Title: SYSTEM FOR PHYSICAL MOBILITY ACTIVITY OF A PERSON

Abstract: System for physical mobility activity of a person, comprising at least one fixed support member and at least one contact member to be worn by the person in motion, wherein the support member and the contact member comprise at least one support surface and at least one contact surface, respectively, wherein the support surface and the contact surface constitute the respective components of a hook-and-loop fastening connection consisting of hooks and loops, wherein the hooks have hook stems and hook openings, wherein the hook openings on the support surface or contact surface in question are at least substantially all situated at the same side of the hook stems in question, when considered in a first direction parallel to the support surface or contact surface in question.

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System for physical mobility activity of a person

BACKGROUND OF THE INVENTION

The Invention relates to a system for physical mobility activity of a person. The Invention in particular relates to such a system comprising at least one support member that is external relative to the person in motion, in particular a stationary or fixed support member, and at least one contact member to be worn by the person. Such a system may for instance comprise a climbing wall or clambering course or track, over which the person has to work their way.

Climbing walls are generally known. The climbing person tries to find their way up by using colored supports attached to the climbing wall, on which supports the hand or the foot can find purchase. Clambering courses are usually less steep and may be slippery or be provided with supports for the hands and feet. Climbing walls and clambering courses may be part of an obstacle course, assault course or adventure track that include obstacles that the person has to try to negotiate. Such courses come in all manner of designs and are in many ways a challenge to the user.

SUMMARY OF THE INVENTION

It is an object of the Invention to provide a system of the type mentioned in the preamble that is capable of giving the user a special experience.

It is an object of the Invention to provide a system of the type mentioned in the preamble that may be a particular challenge to the user.

It is an object of the invention to provide a new system for physical mobility activity of a person, in particular a system of the type mentioned in the preamble.

According to one aspect the Invention provides a system for physical mobility activity of a person, comprising

- at least one, in particular fixed, support member that is external relative to
the person, and
- at least one contact member to be worn by the person in motion,
wherein the support member and the contact member comprise at least one support surface and at least one contact surface, respectively,
wherein the support surface and the contact surface constitute the respective components of a hook-and-loop fastening connection consisting of hooks and loops,
wherein the hooks have hook stems and hook openings,
wherein the hook openings on the support surface or contact surface in question are at least substantially all situated at the same side of the hook stems in question, when considered in a first direction parallel to the support surface or contact surface in question.

Contrary to the usual hook-and-loop fastening: connections the hooks, that open to one side of the hook stem, are in this case not oriented randomly. As a result, the mutual grip between the hooks and loops has an effective, preferred orientation, depending on whether the hooks are situated on the contact surface or on the support surface in the first direction or in a direction opposite thereto. In that direction, the holding power can be relatively large. In the direction opposite thereto, the connection can easily be released. The person in question is thus always able to find a reliable point of support and yet able to move on easily. The person is able to move over the at least one support surface in a special way, by releasing the connection between hooks and loops at the one location and realizing a connection again at a next location at a distance therefrom.

In one embodiment in which the directional effect is enhanced, the hooks on the support surface or contact surface in question are at least substantially equi-oriented, when considered in the first direction.

It is noted that hook-and-loop fastening connections having equi-oriented or unidirectional hooks are known per se, such as "Quiet Closure Hook and Loop" by Vetera®, the purpose of which is limiting the noise made when releasing a hook-and-loop fastening connection in a clothing fastener. Reference can also be made to US 2010/0239805, in which the unidirectionality of the hooks enhances the cleansing of a fastener in a wrapping for cotton bales.

The one or more contact surfaces may have been provided on one or more objects that can be held by hands and/or fingers or by feet, in particular they have been provided with means for attaching those objects to hands or feet, in particular in the shape of articles of clothing for hands or feet.
The article of clothing may be an item of handwear, in particular a glove that may or may not have been provided with fingers. Bringing the hooks and loops in and out of contact with each other is facilitated if the contact surface has been provided at the palm side of the glove and/or at the palm side of the fingers, in particular the distal phalanxes. The glove may have been provided with fingers or may have been designed like a kind of cycling glove without fingers.

The article of clothing may also be intended for the forearm, and in that case preferably the palm side of the forearm will have been provided with the contact surface. Said article of clothing can then form one unity with the item of handwear.

The article of clothing may be an item of footwear, wherein the contact surface has, preferably, been provided at the sole side, preferably under the front part of the foot, preferably under the ball and ynder the toes. This provides a special effect to the person, as they will be able to find a reliable point of support by contact of the sole and not necessarily needing to place a shoe on a protrusion such as a climbing grip.

The contact surface may have been formed on the sole of a shoe itself. Alternatively, the contact surface may have been formed on a covering or cap or plate for a shoe, such as for instance an overshoe or mounting cap or mounting plate that can be placed over the toe of the shoe. Said covering or cap or plate will have sufficiently safely and reliably been attached to the shoe by means of fasteners.

For an optimal effect to the user, a pair of gloves and a pair of shoes or overshoes may thus have been provided that have each been provided with said contact surfaces.

If there is question of one support surface it may have a relatively large surface, for instance an entire slope, it is also possible that there are several support surfaces, that are consecutive to each other but are for instance at different angles of inclination or are flat and curved (convex or concave), or are spaced apart from each other. The user may for instance jump from the one support surface to the other support surface.

At least one support member may have been provided with several support surfaces, for instance in case the support member is a slope, and support surfaces have been provided at scattered locations. The support surfaces may be spaced apart from each other in the X-direction, Y-direction, and/or Z-direction. In a longer, more versatile system a number of the support members provided with one or more support surfaces is present, which
members are spaced apart from each other. The user may for instance jump from to the one support member to a support surface on a next support member. The support members may be situated one alter the other. In an X-direction, be juxtaposed in a Y-direction perpendicular to the X-direction, or be spaced apart from each other in X-direction and Y-direction, or combinations thereof. The sign of the Y-direction may for instance first be positive and next be negative, and then positive again, etc, so that a kind of zig-zag path can be realized. Many variations are possible, also in the Z-direction.

The system according to the invention can be set up so extensively in a track, that the user can choose the course to be taken and for instance be able to run (up) or jump from the one support surface on a support member to the next, and/or be able to jump from the one support member to the next support member, in a two-dimensional or three-dimensional trip over the track.

In a first further development the contact surface constitutes the hook component of the hook-and-loop fastening connection and the support surface constitutes the loop component of the hook-and-loop fastening connection. The contact surface or the contact surfaces are body-worn, and as already stated, are located on the person, and due to the configuration of the hooks thereon the person may have a large degree of freedom in choosing the orientation of the connection with a support surface provided with the loops.

In case of a contact surface on a glove or the like the first direction may be oriented in proximal direction, that means towards the elbow. Hanging and crawling will thus be made easier.

In case of a contact surface on the sole of a shoe the first direction may be front-rear. In that way, a walking motion is made easier.

In a second, different development according to the invention, the support surface constitutes the hook component of the hook-and-loop fastening connection and the contact surface constitutes the loop component of the hook-and-loop fastening connection. In this case as well the contact surfaces may have been provided on articles of clothing, on gloves and shoes, as discussed above, however then with the loops. The hook fields may now be fixed, stationary, relative to the person in motion. If the support surface is inclined in the first direction, the hook openings can be situated at the higher side of the hook stems in question.

In this development variation can be introduced as regards the grip direction, with at least two support surfaces which in terms of orientation
of the hook openings of their hooks differ one from the other.

According to a further aspect, the Invention provides a glove, which at the palm side has been provided with a contact surface of the hook component of a hook-and-loop fastening connection consisting of hooks and loops, wherein the hooks have hook stems and hook openings, wherein the hook openings on the contact surface are situated at least substantially all at the same side of the hook stems in question, when considered in a first direction parallel to the contact surface in question, The hooks on the contact surface in question may at least be substantially equi-oriented, when considered in the first direction, wherein the first direction is oriented in proximal direction.

According to a further aspect, the invention provides a shoe, which at the sole side has been provided with a contact surface of the hook component of a hook-and-loop fastening connection consisting of hooks and loops, wherein the hooks have hook stems and hook openings, wherein the hook openings on the contact surface are situated at least substantially all at the same side of the hook stems in question, when considered in a first direction parallel to the contact surface in question, wherein, preferably, the first direction is front-rear.

in a further development, the loopholes of the loops on the contact surface or support surface in question are at least substantially equi-oriented.

According to a further aspect the invention provides an overshoe or shoe cap, which at the sole ski has been provided with a contact surface of the hook component of a hook-and-loop fastening connection consisting of hooks and loops, wherein the hooks have hook stems and hook openings, wherein the hook openings on the contact surface are situated at least substantially all at the same side of the hook stems in question, when considered in a first direction parallel to the contact surface in question, wherein, preferably, the first direction is front-rear.

A system as described above can be attractively extended with an aerial runway, in that way the system may comprise a safety device for breaking the fall of the person, wherein the safety device comprises an aerial runway, such as a cable (zip-wire, zip line) or a rail, extending over the at least one support member and which has been provided with a trolley that is movable along it in particular freely movable along ¼, and a safety line which at one end has been connected to the trolley for being moved by it along the aerial runway and which at the other end can be connected to the person, In
case of an aerial runway in the form of a cable and the like, the aerial runway can be more resilient than in case of a rail.

In one embodiment, the safety line is at least partially stretchy. The safety line may for instance be a flexible line having, in series, a part which, relatively speaking, is not stretchy and a part that is elastically stretchy.

In another embodiment, the safety device comprises a belay having a safety drum provided with a brake and the safety line wrapped around the drum, wherein at the one end the safety line has been connected to the safety drum and at the other end has been provided with a coupling for coupling the person to the safety line, wherein the belay has been connected to the trolley for being moved by it along the aerial runway. In that case the safety line may be non-stretchy or hardly stretchy.

Systems such as obstacle courses having trolleys, from which a person is suspended and which can run along overhead rails or cables, are known per se, for instance from EP 1.832,315. The vertical distance between the person and the rail will in that case be constant.

Belay can be used for maintenance purposes at high installations, such as towers, and for recreational purposes such as climbing walls and jumping platforms. A housing in which the drum has been accommodated is then suspended from a fixed location. When the person connected to the safety line falls accidentally or on purpose, the safety line will unwind from the drum, however in a restrained manner, due to which the falling motion of the person in question as regards speed and/or length remains within an acceptable magnitude. An example of a fixed belay, (auto) ‘belay’, for climbing walls or installations is the TrueBlue® (US 2010/0308149), in particular the TrueBlue® type 2, or the Dynascape (US 2002/0179372).

By suspending such a belay to a trolley that moves along with, follows the person, the person is enabled to move up and down and from left to right as well as to turn relative to the trolley during the progress. Should the person, challenged by the special opportunities offered to them by the system according to the invention described above, with contact surfaces and support surfaces which together form a hook-and-loop fastening connection, loose their balance, safety provisions against falling are provided. They may be provided when a support surface aimed at, is missed or when the person loses their balance after realizing a hook-and-loop fastening connection. This may for instance happen when the said connection is made with a contact surface on a shoe and an inclined support surface that is situated rather far...
removed in lateral directions. If there is another support member or support surface that can be engaged at a lower level than the missed support surface or the support surface that had to be released after losing balance, the Journey can be continued as yet.

If the drum of the belay is of the auto-winding type -known per se-, the line will be retrieved again of its own accord, over a length under the influence of a spring active on the drum, once the tensile force on the line is reduced. When the person moves upwards again, for instance when clambering or by Jumping with an upward component the belay will also be ready for providing safety during a fail in said higher position of the person.

The options when fitting out this system with aerial runway, trolley and belay are innumerable. The aerial runway may extend over several support members, the aerial runway may have corners and/or bends, comprise a horizontal course and/or comprise an ascending course. The aerial runway may in particular comprise one or more descending courses. The end point of the aerial runway will in many cases be situated lower than the starting point, it is also possible that the aerial runway comprises a vertical (downward) course. When considered in a projection at a horizontal plane, the support surfaces and/or support members may be situated on the one side and/or on the other side of the aerial runway, for instance at varying distances, it is also possible that a (single) support member has such a width that it extends on both sides of the aerial runway, so that the support surfaces of said support member are situated on both skies of the aerial runway.

According to a further aspect, the invention further provides a general application of a system including aerial runway, trolley and belay, with a system for physical mobility activity of a person, comprising a safety device for breaking a fall of the person in motion, wherein the safety device comprises an aerial runway (overhead), such as a cable or a rait provided with a trolley that is movable along it, in particular freely movable along it, and a safety line which at the one end has been connected to the trolley and at the other end has been provided with a coupling for coupling the person to the safety line, wherein the safety line is part of a belay having a safety drum provided with a brake and around which drum the safety line has been wrapped, wherein the belay has been connected to the trolley for being moved by it along the aerial runway, in that way, the person is able to jump from one obstacle to the other in a secured manner, wherein said obstacles may be situated at different heights and/or in a direction transverse to the aerial runway at a distance from one another, in one embodiment also
on both sides of the aerial runway. As usual the trolley has disks, wheels, rollers and the like that can be moved against/along the cable, rail etc, in particular freely running, for engaging the rail, cable etc, in a rolling manner. In general, the aerial runway will have an end point that is situated lower than the starting point. Between the starting point and the end point the aerial runway may be steadily descending or may have been provided with horizontal and/or short ascending intermediate courses.

According to a further aspect the invention provides a building provided with a system according to the invention.

According to a further aspect, the invention provides an assembly of a first body and a second body that can be defachably connected with each other by means of a hook-and-loop fastening connection, wherein the first body has a first surface with the hook component of the hook-and-loop fastening connection and the second body has a second surface with the loop component of the hook-and-loop fastening connection, wherein the hooks of the hook component have hook stems and hook openings, wherein the hook openings are situated at least substantially all at the same side of the hook stems in question, when considered in a first direction parallel to the first surface, and wherein the loops of the loop component have loopholes that are at least substantially equi-orientated according to a second direction parallel to the second surface. The hook-and-loop fastening connection can then be realized in a rapid and reliable manner in a preferred direction. The same goes for the release.

In this case as well, the hooks on the first surface may be at least substantially equi-orientated, when considered in the first direction.

The aspects and measures described in this description and the claims of the application and/or shown in the drawings of this application may where possible also he used individually. Said individual aspects and other aspects may be the subject of divisional patent applications relating thereto. This particularly applies to the measures and aspects that are described per se in the sub claims.

**BRIEF DESCRIPTION OF THE DRAWINGS**

The invention will be elucidated on the basis of a number of exemplary embodiments shown in the attached drawings, in which:

Figure 1A shows an example of a system according to the invention, with a detail in figure 18;
Figures 2A-C show two sides of a glove to be used in a system according to the invention and detail thereof;

Figures 3A-C show two sides of a shoe to be used in a system according to the invention and detail thereof;

Figure 4 shows a schematic view of the interconnection of the hook-and-loop fastener components of a system according to the invention;

Figures 4A-D show a few examples of supports for a system according to the invention and a detail of figure 4A or 48;

Figure 5 shows another example of a system according to the invention; and

Figures 6A-C show a few examples of systems according to the invention, when considered in projection at a horizontal plane.

**DETAILED DESCRIPTION OF THE DRAWINGS**

The first example of a system according to the invention is shown in figure 1A by reference number 1. On a floor 100, that may be indoor or outdoor, a number of obstacles 2 have been positioned, as a track, which obstacles each comprise support members 3. The support members 3 have been provided with support surfaces 4, which have been provided with the loop components of a hook-and-loop fastening connection. The support members 3 may be inclined, vertical, horizontal, concave, convex, etc.

An overhead path or aerial runway 5, in this example formed by a rail 5, is schematically shown, a is shown that the rail 5 may have curve tracks,

A trolley 8 has been arranged so as to be freely movable in direction A (here essentially an X-direction) on the rail 6. The trolley 6, highly schematically shown in figure 1B, has rollers 8 for riding over the rails 5, and a frame 7 having plates (one of which is shewn) pending down on both sides of the rollers 8, from which plates a belay 10 is suspended via a carabiner 9. The belay 10 in this case is an auto-belay of the brand TrueBute®, in particular type 2, and comprises a drum onto which a safety cord 11 has been wound. The drum has been provided with a brake such that the person P attached to the outer end of the cord 11 by means of for instance a safety harness, is able to allow the cord to unwind in a restrained manner under the influence of their weight. In case of a returning motion of the person P towards the drum, it will retrieve the cord 11 through the action of a spring in the belay 10,
The rail 5 and the obstacles 2 have been positioned such relative to each other that the person P has at least substantially all support surfaces within reach by paying out the cable 11. The paying length of the cable 11, which for safety reasons will be shorter than the vertical distance from drum 10 to the floor 100, also plays a part here. The rail S runs overhead over the obstacles 2, wherein in projection at a horizontal plane the one obstacle is situated with its support member on the left-hand side of the projected rail and the other obstacle is situated with its support member on the right-hand side thereof. An obstacle with support member may also be situated straight below the rail.

The person P wears a pair of gloves 12 and a pair of shoes 13, which are the contact members and on which contact surfaces, to be discussed on the basis of figures 2 and 3, have been provided.

In figures 2A-C an example of a suitable glove 12 is shown, showing the palm side in figure 2A and the back side in figure 2B. The glove 12 has been provided with contact surfaces 14 at the palm side, and namely with contact surfaces 14a on the fingers, contact surfaces 14b on the palm of the hand and with contact surfaces 14c at the location of the forearm, near the wrist.

The glove has been attached to the hand in question of person P by means of a common hook-and-loop fastener. In the detail of figure 2C it can be seen that the contact surfaces 14 constitute the hook component of the hook-and-loop fastening connection. The hooks 16 have been attached to band material 15 and have a hook stem 18a and a hook opening 18b. The hook openings 16b are each time situated on one side only, and each time the same side of the hook stems 18a, when considered in a first direction B. The hooks 16 may be equi-oriented within a contact surface 14a, 14b, 14c. The first direction B is oriented in limb direction towards the torso of the person P, that means in proximal direction.

In the figures 3A-C an example of a suitable shoe 13 with a sole 18 is shown. The shoe 13 may be a regular shoe, but in this case a mounting cap 19 has been added, which with a toe 20 has been placed over the shoe toe and by means of straps 22 has been firmly attached to the shoe 13. The mounting cap 19 comprises a sole plate 21 covering the part of the sole 18 at the location of the ball and the toes. The sole plate 21 constitutes a contact member with a contact surface 14d which, see figure 3C, constitutes the hook component of a hook-and-loop fastening connection. In this case as well the hooks are oriented such that the hook openings 18b are all situated on the
same side of the hook stops 18a, when considered in first direction 8, wherein the hook openings preferably are equi-oriented over the surface 14d. The direction B goes from the front of the foot to the rear. Alternatively use can be made of a shoe in which the contact surface with hook component already is an integral part of the sole.

In the figures 4A and 4B two obstacles 2 have been depicted, having support surfaces 4 constituted by the loop component of a hook-and-loop fastening connection, adapted to the hook component of the contact surfaces 14a-d. The loop component is shown in detail in figure 40, having basis 30 and upright loops 31. In one embodiment, the loopholes of the upright loops are randomly orientated. In another embodiment they are at least substantially equi-oriented, in one embodiment with the openings oriented with a directional component parallel to the slope of the support surface in question. As can be seen in the figures 1A, 4A and 4B the possibilities in terms of location of the support surfaces are large.

During use of the system 1 by the person P, they will start on the floor 100, and for instance run up the concave support member 3. This involves first only the contact surfaces 14d of the shoes 13 contacting the support surfaces 4, wherein proper grip is at all times provided between the hooks 16 and the loops 31 (also see direction C1, figure 4), which grip can easily be released by the shoes moving in the ascending direction of the support member 3 (also see direction C2, figure 4). This does not slow down the mobility of the person P to an undesirable extent, whereas a considerable degree of security is provided against the shoes moving back along the support surfaces.

When running up the support member 3 the belay 10 runs along, along the rails 5, wherein the drum retrieves the cord 11, so that it remains sufficiently taut at all times.

When the person P comes closer to the top of the obstacle 2 they will be able to get more grip using the gloves 12, which with the contact surfaces 14a-c may form a hook-and-loop fastening connection with the loops 31 on the support surfaces 4S in a way similar to the contact surfaces 14d of the shoe. The person P can therefore move onwards over the obstacle 2, as it were, using hands and feet. Once arrived at the top they can jump to a next obstacle or to the floor 100, the cord 11 being paid out when necessary. Because of these possibilities of running up/climbing and jumping the person P experiences a Spiderman-like sensation. The belay and the oriented hook-and-loop fastening connections will ensure that the person P is able to
traverse the track safely, The person P can clamber upwards, jump to the fore, jump to the right, jump to the left and in that way traverse a 3D track.

Figure 40 shows an alternative, in which the obstacle 2 has been provided with support surfaces 14e and 14f with hook components, wherein the hook openings within the support surface 14e are equi-oriented in the first directions B1 and the hook openings in the support surfaces 14f are equi-oriented in the first directions 82. The loop component will in this case have been provided on the contact surfaces on the shoes and the gloves of the person P.

In figure 5 another example of a system 101 according to the invention is depicted. In the system 101 several persons P may be active simultaneously. The system 101 comprises a central body 102, on which a circumferential series of support members 103 has been arranged, having various arrangements of support surfaces 104.. At the top of the body 102 a series of permanent and rigid, radial outriggers 140 has been arranged, each outrigger being provided with a rail 105, along which in the directions A a trolley that is not shown, can be freely movable between stops. Each time, a belay 110 for person P has been attached to said trolley. When the person P runs up the support members 103 the belay 110 in question at the trolley runs along over the rail 105.

The support surfaces may be black. They may also have colors, have bright colors, for instance so-called neon colors. In combination with a UV-A light source (black light) a special color effect can then be achieved.

In figures 6A-C a few examples of arrangements of support members 3 provided with support surfaces 4 are shown. The support surfaces 4 have only been shown in figure 6A, it will be understood that they will also be present in figures 88 and $C$. The direction of inclination of the support members 3 has been indicated. In figure 6A no aerial runway is present, and the person is able to hop from the one support member to the other support member, in random order. In figure 6B there is an aerial runway 5, along which the person is able to move onwards in direction A, by means of a trolley, including belay, as discussed above, while jumping from the one support member to the other support member, let of the aerial runway, right of the aerial runway, below the aerial runway. A similar arrangement can be seen in figure 6C, the aerial runway 5 having a winding course. The support members may also extend up to several heights, in the Z-direction, and starting at different heights.

The invention is/inventions are not at all limited to the
embodiments discussed in the description and shown in the drawings. The
above description is included to illustrate the operation of preferred
embodiments of the invention and not to limit the scope of the invention.
Starting from the above explanation many variations that fall within the spirit
and scope of the present invention will be evident to an expert. Variations of
the parts described in the description and shown in the drawings are possible.
They can be used individually in other embodiments of the invention(s). Parts
of the various examples given, can be combined together,
Claims

1. System for physical mobility activity of a person, comprising at least one, in particular fixed, support member that is external relative to the person, and at least one contact member to be worn by the person in motion, wherein the support member and the contact member comprise at least one support surface and at least one contact surface, respectively, wherein the support surface and the contact surface constitute the respective components of a hook-and-loop fastening connection consisting of hooks and loops, wherein the hooks have hook stems and hook openings, wherein the hook openings on the support surface or contact surface in question are at least substantially all situated at the same side of the hook stems in question, when considered in a first direction parallel to the support surface or contact surface in question,

2. System according to claim 1, wherein the hooks on the support surface or contact surface in question are at least substantially equi-oriented, when considered in the first direction.

3. System according to claim 1 or 2, wherein the loops on the contact surface or support surface in question are at least substantially equi-oriented.

4. System according to claim 1, 2 or 3, wherein the one or more contact surfaces have been provided on objects that can be held by hands and/or fingers or by feet, in particular have been provided with means for attaching those objects to hands or feet, in particular in the shape of one or more articles of clothing for hands or feet,

5. System according to claim 4, wherein the article of clothing is an item of handwear, in particular a glove that may or may not have been provided with fingers, wherein the contact surface preferably has been provided at the palm side of the glove and/or in case of a glove including fingers, at the palm side of the fingers.
8. System according to claim 4, wherein the article of clothing is an item of footwear, wherein, preferably, the contact surface has been provided at the sole side of the item of footwear, preferably under the front part of the foot

5 7. System according to claim 8, wherein the contact surface has been formed on the sole of a shoe.
8. System according to claim 6, wherein the contact surface has been formed on a covering, such as for instance an overshoe, mounting cap or sole mounting plate for a shoe.

10 9. System according to any one of the claims 3-8, which for the person comprises a pair of gloves and a pair of shoes, mounting caps, sole mounting plates or overshoes, each provided with said contact surfaces.
10. System according to any one of the preceding claims, comprising a number of support surfaces,

11 11 System according to claim 10, wherein the support surfaces connect to each other.
12. System according to claim 11, wherein the support surfaces are spaced apart from each other,
13. System according to claim 11 or 12, wherein at least two support surfaces differ in spatial orientation,

14. System according to any one of the claims 10-13, wherein at least one support member has been provided with several support surfaces.
15. System according to claim 12, 13 or 14, comprising a number of support members provided with one or more support surfaces, which support members are spaced apart from each other.

18. System according to any one of the preceding claims, wherein the contact surface constitutes the hook component of the hook-and-loop fastening connection and the support surface constitutes the loop component of the hook-and-loop fastening connection,

17. System according to claims 5 and 18, wherein the first direction for the hooks in the contact surface is oriented in (the person's) proximal direction.

18. System according to any one of the claims 8-8 and according to claim 16, wherein the contact surface has been provided at the sole side of the item of footwear, wherein, preferably, the first direction is front-rear.

19. System according to claim 3 or a claim dependent thereon, wherein the loops are oriented with their openings according to a second direction, wherein the contact surface constitutes the loop component of the
hook-and-loop fastening connection, wherein the second direction is distal-proximal, in case of a contact surface on an item of handwear, or front-rear in case of a contact surface on an item of footwear.

20. System according to claim 3 or a claim depending thereon, wherein the loops with the loopholes have been oriented according to a second direction, wherein the support surface constitutes the bop component of the hook-and-loop fastening connection, wherein the support surface is inclined in the second direction,

21. System according to any one of the claims 1-15, wherein the support surface constitutes the hook component of the hook-and-loop fastening connection and the contact surface constitutes the loop component of the hook-and-loop fastening connection.

22. System according to claim 21, wherein the support surface is Inclined in the first direction and the hook openings are situated at the higher side of the hook stems in question.

23. System according to any one of the claims 10-15, when depending on claim 22, having at least two support surfaces which in terms of orientation of the hook openings of its hooks differ one from the other.

24. System according to any one of the preceding claims, comprising a safety device for breaking the fall of the person, wherein the safety device comprises an aerial runway, such as a cable (zip-wire, zip line) or a rail, extending over the at least one support member and which has been provided with a trolley that is movable along it, in particular freely movable along it, and a safety line which at one end has been connected to the trolley for being moved by it along the aerial runway and which at the other end can be connected to the person.

25. System according to claim 24, wherein the safety line is at least partially stretchy, in particular in the form of a flexible line having, in series, a part which, relatively speaking, is not stretchy and a part that is elastically stretchy.

26. System according to claim 24, wherein the safety device comprises a belay having a safety drum provided with a brake and a safety line wrapped around the drum, wherein at the one end the safety line has been connected to the safety drum and at the other end has been provided with a coupling for coupling the person to the safety line, wherein the belay has been connected to tie trolley for being moved by it along the aerial runway.

27. System according to claim 28, wherein the drum of the belay is
of the auto-winding type.

28. System according to any one of the claims 24-27, wherein the aerial runway extends over several support members.

29. System according to any one of the claims 24-28, wherein the aerial runway has corners and/or bends.

30. System according to any one of the claims 24-29, wherein the aerial runway has a horizontal course and/or a descending course.

31. System according to any one of the claims 24-30, wherein the aerial runway has an ascending intermediate course or ascending end course.

32. System according to any one of the claims 24-31, wherein the aerial runway has a starting point and an end point, wherein the end point is situated lower than the starting point.

33. System for physical mobility activity of a person, comprising a safety device for breaking a fall of the person in motion, wherein the safety device comprises an aerial runway, such as a cable or a rail provided with a trolley that is movable along it, in particular freely movable along it, and a safety line which at the one end has been connected to the trolley and at the other end has been provided with a coupling for coupling the person to the safety line, wherein the safety line is part of a belay having a safety drum provided with a brake and around which drum the safety line has been wrapped, wherein the belay has been connected to the trolley for being moved by it along the aerial runway, wherein, preferably, the drum of the belay is of the auto-winding type.

34. System according to claim 33, wherein the aerial runway has corners and/or bends.

35. System according to claim 33 or 34, wherein the aerial runway has a horizontal course and/or a descending course.

36. System according to any one of the claims 33-35, wherein the aerial runway has a short ascending intermediate course or short ascending end course.

37. System according to any one of the claims 33-36, wherein the aerial runway has a starting point and an end point, wherein the end point is situated lower than the starting point.

38. System according to any one of the claims 33-37, comprising at least one fixed support member and at least one contact member to be worn by the person in motion, wherein the support member and the contact member have at least one support surface and at least one contact surface,
respectively, wherein the support surface and the contact surface constitute the respective components of a hook-and-loop fastening connection consisting of hooks and loops, wherein the hooks have hook stems and hook openings, wherein the hook openings on the support surface or contact surface in question are at least substantially all situated at the same side of the hook stems in question, when considered in a first direction parallel to the support surface or contact surface in question, wherein the aerial runway extends over the at least one support member, wherein, preferably, the aerial runway extends over several support members.

30. System according to any one of the claims 33-38, provided with one or more aspects as described in any one of the claims 2-23.

40. Building provided with a system according to any one of the preceding claims.

41. Glove, which at the palm side has been provided with a contact surface of the hook component of a hook-and-loop fastening connection consisting of hooks and loops, wherein the hooks have hook stems and hook openings, wherein the hook openings on the contact surface are situated at least substantially all at the same side of the hook stems in question, when considered in a first direction parallel to the contact surface in question,

42. Glove according to claim 41, wherein the hooks on the contact surface in question are at least substantially equi-oriented, when considered in the first direction, wherein, preferably, the first direction is oriented in proximal direction.

43. Shoe, which at the sole side has been provided with a contact surface of the hook component of a hook-and-loop fastening connection consisting of hooks and loops, wherein the hooks have hook stems and hook openings, wherein the hook openings on the contact surface are situated at least substantially all at the same side of the hook stems in question, when considered in a first direction parallel to the contact surface in question, wherein, preferably, the first direction is front-rear.

44. Overshoe, shoe cap or sole mounting plate, which at the sole side has been provided with a contact surface of the hook component of a hook-and-loop fastening connection consisting of hooks and loops, wherein the hooks have hook stems and hook openings, wherein the hook openings on the contact surface are situated at least substantially all at the same side of the hook stems in question, when considered in a first direction parallel to the contact surface in question, wherein, preferably, the first direction is front-rear.
4δ. Assembly of a first body and a second body that can be detachably connected to each other by means of a hook-and-loop fastening connection, wherein the first body has a first surface with the hook component of the hook-and-loop fastening connection and the second body has a second surface with the loop component of the hook-and-loop fastening connection, wherein the hooks of the hook component have hook stems and hook openings, wherein the hook openings are situated at least substantially all at the same side of the hook stems in question, when considered in a first direction parallel to the first surface, and wherein the loops of the loop component have loopholes that are at least substantially equi-oriented according to a second direction parallel to the second surface,

46. System according to claim 45, wherein the hooks on the first surface are at least substantially equi-oriented, when considered in the first direction,

47. Device provided with one or more of the characterising measures described in the attached description and/or shown in the attached drawings.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER
INV. A63B9/00 A63B71/00 A62B35/00 A63B69/00 A63G31/00 A62B1/06 A62B35/04 A64B9/00 A63F4/04 A63B1/00 A63B5/00 A63B71/14 A41D19/015 A41D19/015

B. FIELDS SEARCHED
Minimum documentation searched (classification system followed by classification symbols)
A63B A62B A43B A63G A41D A63F

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
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<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
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<tr>
<td></td>
<td>paragraphs [0172], [0183] - [0197], [0202], [0205], [0207] - [0209] figures 1-13</td>
<td>17-19</td>
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</table>

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

**Y** document of particular relevance; the claimed invention cannot be considered inventive step when the document is taken alone

**S** document member of the same patent family

Date of the actual completion of the international search
12 September 2017

Date of mailing of the international search report
20/11/2017

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
Tejada Biarge, Di ego
### 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. X Claims Nos.:
   - 45-47
   - 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:
     - see FURTHER INFORMATION sheet PCT/ISA/210

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. X 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.:

   1-23, 40-44

**Remark on Protest**

- □ No protest accompanied the payment of additional search fees.

- □ 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.
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<td>US 2009023564 A1</td>
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<td>US 2004133965 A1</td>
<td>15-07-2004</td>
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</table>
This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-23, 40-44

   Hooks which are oriented in the proximal direction; loops which are oriented in the distal-proximal direction.

   ---

2. claims: 24-39

   A system with an aerial runaway with a trolley.

   ---
Continuation of Box II.2

**Claims Nos.: 45-47**

Claim 45 relates to an extremely large number of possible products. Support and disclosure in the sense of Article 6 and 5 PCT is to be found however for only a very small proportion of the products claimed (namely, the system for physical mobility activity of a person claimed in the previous claims). The non-compliance with the substantive provisions is to such an extent, that the search was performed taking into consideration the non-compliance in determining the extent of the search of claim 45 (PCT Guidelines 9.19 and 9.23). The same comments as for claim 45 apply, mutatis mutandis, to claim 46.

Claim 47 does not comply with the requirements of Article 17(2) (a) PCT and Rule 6.2 (a) PCT. Accordingly, no meaningful search can be performed for its subject-matter.

The applicant’s attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EP0 policy when acting as an International Preliminary Examination Authority is normally not to carry out a preliminary examination on a matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the applicant proceeds into the regional phase before the EP0, the applicant is reminded that a search may be carried out during examination before the EP0 (see EP0 Guidelines C-IV, 7.2), should the problems which led to the Article 17(2) declaration be overcome.