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(71) Applicant: **Faggiotto, Elberino**
30027 S. Dona' di Piave (VE) (IT)

(72) Inventor: **Faggiotto, Elberino**
30027 S. Dona' di Piave (VE) (IT)

(74) Representative:
Petraz, Gilberto Luigi et al
GLP S.r.l.
Piazzale Cavedalis 6/2
33100 Udine (IT)

(54) Roller skate

(57) Roller skate (10) with rigid or semi-rigid shoe (11) associated with at least two bearing wheels (12), the skate (10) including bearing wheels (12) arranged at the sides of the shoe (11) at a forward position thereof and at least a rear balancing wheel (13) displaced backwards with respect to the erect body of the user (15) and lying substantially on the plane of the center line of the two bearing wheels (12).

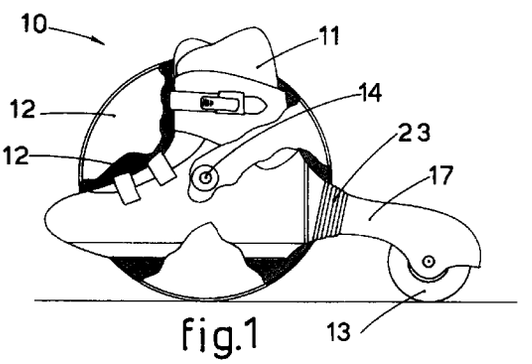

fig.1

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Description

FIELD OF THE INVENTION

[0001] This invention concerns a roller blade as set forth in the main claim.

[0002] With the skate according to the invention, it is possible to achieve much higher speeds, to overcome obstacles more easily and to ensure greater comfort and safety, with respect to skates such as are known in the state of the art.

[0003] The invention moreover allows the user to perform different skating styles and techniques, both traditional and completely innovative.

BACKGROUND OF THE INVENTION

[0004] The Applicant is not aware of any road skates which have the characteristics and performance given by the skate according to the invention.

[0005] In fact, in the state of the art there are roller skates with four wheels arranged parallel two by two at the sides of the shoe, or skates with from two to six or more wheels aligned on a single longitudinal plane.

[0006] At present, both for use in competitive skating and for free time, roller skates, and particularly those with aligned wheels, have met with enormous success; this has given rise to a need to seek out new embodiments, both to increase performance and also to improve comfort and safety for the user.

[0007] These embodiments, however, have never been such as to bring about radical modifications to the structure, functioning or use of the skates.

[0008] For this reason, the limitations of skates known to the state of the art - such as, for example, the difficulty of overcoming obstacles, the limited speeds which can be reached, the lack of versatility in use, difficulty in stopping, etc. - have in some cases been reduced, but have never been completely overcome.

[0009] The present Applicant has designed and embodied this invention to overcome the limitations of skates of the traditional type, to provide a skate with a completely new structure and design, and to obtain further advantages as will be shown hereafter.

SUMMARY OF THE INVENTION

[0010] The invention is set forth and characterised in the main claim, while the dependent claims describe variants of the idea of the main embodiment.

[0011] The purpose of the invention is to provide a roller skate with a structure suitable to overcome, as will be shown hereafter, the limitations evidenced by traditional skates such as, among others, reaching speeds which could not be reached before.

[0012] A further purpose is to extend the field of use of roller skates, increasing their versatility and allowing new skating styles and techniques to be performed, including rink skating, acrobatic skating and off-road skating.

[0013] The skate according to the invention consists of a removable shoe, rigid or semi-rigid, cooperating with at least three wheels: at least two bearing wheels are associated with the sides of the shoe and at least a third wheel, or balancing wheel, is located at a rear position with respect to the bearing wheels.

[0014] According to a variant, the third wheel is arranged on the center line plane of the two bearing wheels.

[0015] According to another variant, the third wheel is displaced backwards by a desired amount with respect to the erect body of the user.

[0016] The third wheel, or balancing wheel, is associated with the front end of a longitudinal element whose rear end is attached to the rear part of the shoe.

[0017] According to a variant, between the rear end and the shoe there is an elastic element. According to another variant, the rear end is associated with a back piece, body piece or similar, worn by the user.

[0018] According to a variant, the at least two bearing wheels are larger in diameter than the wheels of traditional skates and lie on a plane angled downwards and inwards with respect to the vertical plane passing through the median longitudinal axis of the shoe.

[0019] In this way, each bearing wheel located on one side of the shoe achieves with the corresponding bearing wheel located on the other side a V with the top facing downwards; the top constitutes the zone of contact between the bearing wheels and the ground. Therefore, even if the centres of the bearing wheels are outside the shoe, the zone of contact between the wheels and the ground is located within the projection of the shoe as happens in aligned skates which have traditional wheels.

[0020] In a variant, the longitudinal element supporting the balancing wheel associated with the rear part of the shoe acts as a command organ for a braking system.

[0021] In one embodiment, the braking system comprises a friction element which is activated by levers and interferes with the wheels.

[0022] In the preferential embodiment of the invention, the friction element acts on both the bearing wheels, thus making it easier to stop the skates without compromising the stability and safety of the user.

[0023] According to a variant, the levers are activated by the longitudinal element when the user moves his/her weight backwards, causing the longitudinal element to bend. According to another variant, the braking system acts only, or also, on the third wheel or balancing wheel.

[0024] According to another variant, the two bearing wheels are associated elastically to the shoe.

[0025] According to one embodiment, the axles of the wheels are associated directly with the shoe.

[0026] According to a variant, the axles are associated

with a connection element, for example stirrup shaped, with which the shoe is removably associated; this allows to use traditional shoes such as, for example, those used in aligned skates or ice skates.

[0027] In one embodiment, the axle of the bearing wheels is located at a greater height than that of the sole of the shoe; this allows to take the sole to a minimum height from the ground and therefore to lower the centre of gravity of the user and thus give him/her greater stability and balance.

[0028] The skates according to the invention, compared with traditional skates, allow the user to reach much higher speeds with less effort, thanks especially to the greater diameter of the bearing wheels with respect to the wheels of traditional skates.

[0029] In the preferential embodiment of the invention, the bearing wheels have a diameter of between 100 mm and 500 mm and the at least one balancing wheel has a diameter greater than or equal to 50 mm.

[0030] In a variant, the balancing wheel is driven by motor means included, for example, on the back piece or body piece worn by the user.

BRIEF DESCRIPTION OF THE DRAWINGS

[0031] The attached Figures are given as a non-restrictive example and show some preferential embodiments of the invention as follows:

Fig. 1 is a partly cut-away side view of a skate according to the invention;
Fig. 2 is a view of Fig. 1 from above;
Fig. 3 is the rear view of Fig. 1, partly in section;
Fig. 4 shows a variant of Fig. 3;
Fig. 5 shows an enlarged detail of Fig. 1;
Fig. 6 is a three dimensional view of a variant of Fig. 1;
Fig. 7 shows another variant of Fig. 1;
Fig. 8 is a part cut-away view of an enlarged detail of Fig. 7;
Fig. 9 shows the enlarged section from A to A of Fig. 7;
Fig. 10 shows a variant of Fig. 4;
Fig. 11 is a three dimensional view of the enlarged detail B of Fig. 10;
Fig. 12 shows the skates in Fig. 1 in use;
Fig. 13 is a front view of Fig. 12;
Fig. 14 shows a variant of Fig. 12;
Fig. 15 shows a variant of Fig. 14;
Fig. 16 is a part view of a variant of Fig. 12.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0032] The skate 10 according to the invention shown in Figs. 1-3 comprises a shoe 11 associated with two bearing wheels 12 cooperating with a balancing wheel 13 located at a position behind the bearing wheels 12 and on their centre line plane.

[0033] The bearing wheels 12 are associated with the sides of the shoe 11 by means of axles 14, in this case solid with the shoe 11, located at a higher position than that of the sole of the shoe 11; this allows the user 15 to assume a stance similar to the one he/she would have if he/she were using skates of a traditional type (Figs. 12-13).

[0034] The bearing wheels 12 are associated with the axles 14 by means of bearings, advantageously with high resistance conical rollers, which eliminate any play created by the parts settling or by wear on the parts.

[0035] The bearing wheels 12 are much larger in diameter than the wheels used in skates known to the state of the art, preferentially between 100 and 500 mm, and are angled with respect to the vertical median plane 16 of the shoe 11. To be more exact, the bearing wheel 12 located on the right side of the shoe 11 forms an upside down V with the bearing wheel 12 located on the left side.

[0036] In the ideal working condition of the skates 10, the points of contact between the right wheel 12 and the ground are adjacent to the points of contact of the left wheel 12, so that the overall width of the area of contact of the two wheels is similar to that which is to be found with aligned skates using traditional wheels. The points of contact with the ground of the bearing wheels 12 are moreover aligned with the balancing wheel 13.

[0037] In order to get as close as possible to these ideal working conditions, wheels 12 with special profiles are used.

[0038] In the case of Fig. 3, for example, the bearing wheels 12 have a perimeter edge such that, in correspondence with the top of the V, the edges approach each other almost until they touch so as to achieve substantially a single profile like the arc of a circle comparable to that of a wheel used in aligned skates.

[0039] Given their large diameter, however, the bearing wheels 12 make it possible to reach much higher speeds than those which can be reached with aligned skates, and with much less effort, and also to overcome obstacles in the skater's path much more easily.

[0040] In the embodiment shown in Fig. 9, on the contrary, bearing wheels 12 are used with a very thin perimeter edge.

[0041] In both embodiments, however, the wheels 12 can have any thickness and structure whatsoever, for example lenticular, with spokes or segments etc., according to the type of material used.

[0042] According to the invention, the balancing wheel 13 not only allows greater forces to be discharged to the ground, it also allows the user 15 a greater stability while using the skates 10.

[0043] In the embodiments shown in Figs. 1-13 and 16, the balancing wheel 13 is associated with the rear end of a longitudinal element 17 elastically associated with the rear part of the shoe 11.

[0044] According to the invention, the longitudinal ele-

ment 17 can be made as a single piece with the shoe 11 or, as shown in Figs. 1-5, it can be of the removable type.

[0045] In this case, as shown in detail in Figs. 4 and 5, the attachment between the longitudinal element 17 and the shoe 11 is achieved by means of joints 18, for example dove-tail joints, made stable by means of attachment elements 35 consisting in this case of an expansion screw.

[0046] In the variant shown in Fig. 6 there is a part view of a skate 10 which allows to use shoes 11 of the type used in aligned skates or ice skates without the wheel-bearing saddle or the blade.

[0047] In this embodiment, the axles 14 of the bearing wheels 12 are located on the upper ends of a stirrup element 19 equipped at the centre with a supporting blade 20 including holes 21 which, aligning with the holes on the shoe 11 used to associate the shoe with the wheel-bearing saddle or the blade for the ice skate, allow mating attachment elements to be inserted and clamped.

[0048] In this variant, the longitudinal element 17 which supports the balancing wheel 13 is associated not with the shoe 11 but is removably associated with the blade 20 of the stirrup element 19. According to a variant which is not shown here, the shoe 11 and the stirrup element 19 are attached by means of joints.

[0049] In the variant shown in Figs. 7-9, the skate 10 is equipped with a braking system 22 acting on the bearing wheels 12 which can be activated by the user 15 by means of the longitudinal element 17.

[0050] To be more exact, the longitudinal element 17 has an elastic articulated joint 23 which allows it to bend upwards when the user 15 moves his/her weight towards the rear part of the skate 10.

[0051] When this happens, the transmission arm 24 is drawn towards the balancing wheel 13, making the return arm 25 oscillate; the return arm 25 in turn thrusts downwards a friction element 26 which slides inside guides 34 (Fig. 8).

[0052] When thrust downwards, the friction element 26, in this case wedge-shaped, interferes with the inner part of the top of the V, acting simultaneously on both the bearing wheels 12 and thus causing an extremely efficient and safe braking action for the user 15.

[0053] In the variants shown in Figs. 10 and 16, there is a handle 27 on the skates 10 which can be used both in operations to put on and take off the shoe 11, and also to perform more difficult manoeuvres, such as for example those required in acrobatic skating.

[0054] In the embodiment shown in Fig. 10, the handle 27, shown in Fig. 11, can be associated with/removed from the shoe 11 by means of screws which can be inserted into holes made on the body of the handle 27.

[0055] In Fig. 16, on the contrary, the handle 27 is made as a single piece with a protective fairing 28 which surrounds the upper part of the bearing wheels 12.

[0056] In the variants shown in Figs. 14 and 15, the balancing wheel 13 is associated with the end of a longitudinal element 117 which is comparable in structure to the element 17 but much larger. This longitudinal element 117 is directly associated with the user 15.

[0057] In Fig. 14, the longitudinal element 117 is hinged to a rigid back piece 29 fastened to the user 15 by fastening means such as belts, shoulder straps, braces etc.

[0058] In Fig. 15, the longitudinal element 117 is hinged to a rigid body piece 30 worn by the user 15. In both embodiments the longitudinal element 117 cooperates with shock absorber means 31 which increase the user's comfort. In Fig. 15, moreover, there is a motor 32, in this case associated with the back of the rigid body piece 30, which transmits motion to the balancing wheel 13 by means of a transmission system inside the longitudinal element 117. The motor 32, the braking system and any other devices possibly included on the skates 10 are governed by a command unit 33 available to the user 15.

Claims

1. Roller skate with rigid or semi-rigid shoe (11) associated with at least two bearing wheels (12), the skate being characterised in that it includes bearing wheels (12) arranged at the sides of the shoe (11) at a forward position thereof and at least a rear balancing wheel (13) displaced backwards with respect to the erect body of the user (15) and lying substantially on the plane of the center line of the two bearing wheels (12).

2. Skate as in Claim 1, characterised in that the at least two bearing wheels (12) are angled downwards and inwards with respect to the vertical median plane (16) of the shoe (11), the projections of the planes on which the bearing wheels (12) lie meeting below the sole of the shoe (11) and defining a vertex substantially aligned with the point where the balancing wheel (13) comes into contact with the ground.

3. Skate as in Claim 1 or 2, characterised in that the at least one balancing wheel (13) is associated with the end of a longitudinal element (17) constrained to the rear part of the shoe (11).

4. Skate as in Claim 1 or 2, characterised in that the at least one balancing wheel (13) is associated with the end of a longitudinal element (117) fastened to the body of the user (15).

5. Skate as in Claim 4, characterised in that the longitudinal element (117) is associated with the rear part of a rigid body piece/back piece (30, 29).

6. Skate as in any claim hereinbefore, characterised in

that there are shock absorber means (23,31) between the longitudinal element (17,117) and the shoe (11) or the body piece/back piece (30,29).

7. Skate as in the preceding claims, characterised in that the bearing wheels (12) are at least 100 mm in diameter.

8. Skate as in the preceding claims, characterised in that the balancing wheel (13) is at least 50 mm in diameter.

9. Skate as in any claim hereinbefore, characterised in that the shock absorber means (23) are associated with a braking system (22) comprising at least a braking element (26) cooperating with at least a bearing wheel (12).

10. Skate as in Claim 9, characterised in that the braking element (26) is wedge-shaped and acts on the inner part of the vertex formed by the bearing wheels (12).

11. Skate as in Claim 5 or 6, characterised in that the longitudinal element (117) is associated with motor means (32) to drive the balancing wheel (13).

12. Skate as in any claim hereinbefore, characterised in that the shoe (11) is associated with a stirrup element (19) cooperating with the bearing wheels (12) and with the longitudinal element (17).

13. Skate as in any claim hereinbefore, characterised in that it includes gripping handles (27).

14. Skate as in any claim hereinbefore, characterised in that at least the bearing wheels (12) have a protective fairing (28).

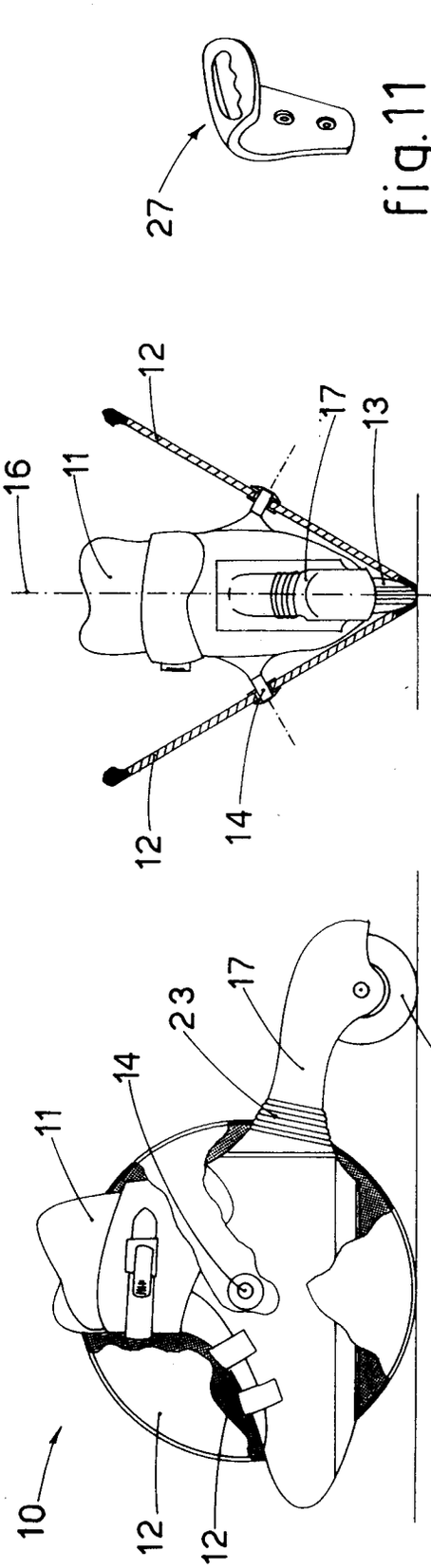

fig.1

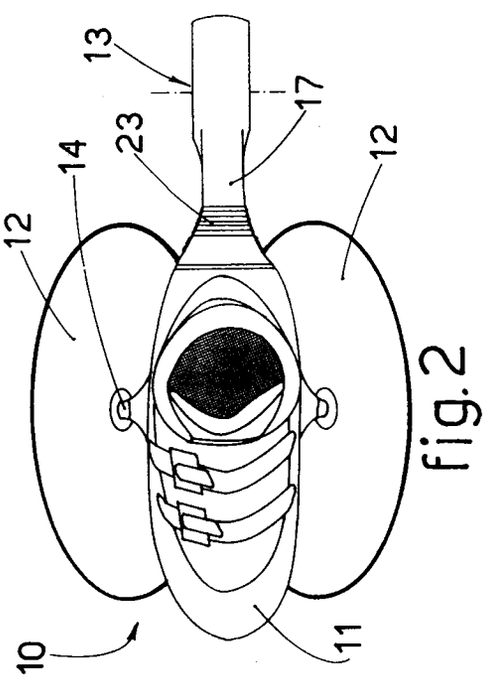

fig.2

fig.3

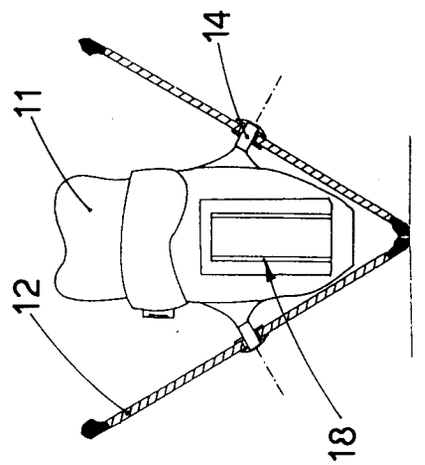

fig.4

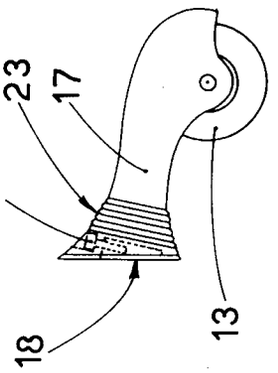

fig.5

fig.11

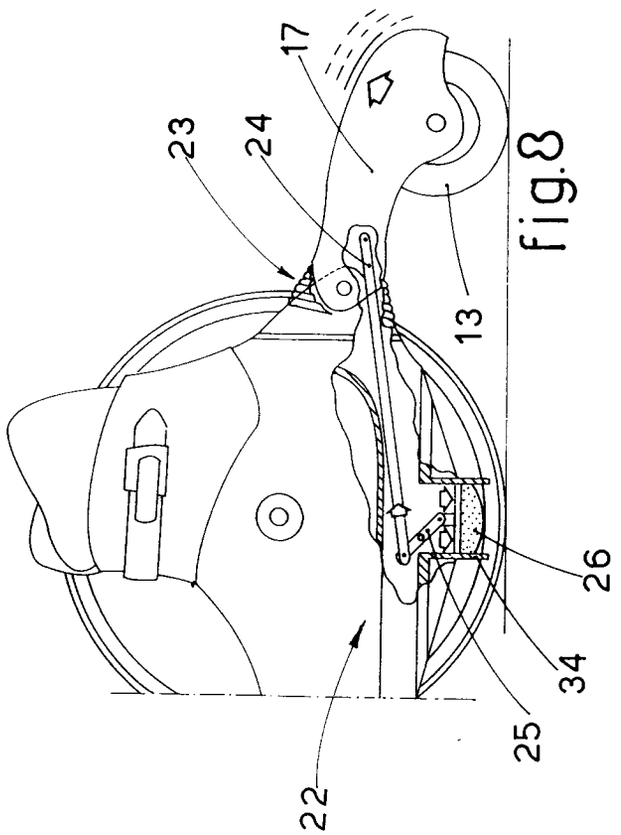

fig.8

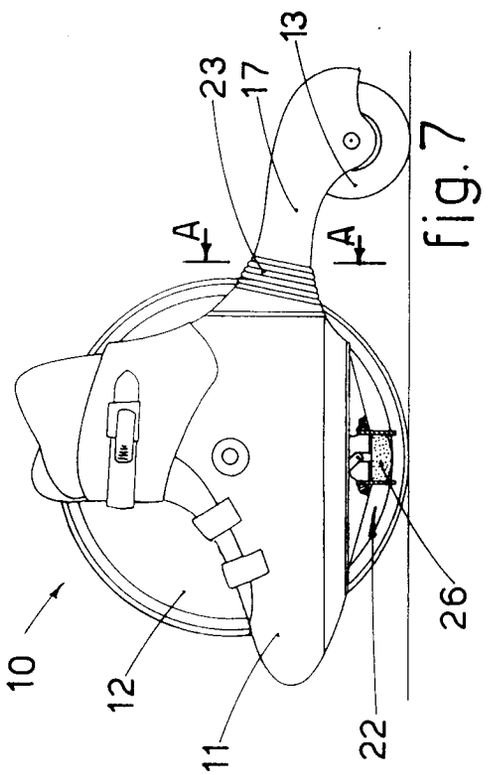

fig.7

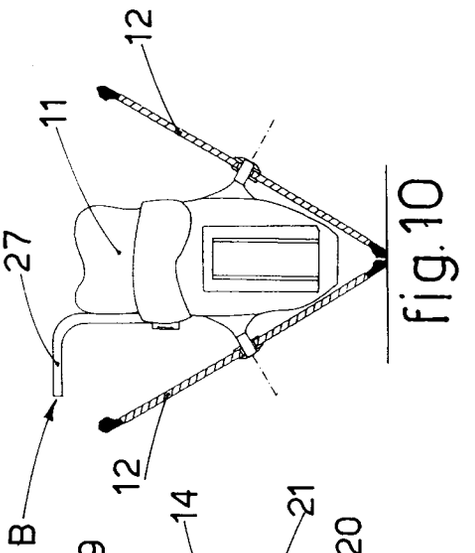

fig.10

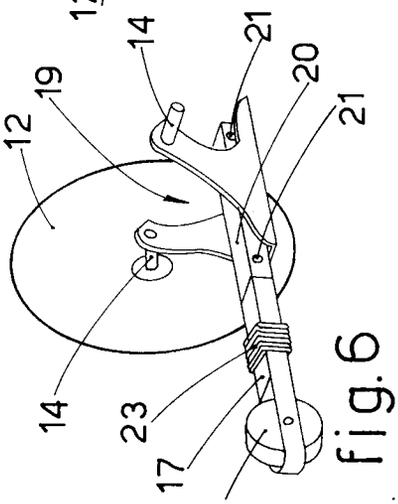

fig.6

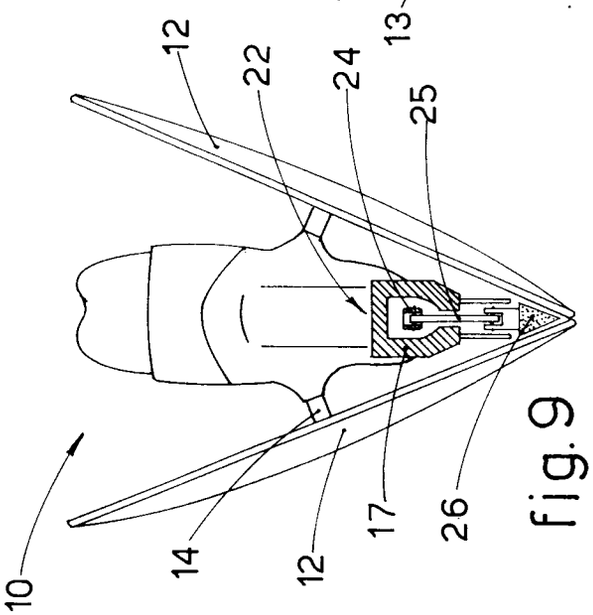

fig.9

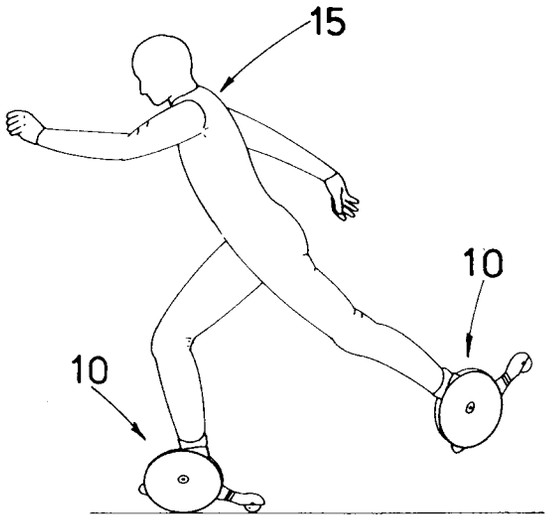

fig.12

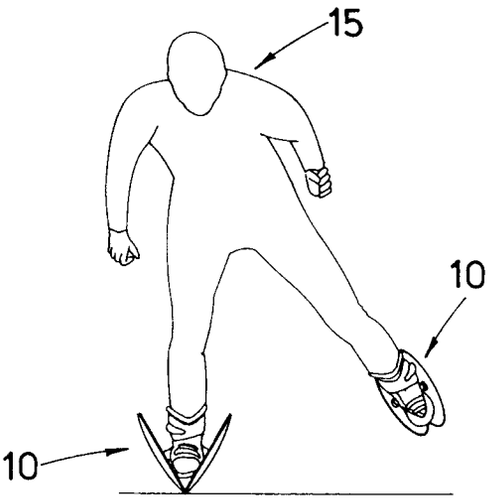

fig.13

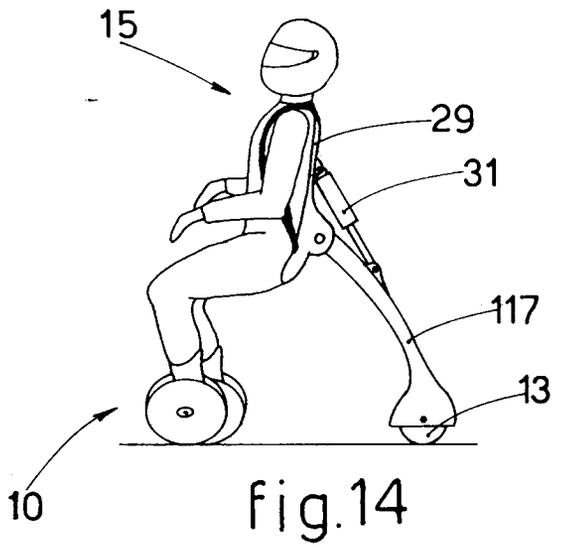

fig.14

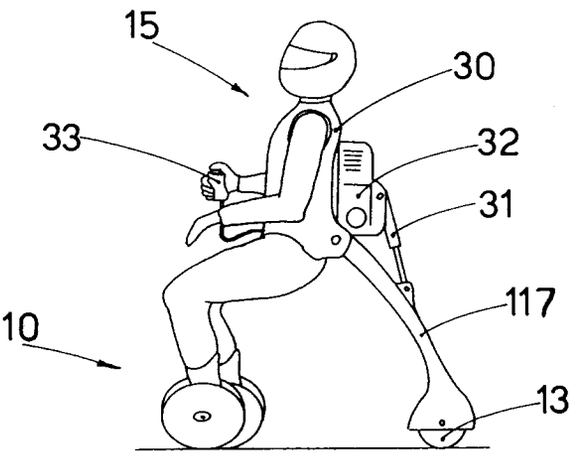

fig.15

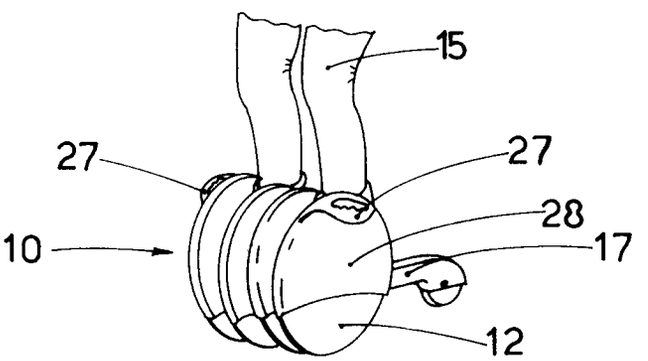

fig.16