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(54) **ROLLER SKI**

ROLLSKI

SKI A ROULETTES

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(56) References cited:
**US-A- 4 887 824 US-A- 5 487 441
US-A- 5 855 385**

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Description

[0001] The present invention relates to roller ski, and in particular to a pair of roller skis or to a monoski or to a roller ski board of the type capable of sliding on rollers interposed between the ski and a suitable ground, e.g. a lawn, a pavement, a carpet and the like.

[0002] Various examples of roller skis or boards are known, sharing the presence of plural in-line rollers rotatably coupled to an elongated ski body. These examples have been devised in lieu of traditional-type skis or snowboards in order to allow skiing in the absence of snow.

[0003] This type of device was taught in several patent documents. In several instances, downhill skis have been proposed wherein the turning is performed as with the traditional on-snow downhill skis, i.e. by shifting a skier's weight.

[0004] E.g., US 4,836,567 (Schmid) suggests roller skis equipped with a front wheel and a pair of parallel rear wheels that could hinder the turning and hence involve for a reduced ski length.

[0005] US 4,886,298 (Shols) discloses a roller ski having pairs of rollers mounted on elastic and pivotable bearings, so as to have a skier's weight shifting entail the tilting of the rollers and therefore a turning. However, this arrangement is unstable and it entails strong friction apt to make lose control of the ski, especially on uneven grounds.

[0006] US 6,237,960 (Dornhofer) discloses instead skis mounted on wheels extending along the entire width of the ski body, providing a remarkable stability, yet complicating the turning.

[0007] US 6,435,558 (Osawa) refers to skis having rollers located on a single line along the ski, in an arrangement known from the so called Rollerblade®. With reference to the rollers positioned at the central portion of the ski, each roller is tapered sideways so that, tilting the skis when turning, the ground-resting spots lie along a curved line, with a bending radius which decreases at the increase of the camber. This arrangement enables turning with a skiing technique, and yet it undermines the ski stability when turning, where the least loss of adherence to the ground would entail a fall by side sliding, which in traditional snow skiing is called inner edge loss.

[0008] US 5,855,385 (Hambusch) discloses a wheeled board device having central and lateral supporting wheels substantially located at the region wherein the weight of the user is concentrated.

[0009] Lastly, US 5,195,781 discloses a ski supported by pairs of parallel rollers. At the central portion of the ski the rollers are mounted on elastic bearings and have a tapered shape such that, at tilted ski, the ground-resting spots are located on curved lines. This arrangement, though more effective than the preceding one in terms of stability, aims at simulating the presence of the so-called laminae onto traditional skis. However, onto hard and possibly uneven terrains, the inner edge loss is al-

ways very high, as the outer roller is unburdened.

[0010] The technical problem underlying the present invention is to provide roller ski allowing to overcome the drawbacks mentioned with reference to the known art.

[0011] This problem is solved by a roller ski as defined in appended claim 1.

[0012] The main advantage of the roller ski according to the present invention lies in allowing turning with common skiing techniques, concomitantly ensuring a remarkable stability to the skier.

[0013] The present invention will hereinafter be described according to a preferred embodiment thereof, given by way of a non-limiting example and with reference to the attached drawings, wherein:

* figure 1 is a top perspective view of a roller ski according to the invention;

* figure 2 is a bottom perspective view of the roller ski of figure 1, fitted with accessories, in particular with a respective pole;

* figure 3 is a schematic top plan view of the roller ski of figure 1;

* figure 4 shows a pair of roller skis and related poles according to the invention, donned by a skier;

* figure 5 is a perspective view of a detail of the pole of figure 2;

* figure 6 is a partially sectional perspective view of a detail of the roller ski of figure 1 or 2;

* figure 6A is a cross-sectional view of the detail of figure 6.

* figure 7 shows the skier of figure 4 skiing with substantially parallel skis;

* figure 7A shows a detail of the ski in the configuration of figure 7;

* figure 8 shows the skier of figure 4 skiing with the skis in a substantially wedge-like configuration;

* figure 8A shows a detail of the skis in the configuration of figure 8;

* figure 9 shows the skier of figure 4 turning;

* figure 9A shows a detail of the skis in the configuration of figure 9.

[0014] In the following description 'roller ski' will mean the entire structure which is the subject-matter of the present invention, referring however not merely to common ski pairs analogous to those employed for on-snow downhills, but also to monoski or to snowboards. In the description of the following embodiment, when not differently specified for 'roller ski' an individual roller ski of a pair of skis will be meant, it being understood that a pair of roller skis will comprise two specularly identical roller skis.

[0015] The surface onto which the roller ski rests will hereinafter be defined with the term 'ground', however it is understood that it may include any type of terrain: e.g. asphalt, concrete, grass, firm soil, artificial terrains or turfs, carpets, artificial lawn, etc.

[0016] The term 'ski' will instead refer to the plane elon-

gated laminar body or to the board that, in skis or snowboards, implements the entire device. This ski will be made of a wood-based, metallic, plastics, resin-based material, or composite thereof yet capable of providing the required elasticity and strength.

[0017] With reference to figures 1 to 4, a roller ski is generally indicated by 1. It comprises a ski 2 having an inner edge 3, an outer edge 4, and that extends from a rear end 5, or briefly tail, to a front end 6, or briefly tip, the latter having a raised configuration as in the common snow ski. The ski 2 further has a bottom ground-resting surface 7, or briefly bottom.

[0018] Centrally, the roller ski 1 comprises a binding 8 which in the present example is shown to be alike a common ski boot binding, employed in on-snow downhill. However, it is understood that the roller ski 1 could mount any type of binding adequate to the foreseen performances and to the footwear. Likewise, the binding 8 could be replaced by a shoe incorporated in the ski body 2.

[0019] The contour of the ski 2 has a marked sidecut, alike that employed in on-snow downhill ski, i.e. the so-called carving ski. For 'sidecut' it is meant that the edges of the ski 2 have curved profile with opposite convexities, so that the ski waist be narrower with respect to the wider regions corresponding to tip and tail. The sidecuts onto the inner edge 3 and the outer edge 4 are substantially symmetrical.

[0020] The roller ski 1 is associated to a respective pole 9 having a handle 10 with a strap 11, a ferrule 12 e, at the latter, a basket 13.

[0021] The roller ski 1 comprises in-line supporting rollers located along the centerline of the ski 2, apt to support the ski 2 while contacting the ground. In particular, the present embodiment comprises two supporting rollers 20, a front one, located between the binding 8 and the tip 6 and a rear one, located between the binding 8 and the tail 5.

[0022] Said rollers may be of any one dimension, and could therefore be housed in suitable bearings below the bottom 7, or, as in the present embodiment, they could cross the thickness of the ski 2 by virtue of a suitable slot 21. Always in the present embodiment, said supporting rollers 20 are of the integrated-bearing type, known e.g. for in-line skates, and have a hub 22 fastened to the bottom 7 by fastening plates 23.

[0023] Said supporting rollers 20 are of the type realizing a substantially punctiform contact on the ground, having a tapered contour and outer diameters that are smaller than the innermost diameters, i.e. than those nearer to the centerline thereof. Hence, said rollers 20 can be tilted preserving a point of contact onto the side surface thereof. The material selected for the supporting rollers 20, e.g. a resin, should be adequate in terms of friction and strength.

[0024] The roller ski 1 further comprises a plurality of additional rollers, located at the inner edge 3 and at the outer edge 4 of the ski 2.

[0025] In particular, the roller ski 1 according to the

present embodiment has, at each edge of the ski 2, a pair of additional front rollers 24a, at the tip region 6, and a single additional rear roller 24b, at the tail region 5.

[0026] Said additional rollers 24a, 24b are of the type realizing a substantially punctiform contact onto the ground, having a tapered contour and outer diameters smaller than the innermost diameters, i.e. than the diameters nearer to the centerline thereof. The material selected for the rollers 24a, 24b, e.g. a resin, should be adequate in terms of friction and strength. Both for these latter rollers and for the supporting rollers 20, the rollers commonly employed for in-line rollerblades or roller-skates may be adequate. Rollers having a greater diameter, optionally provided of tires or of other covers, may be selected for employs on uneven and/or soft terrains like carpets, natural or artificial grass, dirt tracks, etc.

[0027] The additional rollers 24a, 24b are mounted onto the ski 2 by virtue of a bearing 25 that, in present embodiment, is in the shape of an inverted-T and has a fastening plate 26. From the latter there rises a stem 27, comprising at its top a pair of flaps 28 ending in a fork 29, each flap having an additional roller 24a, 24b coupled thereto.

[0028] By effect of the configuration of the bearing 25, said additional rollers 24a, 24b remain raised with respect to the ground when the roller ski 1 lies in a horizontal configuration, i.e. when the skier wearing it is in a parallel ski configuration (figures 7 and 7A).

[0029] By effect of this positioning, the additional rollers 24a, 24b located onto the inner edge and onto the outer edge of the ski are destined to alternatively rest on the ground when the ski is tilted on the inside and on the outside (FIGS. 8 and 9A).

[0030] Moreover, in the roller ski 1 the additional rollers 24a, 24b are located on a curved line C both onto the inner edge 3 and onto the outer edge 4. Said curved line C substantially follows the contour of the abovesited sidecut, a shape that facilitates the positioning of the additional rollers. According to a variant, said additional rollers could be mounted projecting directly onto the edge of the ski 2, and in this case the additional rollers would be located on a curved line defined directly by the sidecut of the ski 2.

[0031] The abovesited bearing 25 is elastic and hence, when the roller ski 1 is tilted onto the inner or outer edge with the additional rollers 24a, 24b resting on the ground, a greater weight load onto the bearing edge will determine an elastic strain of the bearing 25, facilitating the spring back of the roller ski 1 to a horizontal configuration.

[0032] In the present embodiment, the elasticity of the bearing 25 is due to the fact that said stem 27 can bend elastically. The same effect may be attained with a symmetric leaf spring configuration of the stem 27, with elastic flaps 28, with an elastic hub mounted onto the fork 29, with helical springs mounted between the flap and the fork, or even with actual shock absorbers. However, it is understood that several variants may be envisaged.

[0033] Remarkably, the additional rollers 24a, 24b

have a camber toward the centerline of the ski 2, so that when the roller ski 1 is tilted sideways the additional rollers 24a, 24b contact the ground substantially vertically. According to a variant the camber is more marked, so that the additional roller 24a, 24b contacting the ground still has a camber toward the centerline of the ski 2. This positioning facilitates the unloading of the weight loaded onto the edge of the ski 2, compensating also the straightening back of the roller determined by the elasticity of the bearing.

[0034] According to a variant of the abovedescribed roller ski, the adjustment of the camber of the additional rollers 24a, 24b, of the elasticity of the bearing 25 or of the camber of the curved line C may be provided. With reference to the latter, apparently said line C is defined by the planes of rotation of the additional rollers 24a, 24b, tangential to said curved line C (figure 3).

[0035] Moreover, it is understood that the preferred roller arrangement provides the supporting rollers 20 to lie between the binding 8 and the additional rollers 24a, 24b, whereas the latter will lie between the supporting rollers 20 and the tail 5 and the tip 6, respectively.

[0036] The number of the supporting rollers 20 and/or of the additional rollers will be preselected according to the desired performances, to the skier's weight, and to the length of the ski 2. A marked increase of the latter will be unnecessary, it being optionally reduced as in on-snow carving skis.

[0037] The roller ski 1 according to the present embodiment has at least one supporting roller 20, in particular the rear one, with evident advantages in terms of stability, provided with a braking system. Alternatively, the roller ski 1 could anyhow have a brake, even acting directly on the ground rather than onto the supporting rollers, like e.g. the one taught in US 4,892,332 (Jennings).

[0038] In the present embodiment, the brake, generally indicated by 30, is of the disc type. For this purpose, to the rear supporting roller 20 there is fastened a belt 31 at a first pulley 32 integral thereto. A second pulley 33 working as disc houses the belt 31. A pincer 34, provided with pads 39 acting onto the disc surface, is located onto the periphery of the second pulley 33 and it is provided with a remotely controlled hydraulic actuator, conventional and not shown in detail. A rigid casing 35 fastened to the ski 2 shields the brake 30.

[0039] The remote control may be implemented in several different ways. According to a variant, the actuator may comprise an electric power source, e.g. a rechargeable battery, and be radio controlled by a remote control e.g. located in the handle 10, it also power-supplied by an analogous power source.

[0040] According to the present embodiment, the activation is of mechanical type and it comprises a cable 36 housed inside of a sheath 37 extending from the pincer 34 to the handle 10 of the pole 9. At the handle 10 the brake 30 comprises a lever 38 capable of pulling the cable 36, thereby activating the actuator of the pincer 34 ac-

ording to a system already tried out in the field of bicycle brakes.

[0041] The abovedescribed disc brake 30 could be replaced by other brake variants, e.g. the pincers could act directly onto the supporting roller, in particular on a specifically provided crown thereof.

[0042] Moreover, the same brake could be controlled by a skier's shifting the ski boot onto the binding. Furthermore, there may be provided a anti-blocking system, well-known in the motor field, i.e. capable of preventing the blocking of the supporting roller with the entailed extension of the braking space.

[0043] With reference to figures 4 and 7 to 9A the employ of the abovedescribed roller ski will be described.

[0044] During a normal sliding, the skier keeps the roller skis 1 substantially parallel and not tilted sideways. In this configuration, the supporting rollers 20 act as a rollerblade system and, being located at the central region of the ski 2, provide a sufficient stability implementable by the skier through an adequate employ of the poles 9. The speed, due to the gradient of the downhill that is being negotiated, may be adjusted by virtue of the brake 30 (figures 7 and 7A).

[0045] Likewise, the skier can perform the so-called wedge technique by tilting both skis inwards, thereby ground-contacting the additional rollers 24a, 24b at the inner edge 3 (figures 8 and 8A).

[0046] In this configuration the stability is ensured by the concomitant ground-contacting of the supporting rollers 20 and of the additional rollers 24a, 24b. When the skier keeps the distance and the angle between the skis 2 constant, the additional rollers and the supporting rollers are translated sideways in sliding, slowing down the ski. However, this manoeuvre is indicated on a soft terrain, like grass, dirt track or the like, where rollers tend to sink into the ground.

[0047] When instead the skier faces a turning according to a classical skiing technique, shifting the weight onto the edge lying onto the turn face and tilting the ski accordingly, the supporting rollers 20 and the additional rollers 24a, 24b lying onto corresponding sides of the roller ski 1 are ground-contacted again.

[0048] Thus, the additional rollers 24a, 24b lie on a curved line C that facilitates the turning, as it happens e.g. in the abovementioned carving skis. I. e., the additional rollers 24a, 24b replace the laminae of an on-snow ski concomitantly ensuring the maximum stability of the ski by virtue of the supporting rollers 20 always maintaining a grip.

[0049] As abovementioned, a greater weight load determines an elastic strain of the bearing 25 of the additional rollers 24a, 24b, a strain giving the skier a sensation which is very similar to that given by on-snow skiing and turning.

[0050] It is understood that the abovedescribed roller ski fit any off-snow sport or amateur employ. It is understood that the same principles hereto described may fit any ski type: downhill, slalom, cross-country, jump skis,

etc. Moreover, the same technical principle may successfully be adopted on monoski and snowboards. Moreover, the abovedescribed roller ski allow turning according to any known technique (christiania, matching skis, Telemark).

[0051] In all of the abovementioned contexts, the abovedescribed roller ski may be employed for sport training, for amateur practice and for learning.

[0052] To the abovedescribed roller ski, a person skilled in the art in order to meet further and contingent needs may effect several further modifications and variants, all however comprised within the protective scope of the present invention, as defined by the appended claims.

Claims

1. A roller ski (1), comprising:

* in-line supporting rollers (20) located along the centerline of the ski (2), apt to support the ski (2) while contacting the ground; and

* a plurality of additional rollers (24a, 24b), located at the inner edge (3) and at the outer edge (4) of the ski (2), said additional rollers (24a, 24b) being raised with respect to the ground,

wherein the additional rollers (24a, 24b) are located on a curved line (C) between the binding (8) and the tip region (6) and between the binding (8) and the tail region (5) and wherein the additional rollers (24a, 24b) are located onto the inner edge (3) and onto the outer edge (4) of the ski (2) at the tip region (6) and at the tail region (5), being apt to alternatively rest on the ground when the ski (2) is tilted onto the inside and onto the outside, respectively **characterised in that** the additional rollers (24a, 24b) are mounted on the ski (2) by virtue of an elastic bearing (25).

2. The roller ski (1) according to claim 1, wherein the contour of the ski (2) has a sidecut onto the inner (3) and outer (4) edge, said curved line (C) substantially following the contour of said sidecut.

3. The roller ski (1) according to claim 2, wherein the additional rollers (24a, 24b) are mounted projecting directly onto the edge of the ski (2), said curved line (C) being thus defined directly by the sidecut of the ski (2).

4. The roller ski (1) according to claim 1, wherein the additional rollers (24a, 24b) has a camber towards the centerline of the ski (2), so that when the roller ski (1) is tilted sideways, the additional rollers (24a, 24b) contact the ground substantially vertically or with a camber toward the centerline of the ski (2).

5. The roller ski (1) according to claim 1, wherein the location of the rollers (20, 24a, 24b) provides that the supporting rollers (20) lie between the binding (8) and the additional rollers (24a, 24b), whereas the latter will lie between the supporting rollers (20) and the tail (5) and the tip (6) respectively.

6. The roller ski (1) according to claim 1, wherein at least one supporting roller (20) is provided with a braking system.

7. The roller ski (1) according to claim 6, wherein the braking system acts on a rear supporting roller (20).

8. The roller ski (1) according to claim 6 or 7, wherein the braking system comprises a disc-type brake (30).

9. The roller ski (1) according to claim 8, wherein to a supporting roller (20) there is fastened a belt (31) at a first pulley (32) integral to the supporting wheel (20) and a second pulley (33), working as disc houses the belt (31) and it is provided with a pincer (34), acting onto the disc surface, located on the periphery of the second pulley (33).

10. The roller ski (1) according to claim 6 or 7, wherein the braking system comprises a remotely controlled actuator.

11. The roller ski (1) according to claim 10, wherein the actuator comprises an electric power source and it is radio controlled by a remote control power-supplied by an analogous power source.

12. The roller ski (1) according to claim 10, wherein the actuator has a mechanical-type activation comprising a cable (36), housed inside of a sheath (37), and a lever (38) capable of pulling the cable (36), thereby activating the actuator.

13. The roller ski (1) according to claim 11 or 12, wherein the remote control or the lever (38) are associated to a handle (10) of a ski pole (9).

14. The roller ski (1) according to claim 13, wherein the braking system comprises an anti-blocking system.

Patentansprüche

1. Rollski (1), der umfasst:

Reihen-Tragerollen (20), die entlang der Mittellinie des Ski (2) angeordnet sind und sich dazu eignen, den Ski (2) zu tragen, während sie mit dem Boden in Kontakt sind; und eine Vielzahl zusätzlicher Rollen (24a, 24b), die sich an der Innenkante (3) und an der Außen-

- kante (4) des Ski (2) befinden, wobei die zusätzlichen Rollen (24a, 24b) in Bezug auf den Boden erhöht sind,
 die zusätzlichen Rollen (24a, 24b) auf einer gekrümmten Linie (C) zwischen der Bindung (8) und dem Spitzenbereich (6) sowie zwischen der Bindung (8) und dem Endbereich (5) angeordnet sind und die zusätzlichen Rollen (24a, 24b) an der Innenkante (3) und an der Außenkante (4) des Ski (2) am Spitzenbereich (6) und am Endbereich (5) angeordnet sind und sich dazu eignen, abwechselnd auf dem Boden aufzusitzen, wenn der Ski (2) zur Innenseite bzw. zur Außenseite geneigt wird,
dadurch gekennzeichnet, dass die zusätzlichen Rollen (24a, 24b) mittels eines elastischen Lagers (25) an dem Ski (2) angebracht sind.
2. Rollski (1) nach Anspruch 1, wobei die Kontur des Ski (2) eine Taillierung an der Innenkante (3) und der Außenkante (4) hat, und die gekrümmte Linie (C) im Wesentlichen der Kontur der Taillierung folgt.
 3. Rollski (1) nach Anspruch 2, wobei die zusätzlichen Rollen (24a, 24b) so angebracht sind, dass sie direkt an der Kante des Ski (2) vorstehen, und die gekrümmte Linie (C) so direkt durch die Taillierung des Ski (2) gebildet wird.
 4. Rollski (1) nach Anspruch 1, wobei die zusätzlichen Rollen (24a, 24b) eine Wölbung zur Mittellinie des Ski (2) hin haben, so dass, wenn der Rollski (1) seitlich geneigt wird, die zusätzlichen Rollen (24a, 24b) im Wesentlichen vertikal mit dem Boden oder mit einer Wölbung zur Mittellinie des Ski (2) hin in Kontakt kommen.
 5. Rollski (1) nach Anspruch 1, wobei die Anordnung der Rollen (20, 24a, 24b) gewährleistet, dass die tragenden Rollen (20) zwischen der Bindung (8) und den zusätzlichen Rollen (24a, 24b) liegen, während die letzteren zwischen den tragenden Rollen (20) und dem Ende (5) bzw. der Spitze (6) liegen.
 6. Rollski (1) nach Anspruch 1, wobei wenigstens eine tragende Rolle (20) mit einem Bremssystem versehen ist.
 7. Rollski (1) nach Anspruch 6, wobei das Bremssystem auf eine hintere tragende Rolle (20) wirkt.
 8. Rollski (1) nach Anspruch 6 oder 7, wobei das Bremssystem eine Scheibenbremse (30) umfasst.
 9. Rollski (1) nach Anspruch 8, wobei an einer tragenden Rolle (20) ein Riemen (31) an einer ersten Riemenscheibe (32) befestigt ist, die integral mit dem tragenden Rad (20) ausgebildet ist und eine zweite Riemenscheibe (33), die als Scheibe wirkt, den Riemen (31) aufnimmt und mit einer Klemme (34) versehen ist, die auf die Scheibenoberfläche wirkt und sich am Umfang der zweiten Riemenscheibe (33) befindet.
 10. Rollski (1) nach Anspruch 6 oder 7, wobei das Bremssystem ein fernbedientes Betätigungselement umfasst.
 11. Rollski (1) nach Anspruch 10, wobei das Betätigungselement eine Stromquelle umfasst und durch eine Fernsteuerung funkgesteuert wird, die durch eine analoge Stromquelle mit Strom versorgt wird.
 12. Rollski (1) nach Anspruch 10, wobei das Betätigungselement eine mechanische Betätigung aufweist, die ein Seil (36), das im Inneren einer Ummantelung (37) aufgenommen ist, und einen Hebel (38) umfasst, der das Seil (36) ziehen kann, um so das Betätigungselement zu aktivieren.
 13. Rollski (1) nach Anspruch 11 oder 12, wobei die Fernsteuerung oder der Hebel (38) mit einem Griff (10) eines Skistocks (9) verbunden ist.
 14. Rollski (1) nach Anspruch 13, wobei das Bremssystem ein Antiblockiersystem umfasst.
- ### Revendications
1. Ski à roulettes (1), comportant :
 - des roulettes de support alignées (20) situées le long de l'axe central du ski (2), aptes à supporter le ski (2) tout en étant en contact avec le sol, et
 - une pluralité de roulettes supplémentaires (24a, 24b), situées sur le bord intérieur (3) et sur le bord extérieur (4) du ski (2), lesdites roulettes supplémentaires (24a, 24b) étant surélevées par rapport au sol,
 dans lequel les roulettes supplémentaires (24a, 24b) sont situées sur une ligne incurvée (C) entre la fixation (B) et la zone de pointe (6) et entre la fixation (8) et la zone de talon (5), et dans lequel les roulettes supplémentaires (24a, 24b) sont situées sur le bord intérieur (3) et sur le bord extérieur (4) du ski (2) dans la zone de pointe (6) et la zone de talon (5), étant aptes à reposer alternativement sur le sol lorsque le ski (2) est basculé sur l'intérieur et sur l'extérieur, respectivement
caractérisé en ce que les roulettes supplémentaires (24a, 24b) sont montées sur le ski (2) par l'intermédiaire d'un support élastique (25).

2. Ski à roulettes (1) selon la revendication 1, dans lequel le contour du ski (2) a une découpe latérale sur le bord intérieur (3) et le bord extérieur (4), ladite ligne incurvée (C) suivant sensiblement le contour de ladite découpe latérale. 5
3. Ski à roulettes (1) selon la revendication 2, dans lequel les roulettes supplémentaires (24a, 24b) sont montées faisant saillie directement sur le bord du ski (2), ladite ligne incurvée (C) étant ainsi définie directement par la découpe latérale du ski (2). 10
4. Ski à roulettes (1) selon la revendication 1, dans lequel les roulettes supplémentaires (24a, 24b) ont une cambrure vers l'axe central du ski (2), de sorte que lorsque le ski à roulettes (1) est basculé vers le côté, les roulettes supplémentaires (24a, 24b) viennent en contact avec le sol de manière sensiblement verticale, ou avec une cambrure vers l'axe central du ski (2). 15 20
5. Ski à roulettes (1) selon la revendication 1, dans lequel l'espacement des roulettes (20, 24a, 24b) fait que les roulettes de support (20) se trouvent entre la fixation (8) et les roulettes supplémentaires (24a, 24b), alors que ces dernières vont se trouver entre les roulettes de support (20) et le talon (5) et la pointe (6), respectivement. 25
6. Ski à roulettes (1) selon la revendication 1, dans lequel au moins un rouleau de support (20) est muni d'un système de freinage. 30
7. Ski à roulettes (1) selon la revendication 6, dans lequel le système de freinage agit sur une roulette de support arrière (20). 35
8. Ski à roulettes (1) selon la revendication 6 ou 7, dans lequel le système de freinage comporte un frein de type à disque (30). 40
9. Ski à roulettes (1) selon la revendication 8, dans lequel sur une roulette de support (20), une courroie (31) est fixée au niveau d'une première poulie (32) en un seul bloc avec la roue de support (20), et d'une deuxième poulie (33), agissant comme un disque, reçoit la courroie (31), et elle est munie d'un dispositif de pincement (34) agissant sur la surface du disque, positionné à la périphérie de la seconde poulie (33). 45 50
10. Ski à roulettes (1) selon la revendication 6 ou 7, dans lequel le système de freinage comporte un actionneur commandé à distance.
11. Ski à roulettes (1) selon la revendication 10, dans lequel l'actionneur comporte une source de puissance électrique, et est radiocommandé par une commande à distance alimentée en puissance par une source de puissance analogue. 55
12. Ski à roulettes (1) selon la revendication 10, dans lequel l'actionneur a un actionnement de type mécanique comportant un câble (36), logé à l'intérieur d'une gaine (37), et un levier (38) capable de tirer le câble (36), en actionnant ainsi l'actionneur.
13. Ski à roulettes (1) selon la revendication 11 ou 12, dans lequel la commande à distance ou le levier (38) sont associés à une poignée (10) d'un bâton de ski (9).
14. Ski à roulettes (1) selon la revendication 13, dans lequel le système de freinage comporte un système antiblocage.

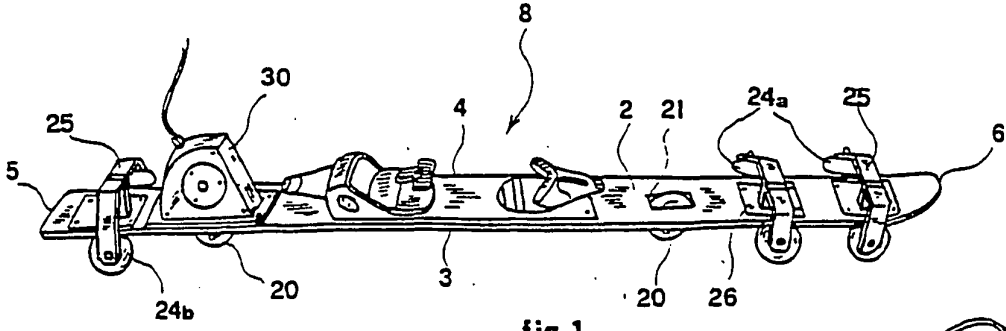


fig.1

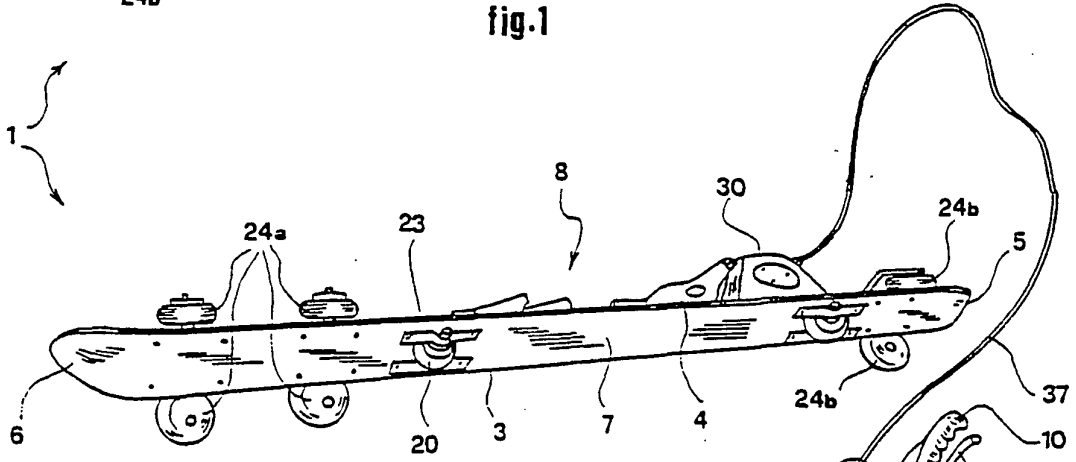


fig.2

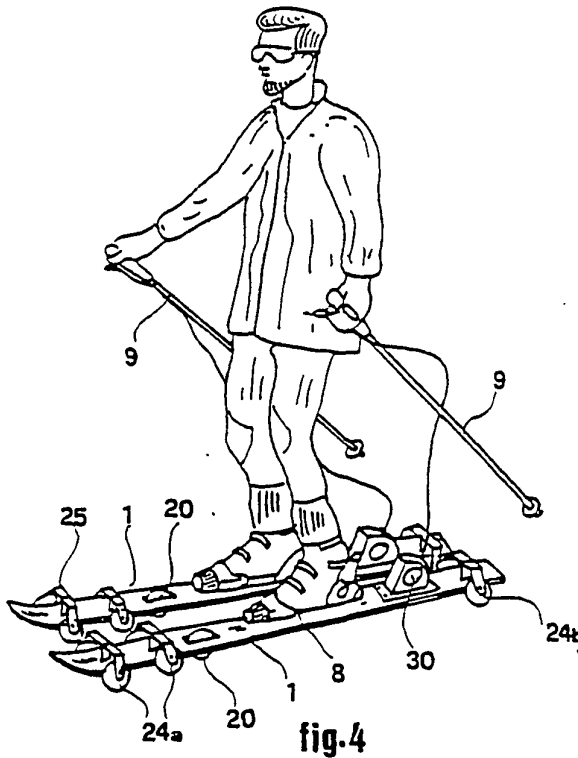


fig.4

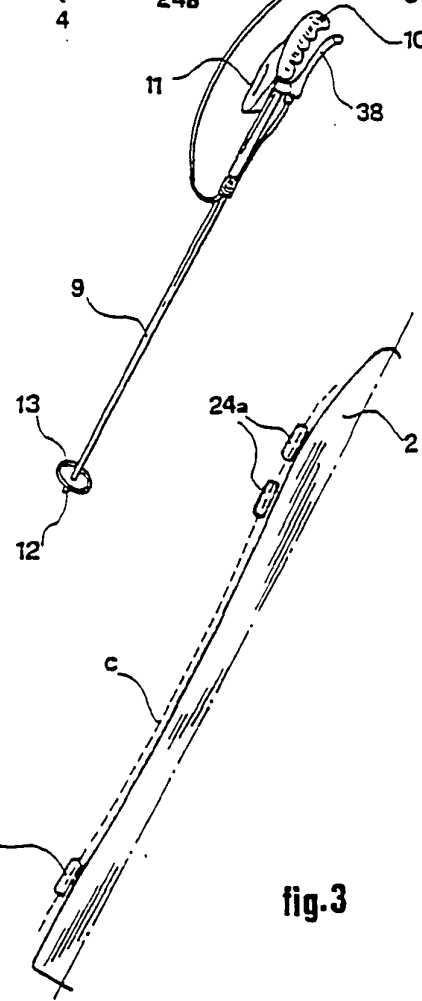
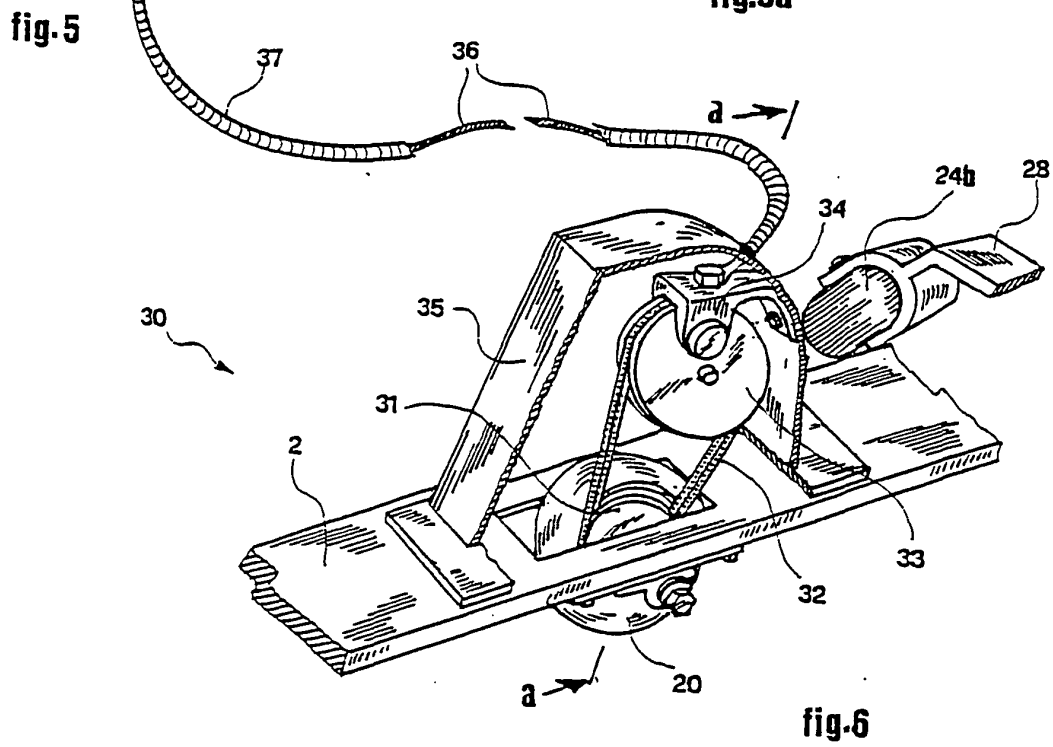
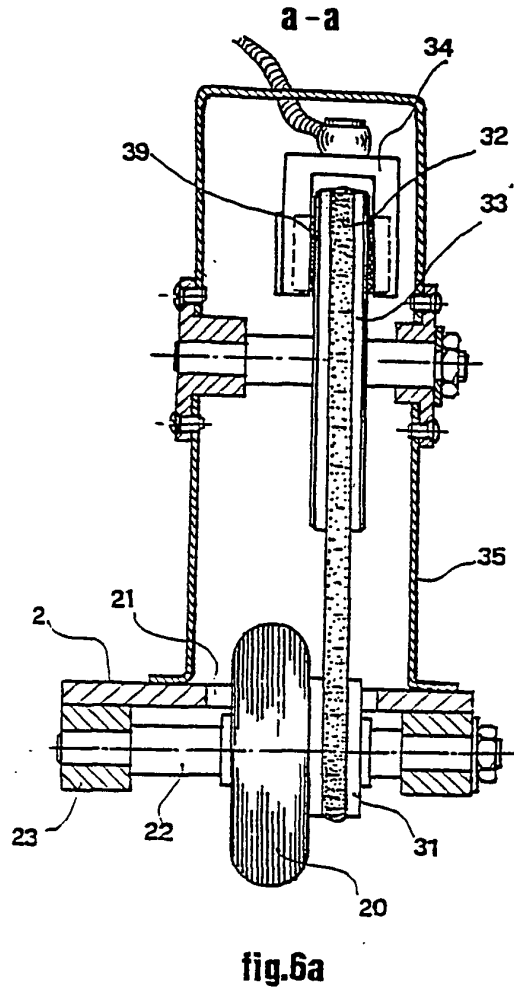
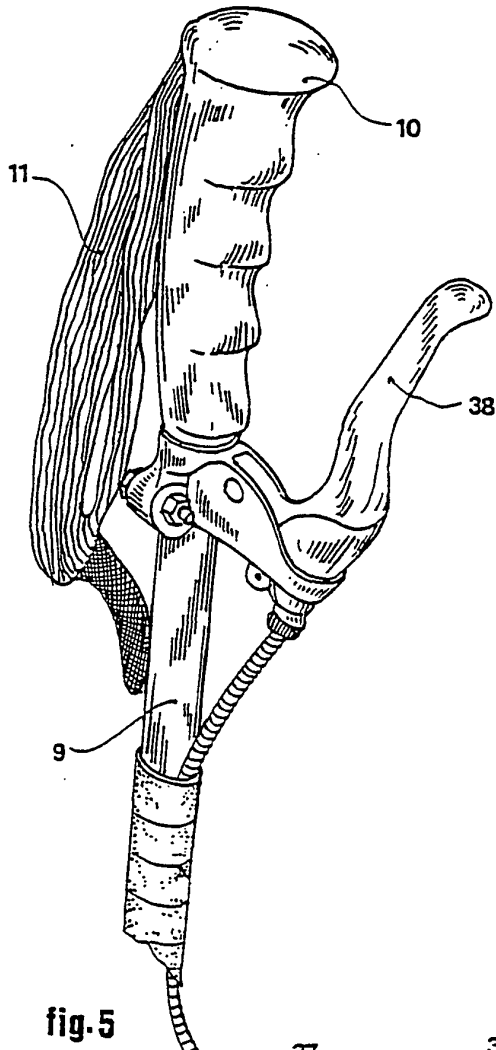


fig.3



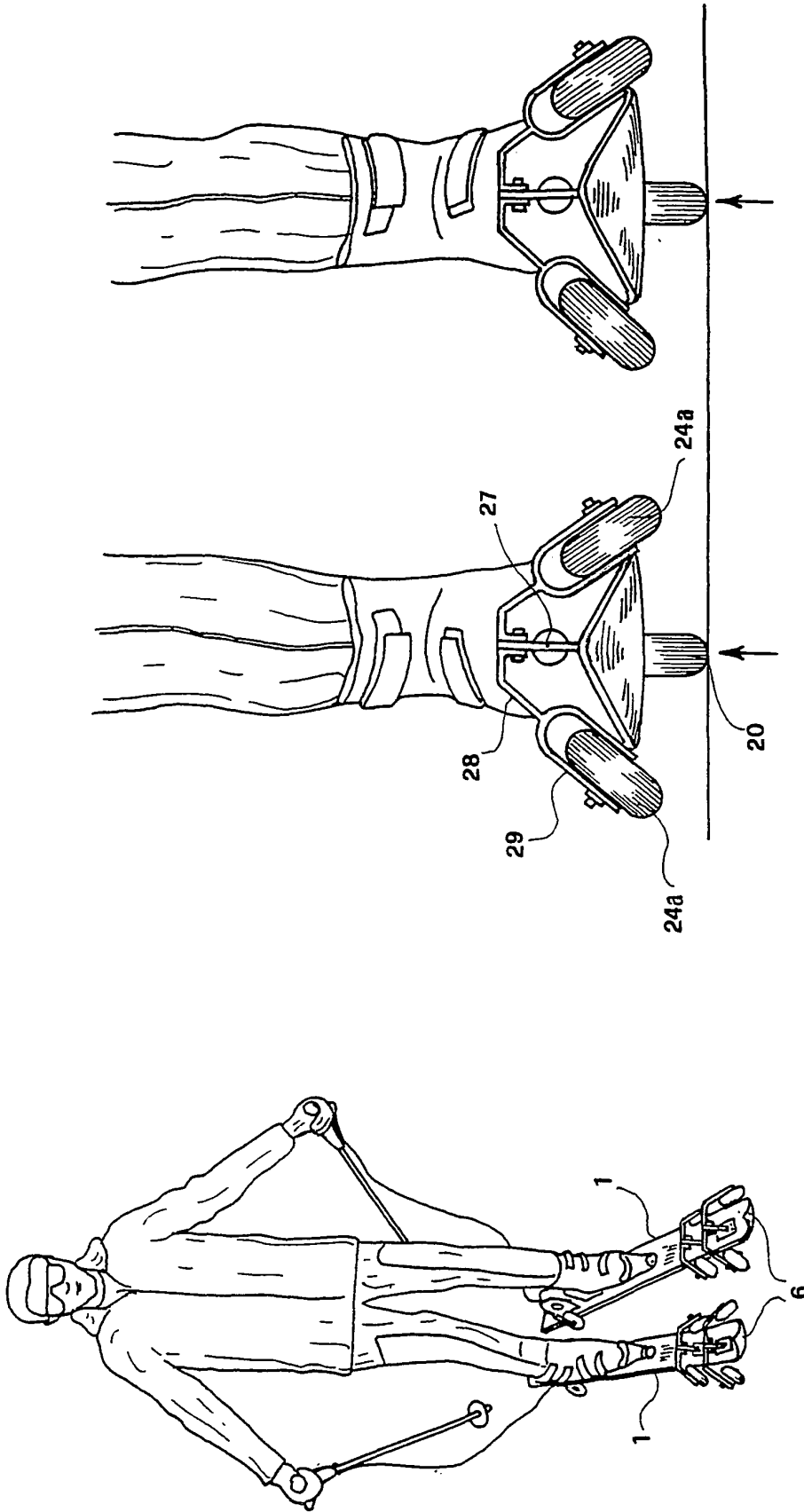


fig.7a

fig.7

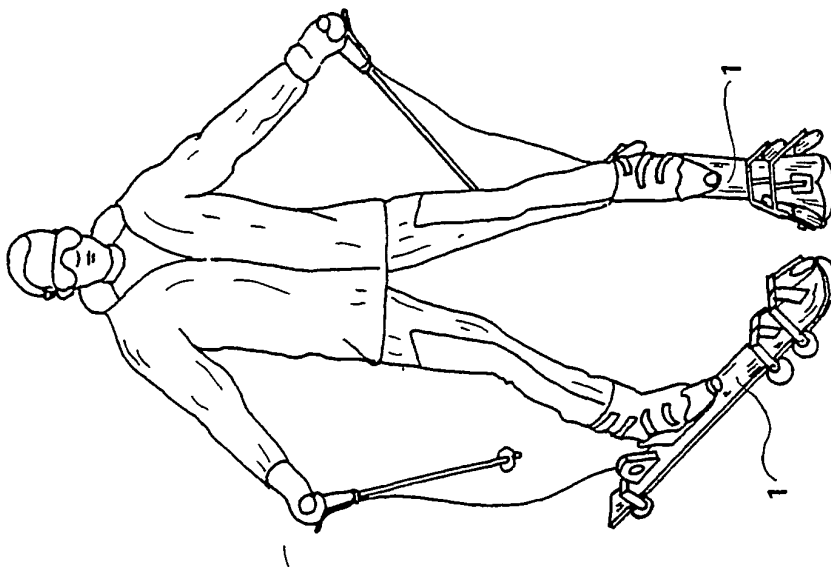


fig. 8

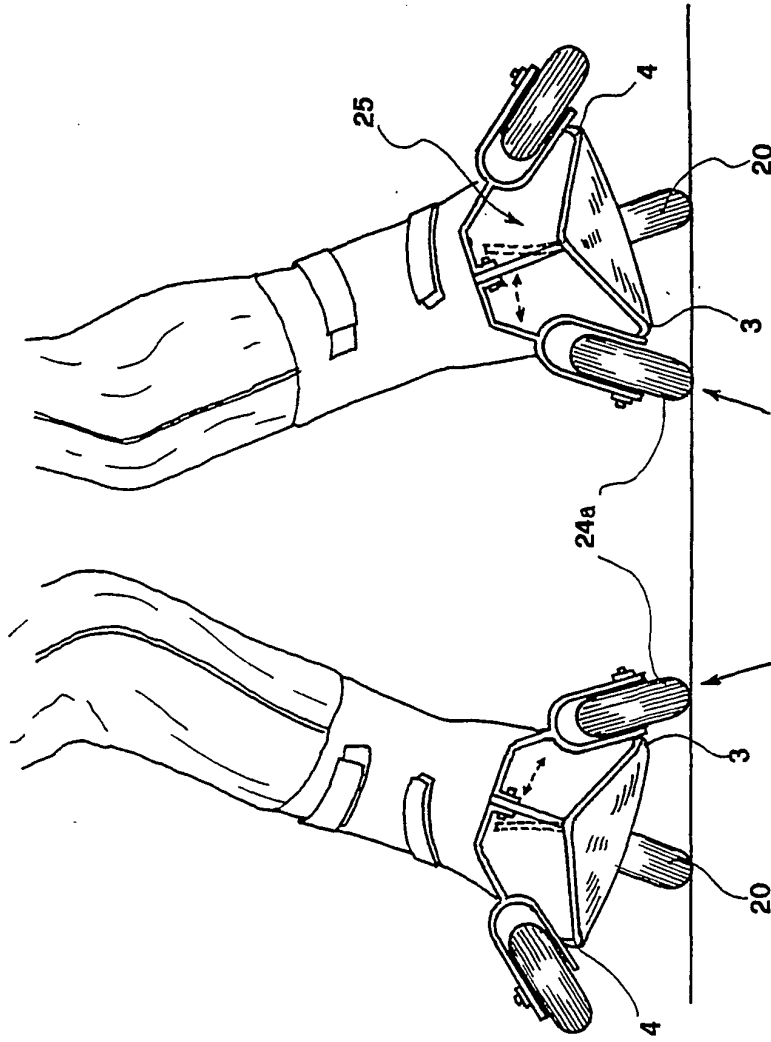


fig. 8a

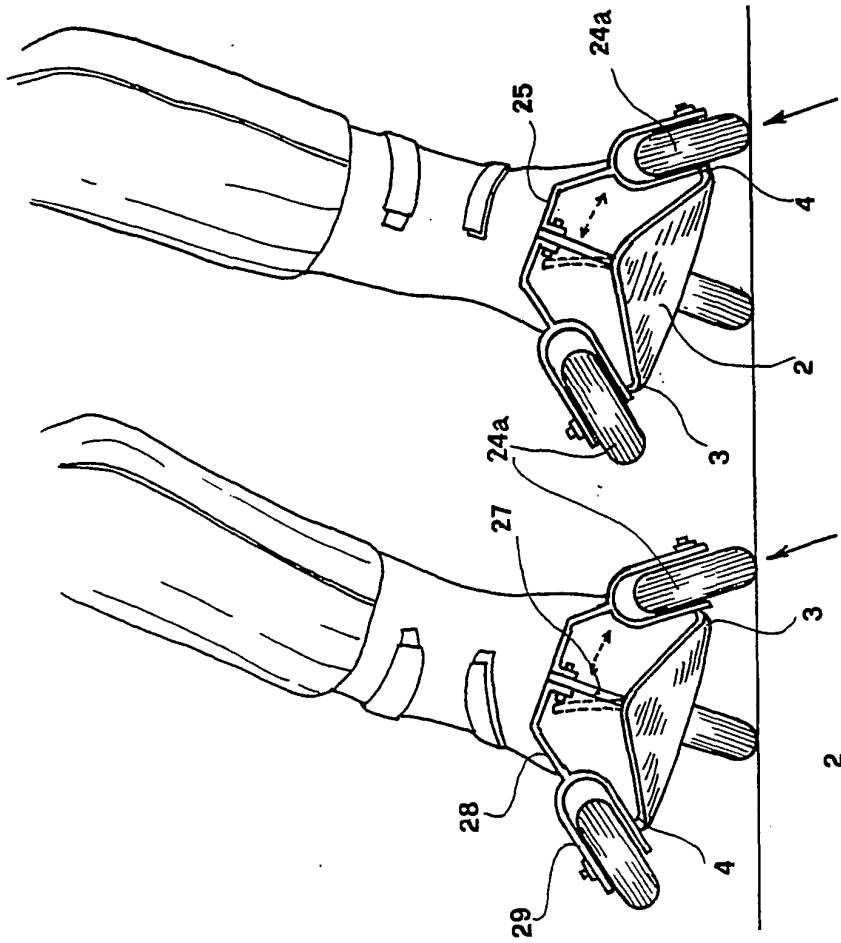


fig.9a

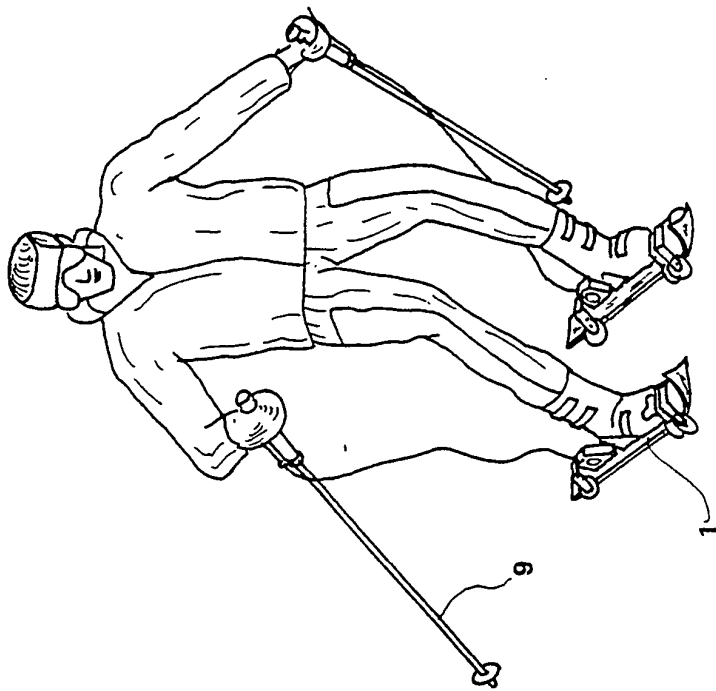


fig.9