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(54) **Binding plate with articulations**

(57) The present invention relates to a binding element to which a boot or shoe fixing unit is attachable or attached so as to form a binding, in particular for connecting a boot or shoe to a sports device (5). The sports device (5) being in particular a ski (1), such as a cross country or touring ski, or a roller-ski (6). The sports device (5) is expected to comprise a longitudinally extending body (7) with a top surface (8). Said binding element, in the form of a mounting plate (10), is provided by a central longitudinal section (11) and at least one side section (12a, 12b) positioned on one or both of the long sides (15) of the longitudinal section (11). The central longitudinal section (11) has a width (13) which is approximately the same as the width of the top surface (8) of the sports

device (5), and the at least one side section (12a, 12b) has a width (14) which is less than the thickness of the sports device (5) to which the binding element is to be attached. Flexible joints (20) are provided between the central longitudinal section (11) and each of the at least one side sections (12a, 12b), such that the at least one side section (12a, 12b) can be bent out of the plane of the central longitudinal section (11). Finally, the central longitudinal section (11) is adapted to be in contact with the top surface (8) of the sports device (5) and the at least one side section (12a, 12b) is adapted to be bent and brought into contact with the side of the sports device (5), by means of the flexible joints (20), to be attached thereto.

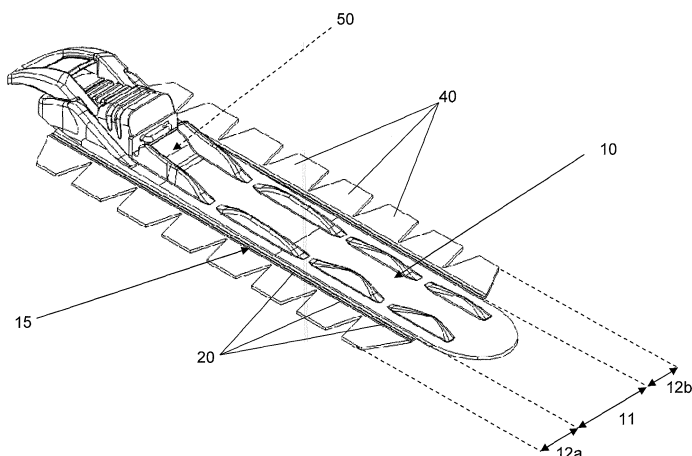


Figure 1

Description

Background of the Invention

[0001] Sports are extremely popular with a great many people, as exercise brings with it a great many health benefits. In particular, sports such as skiing and more recently roller skiing are very popular. Both downhill skiing and cross-country or touring skiing is enjoyed by many people, however specialist equipment is required. In particular, for skiing it is necessary to have some form of binding with which the sports practitioner's sports shoe or boot is appropriately affixed to the ski. This binding requirement is also the case for roller skis.

[0002] As would be well known to the skilled person, it is necessary that the connection between the sports practitioner and the ski or roller ski is not a rigid connection, but that the sports shoe or boot will disconnect under the appropriate conditions to avoid injury to the sports practitioner. Whilst it is possible to provide the sports shoe or boot binding directly on the ski or roller ski, this is rather more limiting as the binding cannot then be easily adjusted should a different sports practitioner wish to use the equipment and have a shoe or boot size which is different. As such, it is common in the art that a binding element, perhaps in the form of a mounting plate, is attached directly to the ski or roller ski, and that this binding element is then used to attach the specific sports shoe or boot binding thereto. Such a binding element often is provided with appropriate fixing points, to allow the binding to be adjustably attached to the mounting plate.

[0003] Currently it is necessary to have a binding element attached to the ski or roller ski by a professional. Attachment of the binding element to the ski must be done properly, as this provides the main connection between the sports practitioner and the ski itself. Failure of the binding element will clearly lead to failure of the entire ski or roller ski, thus potentially leading to significant harm to the sports practitioner. In light of this, it is most usual that the binding is attached to the ski or roller ski by a professional sports equipment technician. The attachment of binding elements requires specialist training and often specialist tools, to ensure that the mounting plate is appropriately fixed to the ski.

[0004] Clearly, requiring a sports technician to attach binding elements to skis or roller skis is rather inconvenient to the sports practitioner. The present disclosure relates to a binding element which can be attached to a ski, roller ski or other sports device by the sports practitioner, without requiring specialist training or a sports equipment technician. Whilst skis and roller skis have been discussed, it is clear to the skilled person that the binding element may be utilised for attachment to any sports device or indeed any other device to which a user must in some way attach either a shoe or boot, or perhaps some form of harness connection or the like.

Summary of the Disclosure

[0005] The present disclosure overcomes the above problem in the art, by providing a binding element, preferably in the form of a mounting plate, which can readily be attached to a sports device by the sports practitioner. Such a binding element makes a good and secure connection with the sports device, but does not require specific tools or training to attach, thus dramatically improving the usability of such a binding element. This binding element is advantageously described in claim 1, and further preferred embodiments and examples of the device are detailed in the dependent claims therefrom.

[0006] The claimed invention can be better understood in view of the embodiments of a binding element described hereinafter. In general, the described embodiments describe preferred embodiments of the invention. The attentive reader will note, however, that some aspects of the described embodiments extend beyond the scope of the claims. To the respect that the described embodiments indeed extend beyond the scope of the claims, the described embodiments are to be considered supplementary background information and do not constitute definitions of the invention *per se*. This also holds for the subsequent "Brief Description of the Drawings" as well as the "Detailed Description of the Preferred Embodiments." The binding element of the present disclosure is intended for use in connecting the shoe or boot of a sports practitioner to a sports device. Such sports devices are intended to be those of a ski, in particular touring or cross-country skis, or a roller ski. Obviously, such a requirement is not a limiting use of the binding element, as the binding element will clearly be usable in any situation where some connection is required to a sports or other device. Generally such sports devices will be provided with a long section which extends from front to back of the device, this section being provided with at least two surfaces. The first surface will either be in contact with the ground, or will be generally downwardly facing, thus providing a top or upper surface.

[0007] In this disclosure, the binding element is provided with a boot or shoe fixing unit which is either a part of the binding element or can be connectable therewith. The binding element further comprises several sections, the first being a longitudinal extending central section. On one or possibly both longitudinal sides of the central section are provided one or more side sections. It is clear that such side sections can be provided on one or other of the long sides of the central section, or could be provided on both. Dependant on the required use of the binding element, depends on the selection of the number and location of the side sections. In particular, it is advantageous for the longitudinal central section to have a width which is approximately the same as the top surface of the sports device. By also providing the one or more side sections with a width that is equal to, or more preferably less, than the thickness of the longitudinally extending section of the sports device, this allows the mounting

plate to be fixed to the sports device in a satisfactory manner. The central section of the mounting plate is intended for contacting the top surface of the sports device, and the one or more side sections will then bend round from the longitudinal central section and attach to the side surfaces of the sports device. Clearly, therefore, it is an advantage for the width of the central section to be approximately the same as the width of the sports device longitudinal section, and also by providing the width of the side sections being less than the thickness of the sports device section, the attachment will be improved and no interference with the operation of the device will occur. It is also possible for the central longitudinal section of the binding element to be attachable or attached to the top surface of the sports device.

[0008] In order to allow the side sections to bend with respect to the central section, flexible joints are provided between the central and at least one side sections of the mounting plate. These flexible joints allow the bending of the at least one side section so that when the mounting plate is positioned on the sports device, the at least one side section can be bent round to the side surface of the sports device.

[0009] In order to improve the attachment between the binding element and the sports device, an adhesive such as a strong glue or hot resin can be positioned between the lower surfaces of the central and/or at least one side section of the mounting plate and the sports device. By increasing the surface area of the mounting plate by use of the at least one side section, the mounting plate can be satisfactorily attached to the sports device by means of a glue or hot resin. Furthermore, by having the side section attaching to the side surface of the sports device, this also improves the strength of the bond from shearing forces which could act between the central longitudinal section and the top surface of the sports device. Indeed it is possible to only attach the binding element by use of the at least one side section, and not with the central section. Whilst it is possible to provide the adhesive by external means, it would also be possible to provide the mounting plate with integral adhesive pads. By providing the adhesive pads already attached to the binding element, it is possible to ensure that the connection between the adhesive and the binding element is appropriately strong, and then it is only required for the sports practitioner to ensure that the bond between the adhesive and the sports device is appropriately made; this improves the functionality and safety of the device. Further, by not requiring the sports practitioner to use a separate glue or hot resin, the ease of attachment is also improved.

[0010] It is most advantageous that the binding element does not interfere with the specific characteristics of the sports device. As is well known, skis are often provided with specific bending and flexing characteristics, which are utilised by the sports practitioner to improve his or her technique. Clearly it is somewhat of a disadvantage if the binding element affects the bending and flexing of the sports device, and so to ensure that

this does not occur the binding element is advantageously provided with a modulus of elasticity which is the same or preferably lower than that of the sports device. Obviously if this modulus is lower than the sports device, by attaching the binding element to the sports device this can have no affect to the bending and flexing characteristics.

[0011] In order to improve both the attachment bond strength and ease of attachment of the binding element to the sports device, the at least one side section can be provided itself by a plurality of tabs or teeth-like members. By allowing the binding element to be attached to, or positioned on, the top surface of the sports device initially at just the central longitudinal section, ensures that the sports practitioner will get the binding element in the correct place and orientation. By then providing the side sections by means of a plurality of tabs or teeth, each of the tabs or teeth can then be attached individually to the side surface of the sports device, thus ensuring that the tabs or teeth-like members are attached correctly, and also ensuring that the side sections in general can be attached more easily. A further advantage of providing the multiple tabs or teeth for the side section is that the flexible joint between the tabs or teeth-like members will allow each tab or teeth-like member of the side section to move independently of each other tab or tooth-like member and with respect to the central section. When the sports device in use and the flexing and bending occurs, by allowing the side sections to independently move by means of the tabs or teeth-like sections, the bending characteristics of the sports device will not be affected.

[0012] The flexible joints can be provided in a variety of different ways, and it is expected that one of a flexible plastic or rubber could be used. Additionally, it could be that the flexible joints are provided by means of a thin metal or foil between the side section or sections and the central section. The main requirement, is that the flexible joint will flex appropriately well, but that the joint provides a resilient coupling between the side sections and the central section, such that the bond between the mounting plate and the sports device is maintained.

[0013] The width of the flexible joint can be adjusted along the longitudinal length of the binding element. It is not uncommon for sports devices to be provided with a mounting section which is not straight. By having a change in the width of the flexible joint, the binding element can be readily attached to such devices, as the changing width of the flexible joints will also accommodate the changing width of the top surface of the sports device. Such sports devices are carver skis, which are also well known in the art.

[0014] It will be clear, that the combined width of the flexible joints and the central longitudinal section determines the maximum width of the top surface of the sports device to which the mounting plate may be fixed. Specifically tailoring the width of the longitudinal section and flexible joints will allow for the mounting plate to be coupled to a variety of different sports devices.

[0015] As has been discussed above, not all sports devices have connecting surfaces which are straight. If the binding element is to be attached to a sports device with a known curved side profile, the sports device could also be provided with such a curved profile. The central longitudinal section could have a edge which also curves in line with the sports device. Further, the one or more side sections could also be provided with this curved profile, such that they can also be attached to the side surfaces of the sports device.

[0016] The central section, as has been discussed above, can be provided with binding element points to attach a detachable binding thereto. It is also equally conceivable that the central longitudinal section could have a preformed binding as part of its upper surface, thus obviating a necessity of the separate binding. One main obvious requirement, is that the central longitudinal section be long enough that it will allow attachment of the binding, or will appropriately accommodate the shoe or boot of the sports practitioner.

[0017] In other examples of the device, the underside of the binding element may be provided with guiding pins. Such guiding pins can be used to interact with guiding holes provided on the sports devices to ensure that the mounting plate is positioned in the correct part of the sports device. Also, these guiding pins would ensure an appropriate orientation of a mounting plate.

[0018] In addition to providing a bond between the binding element and the sports device with adhesive, holes can be provided in the mounting plate to allow the use of screw-type fittings. Obviously, it is also possible that the adhesive is dispensed with entirely, and these holes are utilised by the sports practitioner to attach the mounting plate to the sports device.

[0019] Whilst the above disclosure has discussed binding element in general, it is also possible to consider, for commercial reasons, providing a kit of separate mounting plates. By providing kits with a variety of different binding elements, each of these plates with different widths, lengths, etc., the kit could be provided for attachment of binding elements to a variety of different sports devices. Each of the options discussed above could be embodied in a variety of different binding elements, and this could advantageously be used perhaps more by retailers than individual sports practitioners.

Brief Description of the Drawings

[0020]

Figure 1 This figure shows a perspective view of a binding element showing many of the advantageous features of the present disclosure.

Figure 2 Shows a cross-sectional view of the binding element as shown in Figure 1.

Figure 3 Shows a cross-sectional view of the binding element, wherein the side sections have been bent for attachment to the side surface of a sports device.

Detailed Description of the Preferred Embodiments

[0021] Looking at Figure 1, a perspective view of a binding element in the form of a mounting plate 10 showing many of the aspects of the present disclosure can be seen. Such a binding element is designed for easy attachment to a sports device 5 in order to allow for an appropriate connection of a boot or shoe to the sports device 5. In particular, the binding element is intended to overcome the necessity of requiring specialist tools or training in order to attach the binding element to the sports device 5. Also, as shown, this binding element can have means or a unit which allows connection of a boot or shoe to the binding element. Further this unit, or means, can be connected to, or connectable with the binding element, or it can be an integral part thereof.

[0022] Examples of the sports device 5 are numerous. In particular, the sports device 5 is expected to be one of a ski 1 or a roller ski 6. Obviously, binding element is not explicitly limited to connection with either a ski 1 or roller ski 6, and any sports device 5 to which a boot or shoe must be connected in use, can benefit from such a binding element. If the binding element is to be attached to a ski 1, it is further intended that such a ski 1 be a cross country or touring ski, and such a ski 1 could have a straight or curved longitudinal side. A roller ski 6, is well known in sports fields, and is somewhat similar to a normal snow ski 1; it has a long section to which the shoe or boot is removeably attachable, with one or more wheels at the front and back of this section to allow the roller ski 6 to be used on normal ground without snow.

[0023] The binding element as shown in Figure 1, is designed to provide the interface between the sports device 5 and the boot or shoe of the sports practitioner. Each of the sports devices 5 is provided with a longitudinally extending body 7, such a body 7 comprising a top surface 8 which is intended as the surface with which the sports practitioner has contact. The binding element is structured such that it can be mounted to the longitudinally extending body 7 of the sports device 5. As can be seen from the figures, and in particular Figure 1, binding element is provided with a central longitudinal section 11. This central longitudinal section 11 is intended to be placed in contact, or mounted to, the top surface 8 of the sports device 5. A variety of ways of attaching the binding element to the sports device 5 are possible, and these will be detailed below.

[0024] As is shown in Figure 1, on each of the longitudinal sides 15 of the central longitudinal section 11 of the binding element there are provided side sections 12a, 12b. The use of multiple side sections 12a, 12b as seen in the figures, is one advantageous design, however it would be clear to the skilled person that only one side

section 12a or 12b could be provided, without leading to failure of the binding element. Additionally, it is clear from Figure 1 that the side sections 12a, 12b are further structured, however this is again not a necessity for the mounting plate 10. Indeed, the side sections 12a, 12b could be provided with a single longitudinal extending member, which has a length equal to, or less than, that of the central longitudinal section 11. Further, the side sections 12a, 12b do not need to extend the full length of the central longitudinal section 11, and could be present in only one location, or provided at several points along the long side 15 of the central longitudinal section 11.

[0025] The side sections 12a, 12b, or single side section 12a or 12b, have a width 14 which is less than the thickness of the sports device 5 to which the binding element is to be mounted. The longitudinally extending body 7 of the sports device 5 will obviously have a thickness, and the width 14 of the side sections 12a, 12b is advantageously less than this. Furthermore, the width 13 of the central longitudinal section 11 is advantageously approximately the same as the width of the longitudinally extending body 7 of the sports device 5, in particular the width of the top surface 8 of the sports device 5. As is clear from Figures 1 and 3, the mounting plate 10 is structured and designed such that the central longitudinal section 11 will be in contact with or mounted to the top surface 8 of the sports device 5, and the side section or sections 12a, 12b are to be bent round out of the plane of the central longitudinal section 11, and mounted to the side of the longitudinally extending body 7 of the sports device 5. In light of this, it is obvious that the widths of the central longitudinal section 11 and the side sections 12a, 12b can readily be varied on the basis of the sports device 5 to which the binding element is to be fixed. The main requirement is that the width 13 of the central longitudinal section 11, is not more than the width of the top surface 8 of the longitudinally extending body 7 of the sports device 5; it should also not be too much narrower, so as to ensure that the one or more side sections 12a, 12b can be bent round to the side of longitudinally extending body of the sports device.

[0026] In order to allow the one or more side sections 12a, 12b to be bent out of the plane of the central longitudinal section 11, flexible joints 20 are provided therebetween. Such flexible joints 20 are flexible enough to allow the one or more side sections 12a, 12b to bend out of the plane of the central longitudinal section 11, but are resilient enough to maintain a good connection between the central longitudinal section 11 and one or more side sections 12a, 12b. That is, when the binding element is in use, the side sections 12a, 12b are advantageously further provided to provide or improve the attachment of the binding element to the sports device 5. Each or all of the central longitudinal 11 and one or more side sections 12a, 12b can be used as providing fixing between the mounting plate 10 and the sports device 5. In light of this multiple mounting points for the mounting plate 10, the bond between the mounting plate 10 and the sports de-

vice 5 is dramatically improved. Additionally, incorporating these further mounting points, in particular in the form of the one or more side sections 12a, 12b, the ease of attachment of the binding element with the sports device 5 is significantly improved. In light of this, therefore, the flexible joints 20 clearly are required to allow the bending of the side sections 12a, 12b, as well as also resiliently connecting the one or more side sections 12a, 12b with the central longitudinal section 11, such that the bonding between the one or more side sections 12a, 12b and the sports device 5 adds to the bonding between the central longitudinal section 11 and the sports device 5.

[0027] It is obvious that a variety of different fixing possibilities are available for the binding element of the present disclosure. Typically, binding elements and mounting plates of the prior art require the use of a specialised sports technician in order to appropriately attach the binding element to the sports device 5. The structure of the binding element as described above and shown in the figures, allows for the binding element to be attached by means of adhesives, which can be used by the sports practitioner rather than the sports equipment technician. As will be clear, the contact surface area of binding element shown in Figure 1 is increased by means of the one or more side sections 12a, 12b. With this increased surface area, it is possible to provide a strong enough bond between the mounting plate 10 and the sports device 5 by means an adhesive. In particular, a strong glue 30 which can be readily applied by the sports practitioner is sufficient to bond the binding element to the sports device 5. Obviously, many further options are available for the glue 30, such as a hot resin 31. As stated above, the fact that an adhesive is sufficient, this is a direct result of the increased surface area of the binding element which is in contact with the sports device 5 and longitudinally extending body 7 thereof. Further, it can be sufficient to provide the bonding between the sports device 5 and the binding element just by using the one or more side sections 12a, 12b.

[0028] Another advantageous design for the adhesive, is to have adhesive pads 32 which are integral with the binding element. That is, the binding element can be provided with appropriately located adhesive pads 32 on the surface intended for contact with the sports device 5, such that the sports practitioner need only remove a protective cover, well known in the art, to expose the adhesive surface for attachment to the sports device 5. Providing the binding element with such integrated adhesive or adhesive pads 32 further improves the usability of the binding element and allows for any sports practitioner to attach the binding element to their sports device 5. In use, the binding element is provided with the integrated adhesive, the user then removes the protective covering and can stick the binding element to the longitudinally extending body 7 of the sports device 5. A further advantage, is that the adhesive covering the central longitudinal section 11 can be exposed first, and then the binding element can be attached to the sports device 5. Once

the binding element is attached to the sports device 5 at the central longitudinal section 11, the adhesive can be exposed on the one or more side sections 12a, 12b and these side sections can be bent, by means of the flexible joint 20, into contact with the side surfaces of the sports device 5. Such an advantage, clearly improves the workability of the device.

[0029] As is clear from the above, it is intended that only the central longitudinal section 11 and/or the one or more side sections 12a, 12b be provided with the adhesive, either by means of glue 30, hot resin 31 or the pre-attached adhesive pads 32. Providing the flexible joints 20 without any adhesive thereto, allows for an improvement of the fitting in the binding element, as well an improvement to the interaction of the binding element with sports device 5. In use, most sports devices 5 will flex or bend to a degree, and the positioning of the flexible joint 20 between the central longitudinal sections 11 and one or more side sections 12a, 12b allows for the binding element to bend appropriately with the sports device 5. Further, by not physically attaching or mounting the flexible joints 20 to the sports device 5, this flexing and bending is dramatically improved. This improvement can also be achieved when the central longitudinal section 11 is not physically bonded with the sports device 5, thus allowing some relative movement.

[0030] With relation to the bending of the sports device 5 in use, it is clear that the binding element should advantageously not influence the reaction of the sports device 5 to stress and strain in use. In particular, it is well known that skis 1, when in use, are required to bend and flex, thus allowing the sports practitioner to partake of said sport. Many skis 1 are specifically fabricated with known bending and flexing characteristics, and the binding element is advantageously designed so as not to influence these. As has been discussed above, the provision of the flexible joint 20 allows the binding element to bend and flex with the sports device 5, in particular ski 1, however it is also possible to improve the lack of influence on the sports device 5 by choosing the internal structure and material for the binding element appropriately. In particular, if the material for the binding element is chosen such that the modulus of elasticity is the same or lower than that of the sports device 5, it is clear that the binding element will not interfere with the bending and flexing of the sports device 5. In general, it is possible to choose the material for the binding element and flexible joint 20 and adhesive, such that the modulus of elasticity of the binding element material and flexible joint 20 is such that the bend and flex characteristics of the sports device 5 are completely unaffected by attachment of the binding element

[0031] Looking at Figure 1, it is further advantageous to structure the one or more side sections 12a, 12b. As can be seen in the Figure, the side sections 12a, 12b are provided by a plurality of tabs or teeth-like members 40. Such a structure gives a crocodile-like profile to the one or more side sections 12a, 12b. Whilst a plurality of tabs

or teeth-like members 40 are shown in Figure 1, as has been discussed above, it is possible that the one or more side sections 12a, 12b be provided by only one of the tabs or teeth-like members 40. Further, it is not necessary to have a continuous line of these tabs or teeth-like members 40, and the improvement of fixing can still be achieved by means of providing one or only a few tabs or teeth-like members 40 along the longitudinal side 15 of the central longitudinal section 11. As has been clearly shown above, the improvement in the binding element, in particular with regards fitting of the binding element to the sports device 5, is achieved by increasing the surface area of the binding element which comes into contact with the sports device 5. This can readily be achieved by means of one or only a few tabs or teeth-like members 40.

[0032] It will be clear that providing the one or more side sections 12a, 12b as a series of tabs or teeth-like members, dramatically improves both the fixing of the binding element to the sports device 5, as well as the interaction of the binding element with the sports device 5. Increasing the surface area of the binding element in contact with the sports device 5 improves the bond between the binding element and the sports device 5. If a single side section 12a or 12b is provided along a longitudinal side 15 of the central longitudinal section 11, the ease of attachment of the mounting plate 10 is decreased. It is not a terribly straightforward matter to ensure that the full surface of the side section 12a or 12b is in appropriate contact with the side of the sports device 5, and thus the fitting is hindered, and also possibly the strength of the final bond. Provision of the one or more tabs or teeth-like members 40 improves the fitting, as each of the tabs or teeth-like members 40 can be individually attached to the side of the longitudinally extending body 7 of the sports device 5. It is clear that attaching just one tab or teeth-like member 40 at a time will improve the ease of fitting of the device, whilst also improving the overall bond between the binding element and the sports device 5. In other words, the sports practitioner when fixing the binding element will be readily able to ensure a good connection between the tab or teeth-like member 40 being attached. Furthermore, as binding element and sports device 5 will flex and bend in use, as discussed above, there is an obvious advantage to having a discontinuous side section 12a or 12b. The main bending of the sports device is likely to be a flexing of the sports device in the direction perpendicular to the longitudinally extending body of the sports device 5. By providing the side sections 12a, 12b by a plurality of tabs or teeth-like members 40, allows the side sections 12a, 12b to maintain a good bond with the side of the sports device 5, whilst not influencing the bending and flexing of the sports device 5.

[0033] The flexible joints 20 can be provided by a variety of different materials or structures. For example, it would be possible to provide the flexible joints 20 by simply having a flexible plastic material connecting the cen-

tral longitudinal section 11 with the one or more side sections 12a, 12b. This could be done with either a separate plastic material or rubber material, or by simply structuring the binding element with a thinner and flexible section between the central longitudinal section 11 and the one or more side sections 12a, 12b. A further option would be to provide the flexible joints 20 by means of a thin flexible metal or foil. Obviously, the actual structure of the flexible joints 20 can be provided in a variety of different ways, the main requirement being that the flexible joint 20 is suitably flexible to allow easy attachment of the binding element, whilst also allowing for the bend and flex of the sports device 5 to be accommodated. Further, the flexible joint 20 must be resilient enough to ensure that the binding element is firmly held to the sports device 5 by the one or more side sections 12a, 12b.

[0034] It is possible to provide the flexible joint sections 20 with a width 21 which is the same all along the longitudinal side 15 of the central longitudinal section 11. This would be advantageous when attaching the binding element to a sports device 5 which had a longitudinally extending body 7 with a straight side. If, however, the longitudinally extending body 7 of the sports device 5 were provided with a non-straight edge, varying the width 21 of the flexible joints 20 along the longitudinal direction of the central longitudinal section 11 would allow the same binding element to be attached to a sports device 5 with a longitudinally extending body 7 of a non-straight edged profile. One such sports device 5 could be a carver ski 3, which is well known to have a narrower middle section than end sections.

[0035] As can be seen in Figure 2, the combined width 22 of the central longitudinal section 11 and the flexible joints 20 provided along the longitudinal side 15 of the central longitudinal section 11, determines the maximum width of the sports device 5 to which the binding element can be attached. This is only the case, however, when the binding element is provided with side sections 12a, 12b on both of the longitudinal sides 15 of the central longitudinal section 11. If only one side section 12a or 12b is provided on the central longitudinal section 11 of the binding element, it is clear that binding element can be attached to a sports device 5 of any width. As is also clear from Figure 2, if the binding element is provided with side sections 12a, 12b on both sides of the central longitudinal section 11, the width 13 of the central longitudinal section 11 determines the minimum width of sports device 5 to which the binding element can be attached.

[0036] The binding elements shown in the figures are all provided with a central longitudinal section 11 which has a straight longitudinal side 16. As has been touched on above, not all sports devices 5 have longitudinally extending bodies 7 with a straight side. In order to allow for appropriate fixing of a binding element to such sports devices 5, it is possible to provide the central longitudinal section 11 with a curved longitudinal side 17. Again, the one or more side sections 12a, 12b are provided along

the curved longitudinal side 17 of the central longitudinal section 11, and when provided by the one or more tabs or teeth like members 40, these can readily be attached to the side surface of the sports device 5. Such a curved longitudinal side 17 is used either instead of or in addition to, flexible joints 20 with varying widths 21 along the longitudinal side 15 of the central longitudinal section 11

[0037] Whilst it is not shown in the figures, the binding element can be provided with a variety of appropriate fixing points 50 to which a shoe or boot binding 2 can be attached, thus functioning as a boot or shoe fixing unit. As is well known in the art, it is often necessary for a separate binding 2 to be provided between the binding element and the shoe or boot of the sports practitioner. For example, skis 1 often have a specific binding 2 which allows the boot or shoe of the sports practitioner to move in order to allow the sports practitioner to travel with the ski 1. In one embodiment, the binding element is provided with fixing points to attach a separate binding 2 or a boot or shoe fixing unit thereto. It is also possible, for the binding element to have the fixing unit or direct binding 2 attached and preformed thereon. In particular, the fixing points 50 or specific binding 2 is provided along the central longitudinal section 11, wherein this is provided on the surface of the central longitudinal section which is not directly in contact with the longitudinally extending body 7 of the sports device 5. In order to appropriately attach either a separable binding 2 or to have an appropriate binding 2 as part of the central longitudinal section 11, this longitudinal section 11 is of an appropriate length to accommodate either the binding 2 by means of the fixing point 50, or to actually be long enough to be structured with the integral binding 2.

[0038] In order to improve the placement of the binding element in the correct location of the sports device 5, it is possible to provide one or more guiding pins 51 on the underside the binding element. Such a guiding pin 51 is shown in Figure 2. These optional guiding pins 51 could be used to interact with appropriate guiding holes or points 4 provided on the sports device 5. The guiding pins 51 and holes or points 4 are primarily provided to ensure that the binding element is positioned in the most desirable location on the sports device 5.

[0039] In addition to, or instead of, providing the bond between the binding element and the sports device 5 by means of an adhesive, it is possible to attach the two together by means of screw or similar fittings. Providing holes 52 through the relevant sections of the central longitudinal section 11 and one or more side sections 12a, 12b, will allow screws to be used to attach the binding element to the sports device 5. Again, this can be used instead of, or as well as, the adhesives as discussed above.

[0040] For commercial purposes, it is advantageous to provide a kit 60 of multiple different binding elements. Of these binding elements, the possible various options are included within the kit 60. That is, the central longitudinal section 11 can be provided with a variety of dif-

ferent widths 13, or with different longitudinal sides 15, those of straight 16 or curved 17. A variety of binding elements can be provided in this regard. Additionally, it is possible to provide binding elements with a variety of different structures and numbers of side sections 12a, 12b, with one or a plurality of tabs or teeth-like members 40 making up these side sections 12a, 12b. Finally, it is obvious that a variety of different widths 21 of the flexible joints 20 can be provided, as well as a variety of different widths 22 of the central longitudinal section 11 and flexible joints 20. It will be possible to provide appropriate kits 60 to cover, for example, a range of possible skis 1 or a range of possible roller skis 6. Such kits 60 could be provided to retailers perhaps, rather than the individual sports practitioners, in order to allow retailers to cover all possible requirements of the binding elements of the present disclosure.

[0041] The above options and description for the various aspects of the binding element can be obviously interchanged as required. No specific individual combination of features is considered as a requirement for the ready functioning of the binding elements, and indeed all options which fall within the scope of the claims are to be considered as disclosed.

Reference list

[0042]

1	Ski
2	Binding
3	Carver skis
4	Guiding holes or points
5	Sports device
6	Roller-ski
7	Long extending body of (5)
8	Top surface
10	Mounting plate
11	Central longitudinal section
12a, 12b	Side sections
13	Width of (11)
14	Width of (12)
15	Long side of (11)
16	Straight long side of (11)
17	Curved long side
20	Flexible joints
21	Width of (20)
22	Width of (11 + 20)
30	Glue
31	Hot resin
32	Adhesive pad
40	Tabs or teeth like members
50	Fixing points of ski binding
51	Guiding pins
52	Holes through (11)

Claims

1. A binding element to which a boot or shoe fixing unit is attachable or attached so as to form a binding, in particular for connecting a boot or shoe to a sports device (5), in particular a ski (1), such as a cross country or touring ski, or a roller-ski (6), the sports device (5) comprising a longitudinally extending body (7) with a top surface (8), wherein:

the said binding element in the form of a mounting plate (10) is provided by a central longitudinal section (11) and at least one side section (12a, 12b) positioned on one or both of the long sides (15) of the longitudinal section (11), wherein further

the central longitudinal section (11) has a width (13) which is approximately the same as the width of the top surface (8) of the sports device (5), and the at least one side section (12a, 12b) has a width (14) which is less than the thickness of the sports device (5) to which the binding element is to be attached, and

flexible joints (20) are provided between the central longitudinal section (11) and each of the at least one side sections (12a, 12b), such that the at least one side section (12a, 12b) can be bent out of the plane of the central longitudinal section (11), wherein

the central longitudinal section (11) is adapted to be in contact with the top surface (8) of the sports device (5) and the at least one side section (12a, 12b) is adapted to be bent and brought into contact with the side of the sports device (5), by means of the flexible joints (20), to be attached thereto.

2. The binding element according to claim 1, wherein the central longitudinal section (11) is adapted to be attached to the top surface (8) of the sports device (5).
3. The binding element according to either of claims 1 or 2, wherein the binding element is attached to the sports device (5) by means of a glue (30) or hot resin (31) between the sports device (5) and the surfaces of each of the central longitudinal section (11) and/or the at least one side section (12a, 12b) intended for contacting the sports device (5).
4. The binding element according to either of claims 1 or 2, wherein the binding element is attached to the sports device (5) by means of an adhesive pad (32) integral to the binding element, which is located on the surfaces of each of the central longitudinal section (11) and for the at least one side section (12a, 12b) intended for contacting the sports device (5).

5. The binding element according to any one of the preceding claims, wherein the modulus of elasticity of the binding element, including the central longitudinal section (11) and the at least one side section (12a, 12b), is the same as or lower than that of the sports device (5) to which the binding element is to be attached.
6. The binding element according to any one of the preceding claims, wherein each of the at least one side sections (12a, 12b) is formed from at least one tabs or teeth like members (40), each of the at least one tabs or teeth like members (40) being separate from each other and independently attached to the central longitudinal section (11) via flexible joints (20), so that they can each be independently bent out of the plane of the central longitudinal section (11).
7. The binding element according to any one of the preceding claims, wherein the flexible joints (20) are made from one of: a flexible plastic material; a thinner and flexible section of the material making up the mounting plate (10); a foil; a flexible metal.
8. The binding element according to any one of the preceding claims, wherein the width (21) of the flexible joints (20) is adjustable along the longitudinal direction of the binding element so as to accommodate sports devices (5) which do not have a straight sided profile, such as carver skis (3).
9. The binding element according to any one of the preceding claims, wherein the combined width (22) of both the central longitudinal section (11) and the flexible joints (20) determines the maximum width of sports device (5) to which the binding element may be fitted.
10. The binding element according to any one of the preceding claims, wherein the central longitudinal section (11) has either a straight longitudinal side (16) for attachment to straight-sided sports devices (5), or a curved longitudinal side (17) for attachment to curved-sided sports devices (5), and wherein the flexible joints (20) and at least one side section (12a, 12b) are provided along the straight (16) or curved (17) longitudinal side.
11. The binding element according to any one of the preceding claims, wherein the central longitudinal section (11) has appropriate fixing points (50) for shoe or boot bindings (2), acting as the boot or shoe fixing unit, on the surface opposite that intended for attachment to the sports device (5).
12. The binding element according to any one of claims 1 to 10, wherein the central longitudinal section (11) has an integral shoe or boot binding (2) on the surface opposite that intended for attachment to the sports device (5), acting as the boot or shoe fixing unit.
13. The binding element according to any one of the preceding claims, wherein the surface of the central longitudinal section (11) which is intended to be attached to the sports device (5) is provided with one or more guiding pins (51) for interaction with appropriate guiding hole or points (4) on the sports device (5).
14. The binding element according to any one of the preceding claims, wherein the central longitudinal section (11) and/or the at least one side section (12a, 12b) has a plurality of holes (52) there-through, for allowing a screw to attach the binding element to the sports device (5).
15. A kit (60) comprising a plurality of binding elements according to any one of the previous claims, wherein the plurality of binding elements comprise binding elements with central longitudinal sections (11) of different widths (13) and different shapes, and binding elements with flexible joints (20) of different widths (21) to allow attachment of the binding elements in the kit to a variety of different sports devices (5).

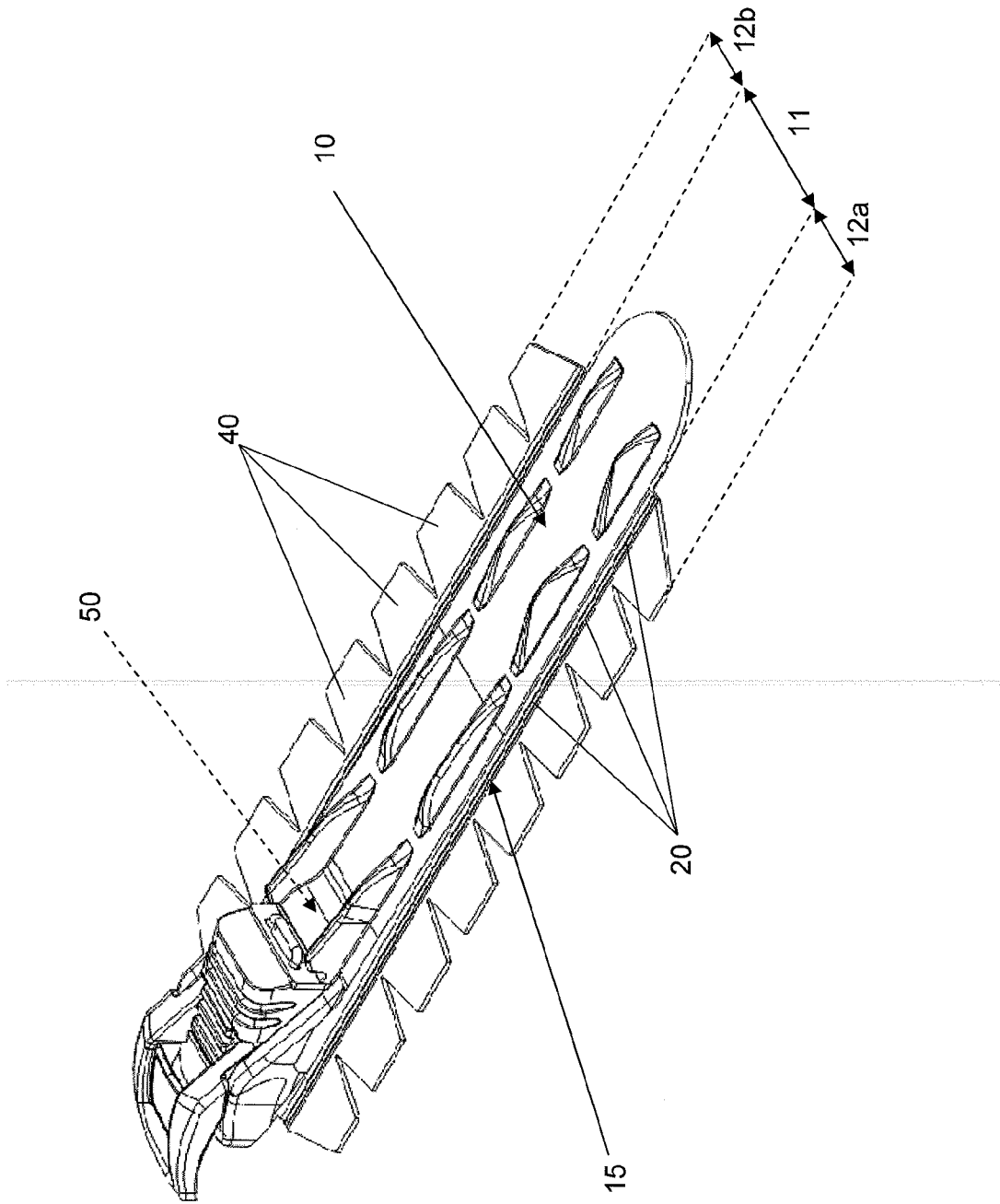


Figure 1

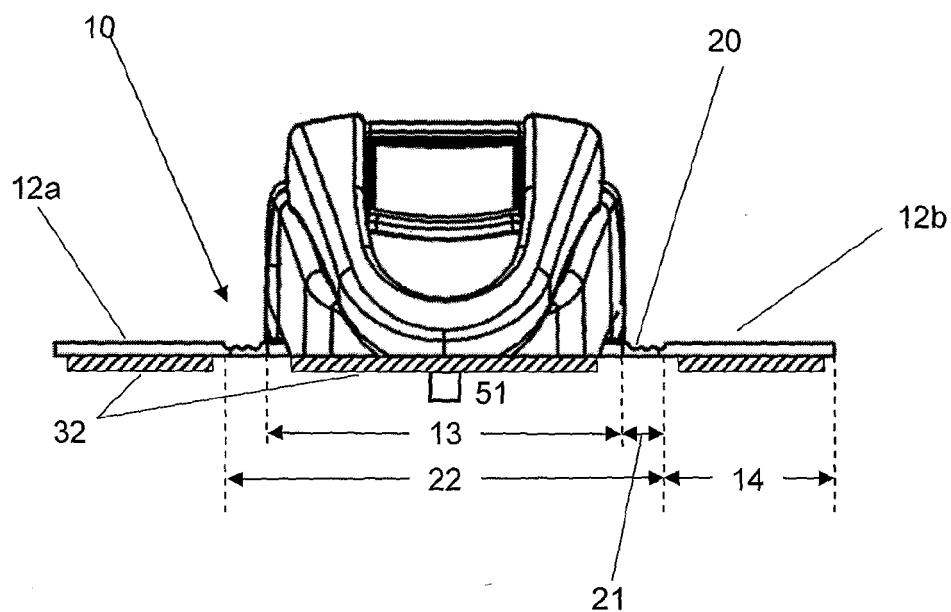


Figure 2

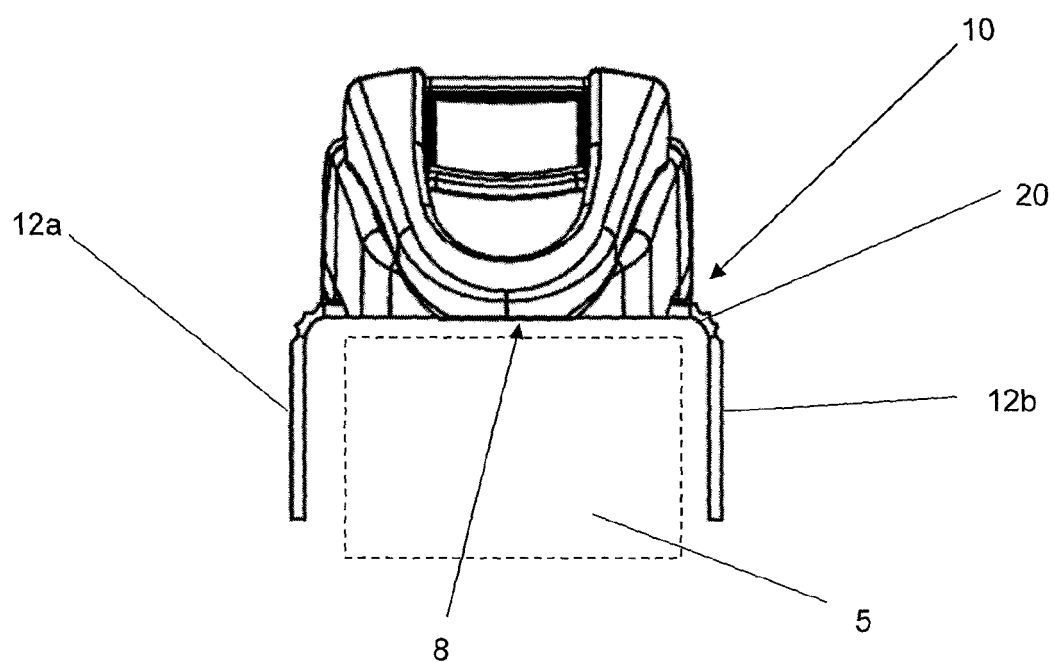


Figure 3



EUROPEAN SEARCH REPORT

Application Number
EP 08 15 6426

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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 22 October 2008	Examiner Murer, Michael
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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