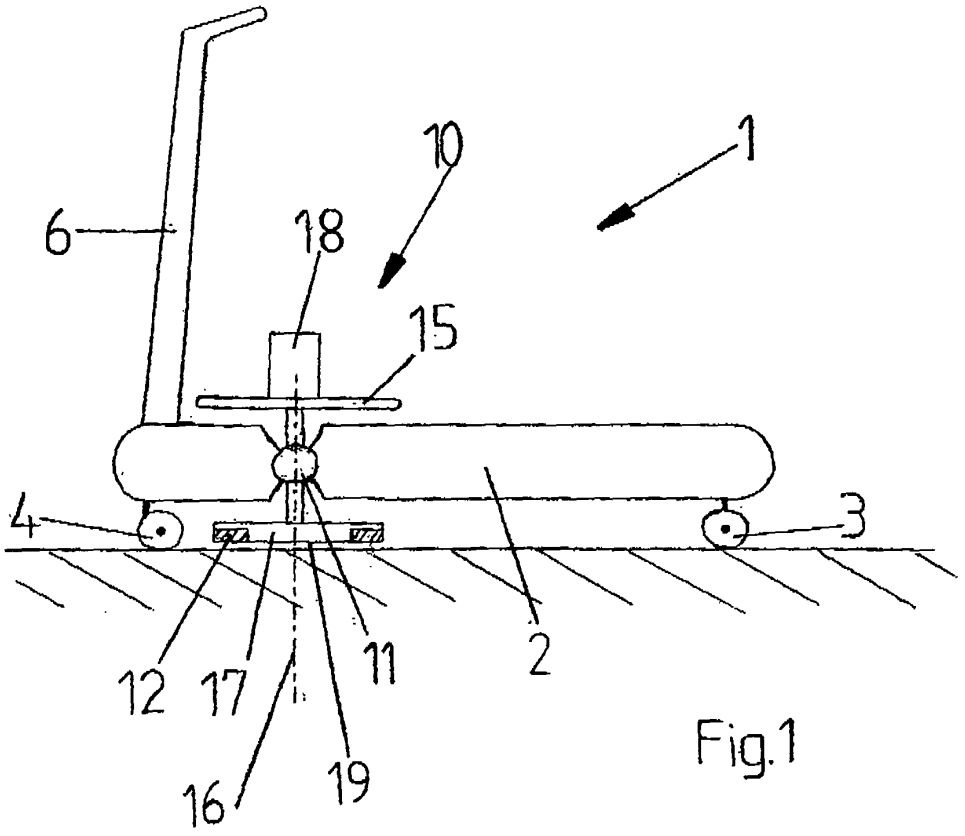

Fig.1

EP 1 679 102 A1

Description

[0001] The invention relates to a vehicle for recreational use, for example on closed terrains with a relatively flat ground.

[0002] In the market of recreation, game and leisure activities, vehicles play an important role. In this context, one can think of vehicles which are amusing to drive, for example because they have an unusual way of operating. Such recreation vehicles should have characteristics of manoeuvrability, should appeal to the adroitness of the driver and give him a sense of speed, because it is proven that good ingredients for amusement and relaxation are then present. For group arrangements, it can be desired that the vehicle is suitable to be able to create a game or match element, for example by being able to let multiple of said vehicles drive together or against each other.

[0003] Several types of such recreation vehicles already exist.

[0004] It is an object of the present invention to provide a new type of recreation vehicle. To that end, a recreation vehicle according to the invention has the features as described in claim 1. A person can stand on the drive unit, and tilts the rotating drive member against the ground, by using his weight, whereby the vehicle displaces itself in a direction depending on the direction in which that person tilts the drive unit.

[0005] With a recreation vehicle according to the invention, one will be able to displace oneself standing upright with large manoeuvrability and with a large sense of speed. Further, such a vehicle will be easy to operate, and it can move on on practically any flat, relatively hard ground, such as for example concrete floors and asphalt or the like, but also on snow or ice.

[0006] Hereinafter, the invention will be further explained with reference to the attached drawing, in which:

figure 1 shows a schematic longitudinal section of an embodiment of a recreation vehicle according to the present invention with the drive unit in the neutral position,

figure 2 shows a bottom view of the recreation vehicle of figure 1, and

figure 3 shows a longitudinal section of the recreation vehicle of figure 1 with the drive unit in several tilted positions.

[0007] Figure 1 shows a longitudinal section of a recreation vehicle 1 according to the present invention. The recreation vehicle 1 comprises a base frame 2 resting on a number of wheels 3, 4. The base frame 2 may in principle have any contour, but preferably has a round shape, for example an elliptic or oval contour, as illustrated in figure 2. In this example, the number of wheels is equal to four. Preferably, one wheel 3 is fixedly mounted to the base frame 2, and the remaining wheels 4 are swivelling rollers capable of swivelling fully (360°) about their vertical axis. The base frame 2 has a top surface suitable for at least one person to stand on. Preferably, a bracket 6 or other supporting member is attached to the base frame 2, to which supporting member the person or persons can hold themselves.

[0008] The vehicle 1 is provided with a drive unit 10 to be operated by body weight. The drive unit 10 comprises a manipulation member 15, which in this example is a foot platform and extends above the base frame 2, and a drive member 17 situated below the base frame 2, which drive member is rotatable about a rotation axis 16 relative to the foot platform 15. Relative to the base frame 2, the foot platform 15 is fixed against rotation about the rotation axis 16. The drive unit 10 can tilt about two mutually perpendicular horizontal axes relative to the base frame 2. In a suitable embodiment, the drive unit 10 is coupled to the base frame 2 by means of a ball joint 11. The drive member 17 is driven by a motor 18 which is mounted to the foot platform 15. Preferably, the motor 18 is an electromotor which is supplied by batteries. Preferably, the motor 18 is positioned centrally on the foot platform 15, and a driven motor shaft extends downward through the ball joint 11, and the drive member 17 is directly mounted on the motor shaft.

[0009] Figure 2 shows a view on the bottom side of the recreation vehicle 1. The vehicle 1 has a centre 13 and a vertical centre plane 14 defining a longitudinal direction of the vehicle 1. The fixed wheel 3 has a wheel rotation axis 3a perpendicular to the centre plane 14, and is located at an end of the base frame 2 which will be indicated as rear end. The ball joint 11 is situated in the base frame 2 and on the rotation axis 16, wherein the centre 13 is situated between the ball joint 11 and the fixed wheel 3.

[0010] In a neutral position of the drive unit 10, as shown in figure 1, the rotation axis 16 is directed vertically, and the bottom surface 19 of the drive member 17 is situated at short distance of a ground on which the vehicle 1 stands. Since there is no contact between the drive member 17 and the ground, the vehicle 1 will stand still or move straight on with constant speed. If the foot platform 15 is tilted, the drive member 17 tilts along and touches the ground with its bottom surface 19. The tilting is illustrated in figure 3, in which the recreation vehicle of figure 1 is shown with the drive unit in two different tilted positions. The rotating drive member 17 then exerts a friction force on the ground; for a good friction contact with the ground, the drive member 17 is provided at its bottom side, at least at its peripheral edge, with a lining 12 of rubber or synthetic material. The material and the profile of this lining 12 may be adapted to the type of ground, for example concrete, ice etc. As reaction to the friction force, the vehicle 1 experiences a thrusting force, of which the direction depends on which part of the drive member 17 touches the ground, and thus on the tilting direction of the foot platform 15, which tilting direction can be influenced by the driver by displacing his weight. This is further illustrated in figure 2, in which the lining 12

is shown shaded. The direction of rotation of the drive member 7 is shown with a round arrow. The straight arrows represent the directions of the respective forces which are exerted on the vehicle when a part of the lining 12 touches the ground at the position of the origin of the arrow.

[0011] The particular characteristic of the recreation vehicle proposed by the present invention is therefore the way of driving, by means of the tiltable drive disc 17, of which the rotation axis 16 is substantially directed vertically in a neutral position. By tilting the drive disc 17, a circumferential part of that disc comes into contact with the ground, and the reaction force drives the vehicle.

[0012] In the described embodiment, a manipulation member 15 for manipulating the tilting of the drive disc 17 is implemented in the form of a foot platform. The driver stands on that platform, and tilts the drive disc 17 by means of a weight displacement on the platform. If desired, the driver can hold on to a support 6 which is directed upward relative to the base frame. In an alternative embodiment, the driver might stand on the base frame, and a manipulation member could be implemented as a grip which is directed upward relative to the base frame, similar to the support 6, which grip is coupled to the drive disc 17, so that the driver can tilt the grip with his hands and thus can tilt the drive disc 17.

[0013] The drive direction depends on the tilting direction of the drive disc 17. In the embodiment described, the manipulation member 15 is directly coupled to the drive disc 17, so that a forward tilting of the manipulation member 15 corresponds to a forward tilting of the drive disc 17, in which case a front part of the drive disc 17 comes into contact with the ground and the reaction force is thus directed to the left or to the right, depending on the direction of rotation of the drive disc 17. In an alternative embodiment, a coupling accommodated between the manipulation member 15 and the drive disc 17 is provided, which coupling rotates the tilting direction of the drive disc 17 90° relative to the tilting direction of the manipulation member 15. The manipulation member 15 and the drive disc 17 may for example be tiltably mounted to the base frame independent of each other, by means of respective ball joints or the like, and a system of cross-coupled bars couples the manipulation member 15 to the drive disc 17. For example, four of such bars are provided. Each bar has a first end and a second end. The first end of a bar is pivotably coupled to the manipulation member 15, at certain distance from the rotation axis 16. The second end of that bar is pivotably coupled to the drive disc 17, also at certain distance from the rotation axis 16, and at an angular position which is shifted 90° relative to the position of the first end. The said distances are preferably mutually equal.

[0014] In such an embodiment, a forward tilting of the manipulation member 15 corresponds to a lateral tilting of the drive disc 17, wherein a lateral part of the drive disc 17 comes into contact with the ground and the reaction force is thus directed forward, depending on the direction of rotation of the drive disc 17.

[0015] It will be clear to a person skilled in the art that the scope of the invention is not limited to the examples discussed in the preceding, but that several variations and modifications thereof are possible without diverting from the scope of the invention as defined in the attached claims.

[0016] Instead of wheels, for example rolls, slide irons, skis, etc. may be implemented, in general to be indicated as guide members.

[0017] In further variations, it is possible that the driver of the vehicle sits on the base frame, and operates the drive unit by hand by means of, for example, a joystick.

[0018] It is further possible that the drive means are situated on the base frame and energize the drive unit by means of a transmission.

Claims

1. Recreation vehicle (1), comprising
a base frame (2) provided with at least three guide members (3, 4) for guidance relative to a ground,
a drive unit (10) tiltably coupled to the base frame (2), provided with a rotatable drive member (17) with a circular bottom surface (19), which drive unit (10) has a neutral position wherein the rotation axis (16) of the drive member (17) is directed substantially perpendicular relative to the ground, wherein the drive member (17) is free from the ground, and wherein the bottom surface (19) is situated at short distance from the ground, and
drive means (18) for rotating the drive member (17).

2. Recreation vehicle according to claim 1, wherein the drive unit (10) is coupled to the base frame (2) by means of a ball joint (11).

3. Recreation vehicle according to claim 1 or 2, further comprising a manipulation member (15) for tilting the drive unit (10).

4. Recreation vehicle according to claim 3, wherein the manipulation member comprises a foot platform (15).

5. Recreation vehicle according to claim 3 or 4, wherein the manipulation member (15) is coupled to the drive member (17) in such a way that a tilting direction of the manipulation member (15) corresponds to a tilting direction of the drive member (17).

6. Recreation vehicle according to claim 3 or 4, wherein the manipulation member (15) is coupled to the drive member (17) in such a way that a tilting direction of the manipulation member (15) makes an angle of substantially 90° with a tilting direction of the drive member (17).

7. Recreation vehicle according to any of the preceding claims, wherein the drive means (18) are arranged on the drive unit (10).

8. Recreation vehicle according to any of the preceding claims, wherein the drive means (18) comprise an electromotor, and wherein the recreation vehicle (1) is preferably provided with one or more batteries for supplying the electromotor.

9. Recreation vehicle according to any of the preceding claims, wherein the drive member (17) comprises a flat cylindrical disc.

10. Recreation vehicle according to any of the preceding claims, wherein the drive member (17) is provided at the bottom surface (19), at least at the peripheral edge, with a lining (12) of rubber or of synthetic material.

11. Recreation vehicle according to any of the preceding claims, wherein the guide members comprise wheels (3, 4).

12. Recreation vehicle according to claim 11, wherein one wheel (3) has a fixed direction of rotation relative to the base frame (2), and the remaining wheels (4) are fully (360°) swivelling.

13. Recreation vehicle according to any of the preceding claims, wherein the base frame (2) is provided with a support member (6).

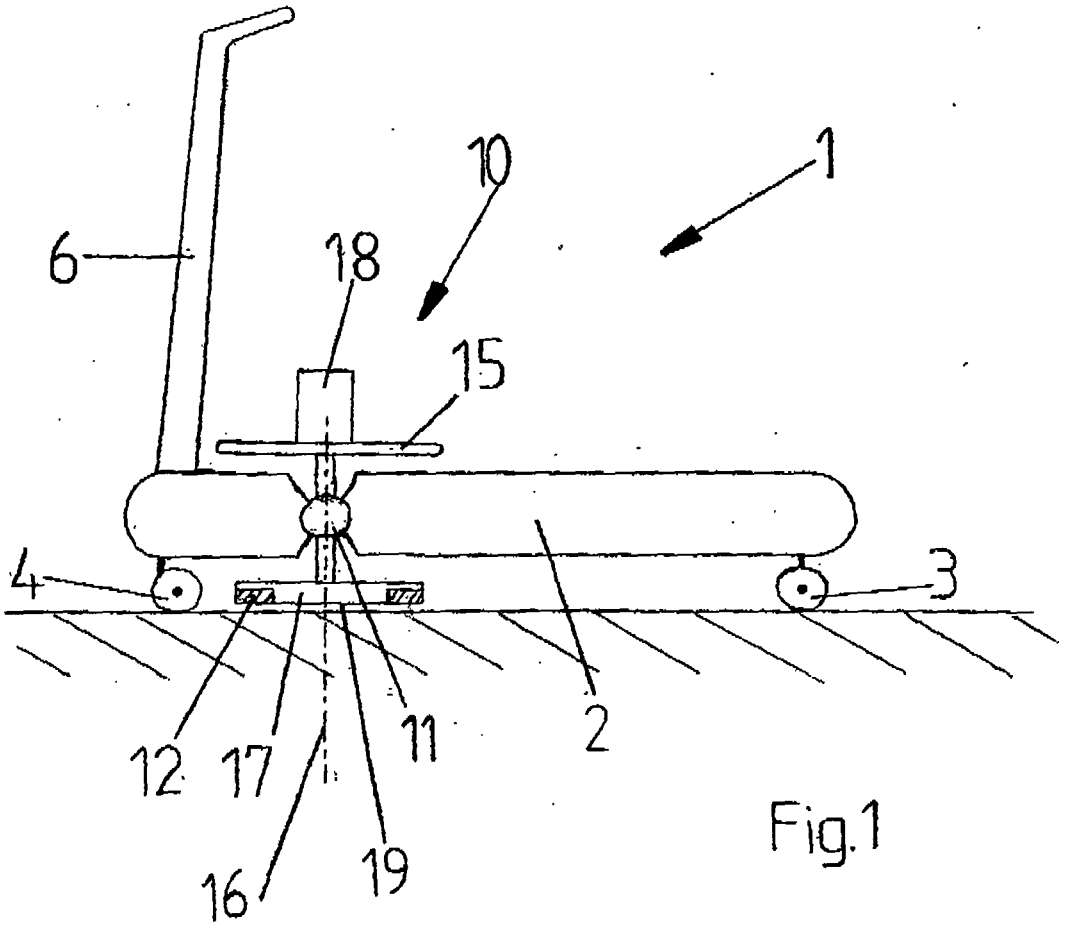

Fig.1

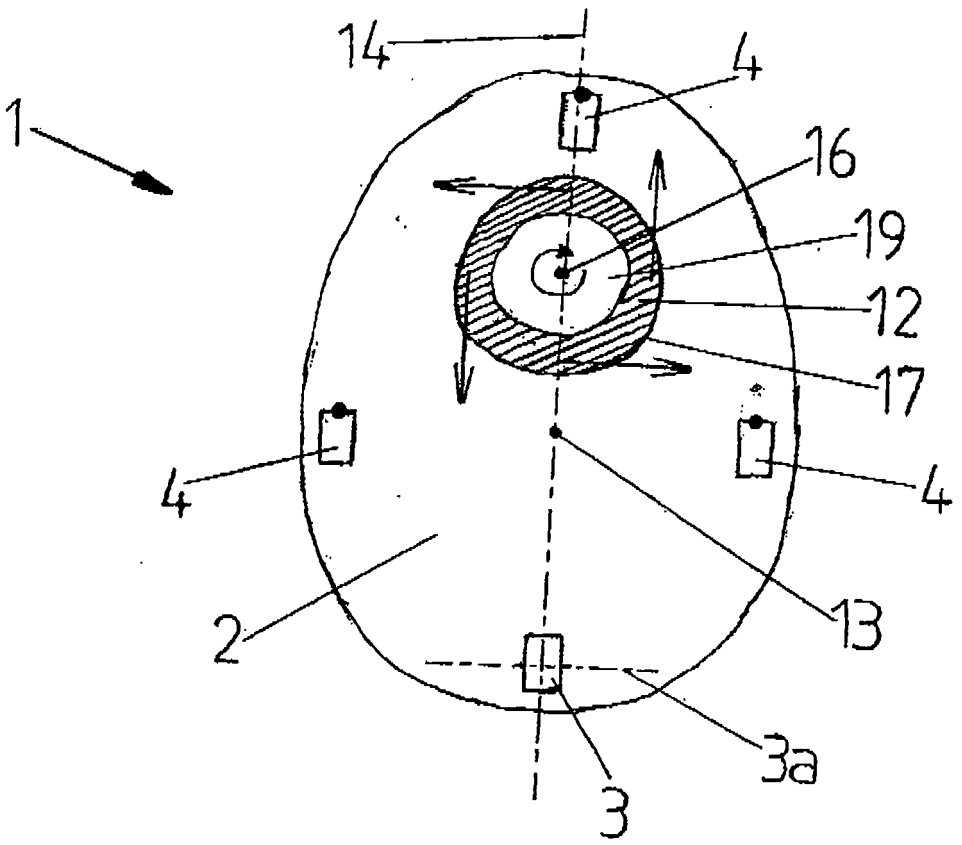

Fig.2

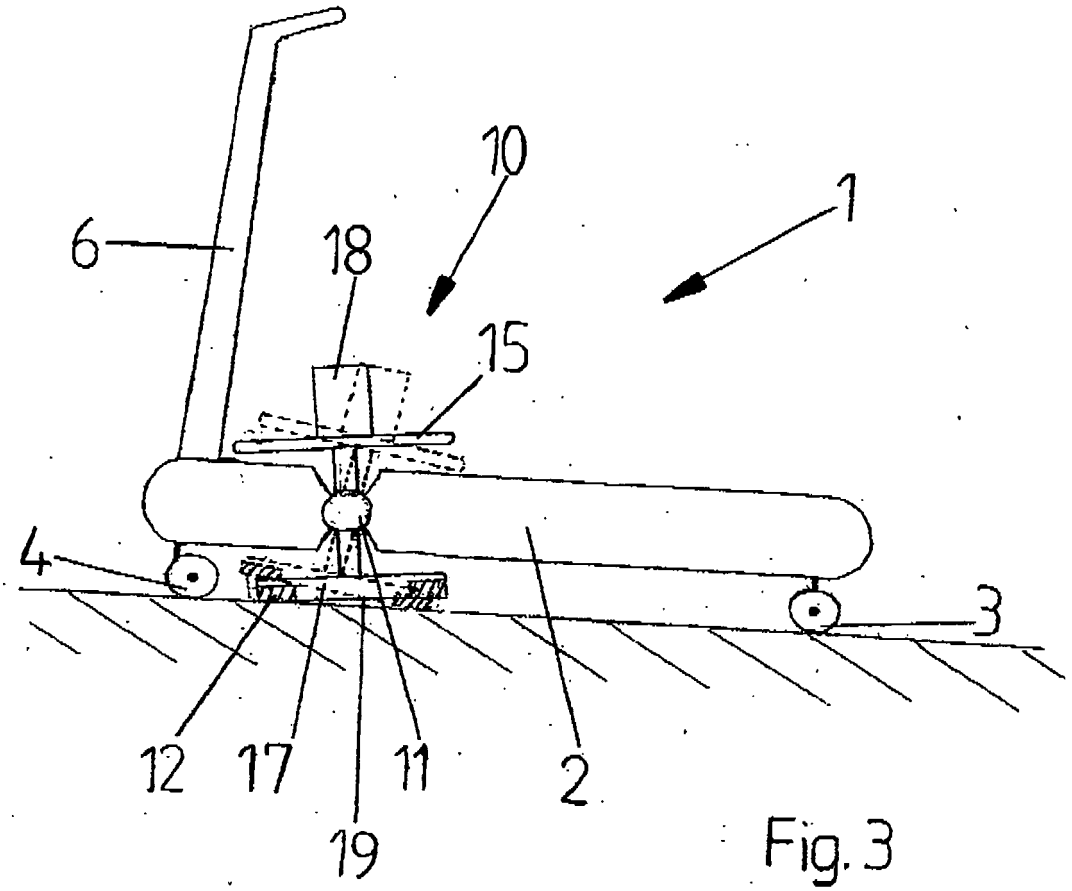

Fig. 3

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EUROPEAN SEARCH REPORT

Application Number
EP 06 07 5034

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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TECHNICAL FIELDS SEARCHED (IPC)

A63C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	10 April 2006	Schut, T

CATEGORY OF CITED DOCUMENTS

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EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 06 07 5034

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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10-04-2006

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