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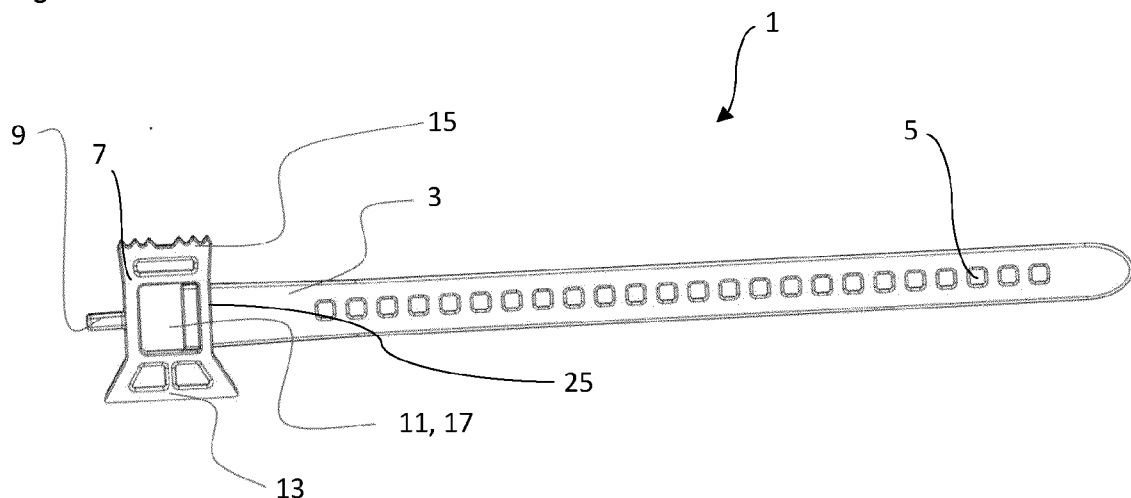
(54) **STRAP DEVICE FOR WINTER SPORTS**

(57) The invention relates to a strap device for winter sports, particularly suitable for holding skis, snowboards, or other items together. The strap device comprises an elastic strap element and a multifunctional closure element coupled to the strap element. The elastic strap element can form a loop and can be held securely in this

loop by the multifunctional closure element.

Furthermore, the invention relates to a use of the strap device for breaking ice and/or as a comb for touring-skis and/or for removing ice or snow from a surface such as skis, snowboard, windshields, glasses, helmets, boots.

Fig. 1



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Description

Technical field

[0001] The invention relates to a strap device for winter sports, particularly suitable for holding skis, snowboards, or other items together, comprising:

- an elastic strap element;
- a multifunctional closure element coupled to the strap element;

wherein the elastic strap element can form a loop and can be held securely in this loop by the multifunctional closure element.

[0002] Furthermore, the invention relates to a use of the strap device for breaking ice and/or as a comb for touring-skis and/or for removing ice or snow from a surface such as skis, snowboard, windshields, glasses, helmets, boots.

Background

[0003] In general, straps or strap devices for winter sports have been known for many years, especially as ski straps to hold skis together during transportation or when not in use. Ski straps are flexible, durable bands specifically designed to typically wrap around the skis and poles to facilitate easy transportation and storage. These bands are often made of elastomer compounds, with adjustable elements via different holes along the strap, or made of textile, commonly adjusted in size by a velcro patch, or by a cinch.

Prior art

[0004] US 3,279,008 A, for example, describes a conventional ski strap with a velcro closure which fulfills the function of holding skis together when they are not in use. The ski strap disclosed in this document is an elongated strip of thin, flexible material, relatively non-stretching in character, preferably tanned pigskin.

[0005] The disadvantage of such a ski strap is that it only fulfills one function, namely holding skis together. Especially when using skis, during a tour for example, the strap is useless and serves as no further aid. In addition, non-stretchable material cause difficulties in adapting to different ski sizes or shapes. Tanned pigskin is also less resistant to extreme weather conditions or moisture, which could affect durability.

[0006] However, strap devices are also known which, in addition to the simple function of holding skis together, can also fulfill other functions at the same time and can therefore be regarded as an upgrade to conventional ski straps.

[0007] For example, WO 2017/091906 A1, US 2020/0078660 A1 and US 2018/0193719 A1 each disclose a strap device which comprises a separator for the

skis, wherein this separator, on the one hand, keeps the skis which are adjacent to one another or bound together spaced apart. On the other hand, the separator has a holding means, such as a ring or another adapter, in order to be hung on another element.

[0008] The disadvantage of the aforementioned devices is that they are not very compact due to the separators, which have an extension perpendicular to the surface of the strap element. Also, the devices have at least three individual elements, namely a closure element, a strap element, and the separator. Because these elements are designed as individual and separate components, they are susceptible to damage at the joints, which reduces the durability of these devices. Furthermore, the multiple functions (separating skis, hanging on other elements) are only intended for storing skis. A function that assists a person on skis during a tour is not supported by these devices.

[0009] US4588115A discloses a ski strap device, which in particular has a multifunctional closure element. In addition to the function of holding skis together, this strap device is also able to function as a scraper for removing ice from surfaces via the multifunctional closure element. The closure element has a sharp edge for this purpose. The strap device also has a strap element made of a textile.

[0010] However, the closure element disclosed in the aforementioned document - and the strap device in this respect - is disadvantageously non-compact. The closure element is a very complex ratchet-latch mechanism for closing/tensioning. In particular, the closure element is designed in such a way that a functional hard part/component must be attached to both ends of the strap element. In addition, the strap device relies on the closure element being "hooked" specifically on one edge of a ski in order to constrain the open end of the strap element. Therefore, it is not possible to fully encircle an object in any random position.

[0011] There are also disadvantages to using the textile as a strap element. For example, it is not stiff enough to serve as a handle for performing additional functions other than holding skis together. Furthermore, it is not flexible enough. Textiles tend to be more loose during bonding, which can lead to a less stable fit. Overall, the disclosed device is intended as a ski-specific-storage element, not a multi-purpose tool to have on the field. Moreover, the combination of the complicated closure element and the textile strap element makes it, among others, impossible to create a tourniquet with the device.

[0012] The device disclosed in patent specification US4588115A is disadvantageously not suitable for the use of an of an elastic material or elastomer in the strap element. This is because such a material is considered not to meet the durability requirements disclosed and in particular is considered to harden and crack after a year or two and fail.

Object of the invention

[0013] The object of the invention was therefore to eliminate the disadvantages of the prior art and to provide a strap device for winter sports which can be designed to be as compact and flexible as possible and which, in addition to holding items such as skis or snowboards together, also fulfills other functions.

Disclosure of the invention

[0014] The object of the invention is solved by the features of the independent claims. Advantageous embodiments of the invention are described in the dependent claims.

[0015] In a first aspect, the invention preferably relates to a strap device for winter sports, particularly suitable for holding skis, snowboards, or other items together, comprising:

- an elastic strap element;
- a multifunctional closure element coupled to the strap element;

wherein the elastic strap element can form a loop and can be held securely in this loop by the multifunctional closure element.

[0016] Compared to the prior art, the present invention offers the advantage of a multifunctional aid for winter sports. The strap device according to the invention can be used conventionally as a ski strap to hold skis, snowboards, or other items together. At the same time, it fulfills other functions, eliminating the need to carry several separate aids. Especially during activities such as skiing, where movement is crucial, the need to carry a variety of different tools is avoided. Another particular advantage is that the strap device according to the invention can be designed to be particularly compact, as only a small number of individual parts are used.

[0017] Further, the strap device according to the invention is in particular highly flexible due to the elastic strap element. It can apply tension to the held items and can hold items of vastly different perimeters. Moreover, the strap element is stiff enough, unlike textile, to serve as handle for performing the additional functions other than holding items together.

[0018] The invention thereby leads away from the prior art, where it is stated, that elastic straps, in particular elastomers, are as having disadvantages and are therefore not suitable to be used in combination with multifunctional closure elements (see for example US 4588115 A, column 3, line 30 ff.).

[0019] According to the invention, an elastic strap element is preferably a flexible component that is made of a stretchable material and is used to secure, hold and/or enclose objects or items. It is preferably characterized by its ability to be elastic, whereby it is able to adapt to different perimeters and thereby exert tension on the

objects or items held. The elastic strap element offers both flexibility and restoring force and can not only act as a loop for holding objects/items together, but also as a handle for additional functions as part of the multifunctional tool. "Strap element" can be synonymous with "belt" or "band", among other terms. Preferably, the elastic strap element is made of an elastomer.

[0020] The elastic strap element preferably has a modulus of elasticity / "Young's modulus" of 1 MPa to 5 MPa.

[0021] As already described, the closure element preferably serves to hold the elastic strap element in a loop. In particular, it is designed in such a way that it integrates an additional functionality that goes beyond the closure of the strap device. In this respect, the multifunctional closure element serves preferably as a handheld tool which, in addition to the function of closing the strap device, fulfills at least one further function while it is not bound to the constrained objects.

[0022] Preferably, it is one-piece and thus designed as a monolith, for example by injection molding. It is preferably attached/ coupled to one end of the strap element, whereby any type of attachment can be used.

[0023] In a further embodiment the closure element comprises metal and/or plastic and/or a compound material such as a fiber compound. The integration of metal provides additional strength and durability, which is particularly important if the closure element is to be subjected to high loads. Plastics and composite materials enable a wide range of design options that can meet the specific requirements and functions of the closure element. The use of plastics and composite materials reduces the overall weight of the closure element.

[0024] The closure element is especially preferably made of plastic and manufactured in an injection molding process. The injection molding process enables precise and efficient production of complex shapes and structures.

[0025] In a further preferred embodiment, the strap device according to the invention is characterized in that,

- the strap element comprises at least one opening, and
- the closure element comprises a mandrel, and

wherein the strap device further comprises a locking means;

wherein the mandrel of the closure element can be inserted into the opening of the strap element to close the strap device and;

wherein the locking means is configured to prevent the strap element from slipping off the mandrel when the strap device is closed.

[0026] These features allow the closure element and, accordingly, the entire strap device to be made smaller and more compact compared to the devices known in the

prior art. Furthermore, the embodiment enables a flat design that is suitable for the strap device for all surfaces. Insofar, the strap device according to the invention is not specifically designed for skis and is not constrained to the ski-edge as a means of locking the strap on one end.

[0027] In a further preferred embodiment, the strap device according to the invention is characterized in that, a plurality of openings are arranged in a row on the strap element. This makes it simple to adjust the size of the loop to be formed by the strap device by inserting the mandrel into the appropriate hole.

[0028] Preferably the openings are arranged on the central longitudinal axis of the strap element which enables precise and central adjustment of the size of the loop to be formed by the strap element.

[0029] The locking means is a mandatory feature in the aforementioned embodiment, as the strap device would otherwise open on its own when holding items together. The locking means can have various designs.

[0030] For example, the locking means can be formed within the body of the closure element, by the closure element having a hole into which one end of the strap element can be guided when closing the strap device, wherein after passing the strap element through the hole, the mandrel of the closure element can be inserted into the opening of the strap element, so that the strap element forms a secure loop around the closure element and consequently prevents it from loosening independently.

[0031] This is advantageously a very simple design to provide a means of preventing the strap element from detaching from the mandrel on its own. This design is particularly easy to produce when manufacturing a closure element by injection molding.

[0032] Furthermore, the locking means can be formed by a frame within the closure element, wherein the mandrel can be supported against the frame, preventing the strap element from loosening independently when the mandrel of the closure element is inserted into the opening of the strap element.

[0033] This design corresponds to a traditional belt buckle, wherein the frame is the most visible part of the buckle. This design is robust and durable, giving the locking element a high resistance to various loads. In addition, the familiarity with the belt buckle design enables easy handling and adjustment of the strap element, which improves user-friendliness.

[0034] Finally, the locking means can also be formed by the mandrel, wherein at least a segment of the mandrel has a larger cross-section than the cross-section of the opening, ensuring that the strap element securely fastens onto the mandrel. In other words, the strap element can be buttoned/ attached to the mandrel with the larger cross-section via the hole and provides a secure hold without being complex to manufacture.

[0035] Obviously, the aforementioned embodiments of locking means can also be used in combination in a strap device. This ensures even better that the strap element cannot detach independently from the mandrel.

[0036] In a further preferred embodiment, the strap device according to the invention is characterized in that,

- the strap element comprises at least one protrusion and;
- the closure element comprises a hook;

wherein the hook can interact with the protrusion and can thereby be held in position by tension applied to the elastic strap element.

[0037] This embodiment can be considered an alternative to the above-mentioned embodiment relating a "mandrel/hole connection". This embodiment also allows the closure element and, accordingly, the entire strap device also to be made smaller and more compact compared to the strap devices of the prior art. Such a mechanism is not yet known from the prior art in the context of strap devices for winter sports.

[0038] In a further preferred embodiment, the strap device according to the invention is characterized in that, a plurality of protrusions are arranged in a row on the strap element. This enables precise and simple adjustment of the size of a loop to be formed by the strap element.

[0039] In preferred embodiment, the hook of the closure element comprises an arm spaced apart from the closure element by a gap, wherein at least the thickness of a portion of the strap element is smaller than the dimensions of the gap and the thickness of the strap element at the location of the protrusion is greater than the dimensions of the gap, so that the portion of the strap element with the smaller thickness can be inserted into the gap and the strap element locks through the thicker location comprising the protrusion with a lateral movement with regards to the longitudinal axis of the strap element. Such an arrangement can be opened and locked particularly easily by a user, but it is secure enough so that the strap element does not become detached independently from the closure element.

[0040] In a further preferred embodiment, the strap device according to the invention is characterized in that the closure element is designed to serve as a handheld tool for removing ice, snow or any other debris from any surface, such as skis, snowboard, windshields, glasses, helmets, boots, in particular by providing a sharp edge. A sharp edge can be used to scrape ice from a surface very effectively. The edge is preferably designed in such a way that it does not damage the surface.

[0041] In the sense of the invention, the closure element is preferably designed to be flat. Flat, in this case, means preferably that the thickness of the closure element is significantly smaller than the extent of the maximum length or width of the closure element. The thickness may, for example, range from 2.5 mm to 30 mm. In contrast, the maximum length and width of the closure element can range from 30 mm to 100 mm.

[0042] In this context, the sharp edge is preferably designed in such a way that it has surfaces converging

towards each other from the two essentially planar surfaces (top and bottom) of the closure element. These converging surfaces ideally form an angle of less than 120 degrees. Additionally, the sharp edge can be considered as the blunt joining of the two characteristic surfaces, when the blunt section can have a narrowest cross-sectional thickness of <2.5 mm.

[0043] In a further preferred embodiment, the strap device according to the invention is characterized in that, the main axis of the sharp edge is angled in relation to the longitudinal axis of the closure element. This allows the closure element to be made more user-friendly for scraping, as the closure element is easier to handle and grip.

[0044] In a further preferred embodiment, the strap device according to the invention is characterized in that, the closure element is designed to serve as a handheld tool for breaking and/or scarring ice and/or as a comb for removal of snow, ice or debris, in particular by providing serrated protrusions which are preferably arranged on one edge of the closure element.

[0045] In sense of the invention, serrated protrusions refer to 1 or more structured projections or teeth that are attached to the surface of the closure element. In particular, they are positioned on the end face of an edge. The serrated protrusions are preferably designed in such a way that they do not damage the treated surface. The protrusions could be regularly or irregularly shaped and dimensioned.

[0046] In a further preferred embodiment, the strap device according to the invention is characterized in that, the closure element is non-permanently coupled to the strap element, wherein the closure element comprises a clamp which is arranged to hold the strap element in a form-fitting and/or force-fitting manner. This allows the closure element to be coupled to different strap elements. Both the closure element and the strap element can be replaced without destroying the strap device.

[0047] In a further preferred embodiment, the strap device according to the invention is characterized in that, the clamp comprises two beams, wherein the beams are offset parallelly and the strap element comprises a double-sided protuberance, wherein the strap element can be guided through a gap between the beams until the double-sided protuberance bears against the beams, so that the strap element is in particular fixed in a form-fitting manner. This is a particularly simple but effective coupling and improves the reliability of the strap device in this respect.

[0048] In a further preferred embodiment, the strap device according to the invention is characterized in that, the closure element is permanently coupled to the strap element, wherein the closure element comprises a beam and the strap element is over molded onto the beam. This leads to increased stability and reliability of the entire strap device. Overmolding creates a structural unit that helps to minimize potential weak points in the connection and improve the durability of the strap device.

[0049] In a further preferred embodiment, the strap

device according to the invention is characterized in that, the stiffness of the elastic strap element is sufficiently high to be used as a handle extension of the closure element for performing any of the additional functions of the closure element, preferably the elastic strap element is made of a material stiffer than Shore A 40. The preference for an elastic material with a higher stiffness than Shore A 40 helps to ensure that the handle is stable and grippy, which improves efficiency and comfort during use.

[0050] In a further preferred embodiment, the strap device according to the invention is characterized in that, the closure element comprises a screwdriver, preferably the closure element comprises a screwdriver tip and/or a hex bit driver, wherein the screwdriver tip in particular can double functionally as the mandrel for the closure element. As is obvious, this measure opens up further areas of application for the closure element or the strap device as a multifunctional tool.

[0051] In a further preferred embodiment, the strap device according to the invention is characterized in that, the closure element is designed to connect with other tools, such as carabiners or hook-like or ring elements, in particular by providing a hole which is preferably arranged centrally in the closure element, wherein the hole is preferably larger than 12mm in its smallest dimension so that a carabiner can fit. Such an embodiment makes it possible, for example, to connect several closure elements so that several closure elements with different functions can be arranged on a single strap device. If the strap device then also has a non-permanently coupling between the closure element and the strap device, the individual closure elements with different functions can be exchanged depending on the requirements.

[0052] In another Aspect, the invention relates to a use of a strap device for winter sports comprising an element with serrated protrusions, preferably the strap device according to the above-mentioned type, for breaking ice.

[0053] In another Aspect, the invention relates to a use of a strap device for winter sports comprising an element with serrated protrusions, preferably the strap device according to the above-mentioned type, as a comb for touring-skins.

[0054] As already discussed above, in the prior art, strap devices were generally only suitable for holding items. The embodiments known from the prior art are not suitable for the uses mentioned above. In this respect, it was surprising that the inventor came to use a strap device for breaking ice and as a comb for touring skins. For the uses mentioned above, design changes would have to be made to the known strap devices in the prior art. So, the strap device must have an element with serrated protrusions. However, it has been shown that this use is very practical, as many skiers carry a strap device with them anyway when they are on the move and thus have a tool available that fulfills at least two functions.

[0055] In another Aspect, the invention relates to a use of the strap device according to the above-mentioned

type for removing ice or snow from a surface such as skis, snowboard, windshields, glasses, helmets, boots.

[0056] Especially with the device according to the invention, the use for removing ice is very practical as the device is very compact and can be held well by the relatively stiff strap element. Insofar, a user can remove the ice from a surface with one hand holding the strap device according to the invention.

[0057] Further examples of embodiments are explained in more detail below with reference to the accompanying drawings. The invention is not intended to be limited solely to these listed examples of embodiments. They merely serve to explain the invention in more detail. The present invention is intended to relate to all objects which the person skilled in the art would use now and in the future as obvious to realize the invention.

Brief description of the figures

[0058]

Fig. 1 a preferred embodiment of the strap device according to the invention;

Fig. 2 a preferred embodiment of the strap device according to the invention, wherein the closure element comprises a mushroom-shaped mandrel;

Fig. 3 a preferred embodiment of the closure element according to the invention, in particular with an angled sharp edge;

Fig. 4 a preferred embodiment of the closure element according to the invention, in particular comprising a screwdriver tip and a hex bit driver;

Fig. 5 a preferred embodiment of the closure element according to the invention, in particular comprising a screwdriver tip;

Fig. 6 cross-section of a part of a preferred embodiment of the strap device according to the invention, showing in particular a preferred joint between the closure element and the strap element;

Fig. 7 a preferred embodiment of the strap device according to the invention, wherein the closure element comprises a hole which is designed to connect with a carabiner;

Fig. 8 a preferred embodiment of the strap device according to the invention, wherein the stiffness of the elastic strap element is sufficiently high to be used as a handle;

Fig. 9 a preferred embodiment of the strap device according to the invention, wherein the strap element comprises protrusions and the closure element comprises a hook;

Fig. 10 closing of a preferred embodiment of the strap device according to the invention, wherein the strap element comprises protrusions and the closure element comprises a hook;

Detailed description of the figures

[0059] **Fig. 1** shows a preferred embodiment of the strap device **1** for winter sports according to the invention. The strap device **1** is particularly suitable for holding skis, snowboards, or other items together. The strap device **1** comprises an elastic strap element **3** and a multifunctional closure element **7** which is coupled to the strap element **3**. The elastic strap element **3** can form a loop and can be held securely in this loop by the multifunctional closure element **7**.

[0060] The closure element **7** and the strap element **3** are coupled by a clamping joint in a form-fitting and/or force-fitting manner, and can in particular also be released from one another.

[0061] The preferred strap element **3** comprises a plurality of openings **5** that are arranged in a row on the strap element **3**, preferably on the central longitudinal axis of the strap element **3**. The closure element **7**, on the other hand, comprises a mandrel **9**, wherein the mandrel **9** of the closure element **7** can be inserted into an opening **5** of the strap element **3** to close the strap device **1**.

[0062] The strap device **1** further comprises a locking means **11** which is configured to prevent the strap element **3** from slipping off the mandrel **9**, when the strap device **1** is closed. In the present case, the locking means **11** is designed within the body of the closure element **7**, by the closure element **7** having a hole into which one end of the strap element **3** can be guided when closing the strap device **1**. After passing the strap element **3** through the hole, the mandrel **9** of the closure element **7** can be inserted into an opening **5** of the strap element **3**, so that the strap element **3** forms a secure loop around the closure element **7** and consequently prevents it from loosening independently.

[0063] The structural design of the closure element **7** also allows it to perform other functions in addition to the closing function.

[0064] For example, the closure element **7** has a sharp edge **13** with which the closure element **7** serves as a handheld tool for removing ice, snow or any other debris from any surface, such as skis, snowboard, windshields, glasses, helmets, boots.

[0065] Further, the closure element **7** is preferably designed to serve as a handheld tool for breaking and/or scarring ice and/or as a comb for removal of snow, ice or debris, by providing serrated protrusions **15** which are

arranged on one edge of the closure element 7.

[0066] The hole intended for the locking means 11 can also act as a receptacle 17 for a carabiner 19 or the like.

[0067] Fig. 2 illustrates a preferred embodiment of the strap device 1 according to the invention, wherein the closure element 7 comprises a mushroom-shaped mandrel 9. The embodiment shown in Fig. 2 corresponds to the embodiment in Fig. 1 except for the mandrel 9 and the joint between the closure element 7 and the strap element 3, so that the reference signs are indicated analogously.

[0068] In the present embodiment, the joint between the closure element 7 and the strap element 3 is designed in such a way that the closure element 7 is permanently coupled to the strap element 3. For this purpose, the closure element 7 comprises a beam 25 and the strap element 3 is over molded onto this beam 25.

[0069] At least one segment of the mandrel 9 has preferably a larger cross-section than the cross-section of the opening 5, so that for example the mandrel 9 can be shaped like a mushroom. This allows the mandrel 9 to also act as a locking means 11, since the larger cross-section ensures that the strap element 3 is securely fastened on the mandrel 9 when the mandrel 9 is inserted into an opening 5 for closing the strap device 1.

[0070] Obviously, the hole contained in the closure element 7 can also be designed as a further locking means 11, as described in Fig. 1, so that the strap device 1 or the closure element 7 can comprise several locking means 11. These locking means 11 prevent the strap element 3 from slipping off the mandrel 9, when the strap device 1 is closed.

[0071] Fig. 3 shows a preferred embodiment of the closure element 7 according to the invention. The closure element 7 comprises a mandrel 9 and a clamp which is designed to hold the strap element 3 (not shown in Fig. 3) in a form-fitting and/or force-fitting manner, in particular releasable. Two beams 25 are provided for this purpose, which are displaced parallel to each other and insofar are separated by a gap. The strap element 3 (not shown in Fig. 3) can be guided through a gap between the beams 25 until a double-sided protuberance of the strap element 3 (not shown in Fig. 3) bears against the beams 25.

[0072] Furthermore, the closure element 7 has a hole in the center, which can serve as a locking means 11 or as a receptacle 17 for hook-like elements or a carabiner 19. The closure element 7 is preferably made of plastic and manufactured in an injection molding process.

[0073] Besides the closing function, the preferred closure element 7 also enables the function for removing ice, snow or any other debris from any surface, such as skis, snowboard, windshields, glasses, helmets, boots. In this context, the closure element 7 comprises a sharp edge 13. In particular in the present embodiment shown in Fig. 3, the sharp edge 13 is designed in such a way that the main axis of the sharp edge 13 is angled in relation to the longitudinal axis of the closure element 7.

[0074] The closure element 7 also has serrated protrusions 15, which are arranged on the edge of the closure element 7 opposite the sharp edge 13. The closure element 7 thus fulfills the function of breaking ice and/or scarring ice and/or acting as a comb for removing snow, ice or debris.

[0075] Fig. 4 shows a further preferred embodiment of the closure element 7 according to the invention. The closure element 7 can comprise metal and/or plastic and/or a compound material such as a fiber compound.

[0076] In particular in the embodiment of the closure element 7 depicted in Fig. 4, the closure element 7 comprises a screwdriver tip 21 and a hex bit driver 23, wherein in particular the screwdriver tip 21 can act as a mandrel 9 for the closure element 7.

[0077] In addition, the preferred closure element 7 has a centrally located hole that can be used as a locking means 11 as well as a receptacle 17 for carabiners 19 or the like. There is also a sharp edge 13 for removing ice from surfaces, as well as two parallel beams 25 spaced apart by a gap, which can be connected to the strap element 3 (not shown).

[0078] Fig. 5 illustrates a further preferred embodiment of the closure element 7 according to the invention. The embodiment shown essentially is the same as the embodiment shown in Fig. 4, with the exception that no hex bit driver 23 is provided.

[0079] Fig. 6 shows a cross-section of a part of a preferred embodiment of the strap device 1 according to the invention, showing in particular a preferred joint between the closure element 7 and the strap element 3. The closure element 7 is non-permanently coupled to the strap element 3, wherein the closure element 7 comprises a clamp which is arranged to hold the strap element 3 in a form-fitting manner.

[0080] For this purpose, the clamp comprises two beams 25, wherein the beams 25 are offset parallelly and the strap element 3 comprises a double-sided protuberance 27. The strap element 3 is guided through a gap between the beams 25 until the double-sided protuberance 27 bears against the beams 25.

[0081] Fig. 7 illustrates a preferred embodiment of the strap device 1 according to the invention, wherein the closure element 7 comprises a hole 17 which is designed to connect with a carabiner 19. The hole 17 is preferably arranged centrally in the closure element 7, wherein the hole 17 is preferably larger than 12mm in its smallest dimension so that the carabiner 19 can fit.

[0082] As already described in the other figures, the closure element 7 and the strap element 3 can be non-permanently coupled to each other by a clamp. For this purpose, the closure element 7 has two parallel, spaced-apart beams 25 (only one beam 25 can be seen in Fig. 7). Due to the double-sided protuberance 27 in the strap element 3, the strap element 3 can be clamped in a form-fitting and/or force-fitting manner.

[0083] In addition, the strap element 3 comprises a plurality of openings 5, which are arranged in a row one after the other on the central longitudinal axis of

the strap element 3. In contrast, the closure element 7 comprises a mandrel 9, which can be inserted into one of the openings 5 to close the strap device 1.

[0084] The hole 17 can thereby act as a locking means 11, wherein one end of the strap element 3 can be guided into the hole 17 and - after passing the strap element through the hole 17 - the mandrel 9 of the closure element 7 can be inserted into one opening 5 of the strap element 3. This measure allows the strap element 3 to form a secure loop around the closure element 7 so that it cannot come loose on its own when the strap device 1 is closed.

[0085] The embodiment depicted in Fig. 7 also has a sharp edge 13 and an edge with serrated protrusions 15.

[0086] Fig. 8 shows a preferred embodiment of the strap device 1 according to the invention, wherein the stiffness of the elastic strap element 3 is sufficiently high to be used as a handle. For example, this embodiment is particularly advantageous if the closure element 7 has a sharp edge 13 and the strap device 1 is used to remove ice, snow or any other debris from any surface, such as skis, snowboard, windshields, glasses, helmets, boots. By doing so, the strap device 1 can be shaped by a user so that the strap element 3 can also be used as a handle and provide an improved grip area 14. Obviously, the strap element 3 has to be stiff, but still flexible enough that it can be shaped by a user without much physical effort - also, for example, so that the strap device 1 can enclose and hold skis or other items.

[0087] To give stability to the entire structure of the strap device 1 during use for removing ice from surfaces, the mandrel 9 could be inserted into an opening 5 (not shown in Fig. 8).

[0088] Fig. 9 shows a preferred embodiment of the strap device 1 according to the invention, wherein the strap element 3 comprises protrusions 6 and the closure element 7 comprises a hook 10. The hook 10 of the closure element 7 comprises an arm 16 spaced apart from the closure element 7 by a gap 12. The hook 10 can interact with a protrusion 6 and can thereby be held in position by tension applied to the elastic strap element 3.

[0089] In addition, the closure element 7 comprises a hole that can act both as a locking means 11 and a receptacle 17 for a carabiner (see the descriptions of the other figures).

[0090] Fig. 10 illustrates the closing of a preferred embodiment of the strap device 1 according to the invention, already depicted in Fig. 9.

[0091] At least the thickness of a portion of the strap element 3 is smaller than the dimensions of the gap 12 and the thickness of the strap element 3 at the location of the protrusion 6 is greater than the dimensions of the gap 12. Consequently, the portion of the strap element 3 with the smaller thickness can be inserted into the gap 12 and the strap element 3 locks through the thicker location comprising the protrusion 6 with a lateral movement with regards to the longitudinal axis of the strap element 3.

Reference List

[0092]

- | | | |
|----|----|---|
| 5 | 1 | strap device |
| | 3 | elastic strap element |
| | 5 | opening |
| | 6 | protrusion |
| | 7 | multifunctional closure element |
| 10 | 9 | mandrel |
| | 10 | hook |
| | 11 | locking means |
| | 12 | gap |
| | 13 | sharp edge |
| 15 | 14 | Improved grip area |
| | 15 | serrated protrusions |
| | 16 | arm of the hook |
| | 17 | hole/ receptacle for carabiner or similar |
| | 19 | carabiner |
| 20 | 21 | screw driver tip |
| | 23 | hex bit driver |
| | 25 | beam |
| | 27 | double-sided protuberance |

25 Claims

1. A strap device (1) for winter sports, particularly suitable for holding skis, snowboards, or other items together, comprising:

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- an elastic strap element (3);
- a multifunctional closure element (7) coupled to the strap element (3);

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wherein the elastic strap element (3) can form a loop and can be held securely in this loop by the multifunctional closure element (7).

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2. The strap device (1) according to claim 1 characterized in that,

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- the strap element (3) comprises at least one opening (5), and
- the closure element (7) comprises a mandrel (9), and
- wherein the strap device (1) further comprises a locking means (11);
- wherein the mandrel (9) of the closure element (7) can be inserted into the opening (5) of the strap element (3) to close the strap device (1) and;
- wherein the locking means (11) is configured to prevent the strap element (3) from slipping off the mandrel (9), when the strap device (1) is closed.

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3. The strap device (1) according to claim 2 characterized in that,

the locking means (11) is formed

- within the body of the closure element (7), by the closure element (7) having a hole into which one end of the strap element (3) can be guided when closing the strap device (1), wherein after passing the strap element (3) through the hole, the mandrel (9) of the closure element (7) can be inserted into the opening (5) of the strap element (3), so that the strap element (3) forms a secure loop around the closure element (7) and consequently prevents it from loosening independently;
and/or
- by a frame within the closure element (7), wherein the mandrel (9) can be supported against the frame, preventing the strap element (3) from loosening independently when the mandrel (9) of the closure element (7) is inserted into the opening (5) of the strap element (3);
and/or
- by the mandrel (9), wherein at least a segment of the mandrel (9) has a larger cross-section than the cross-section of the opening (5), ensuring that the strap element (3) securely fastens onto the mandrel (9).

4. The strap device (1) according to claim 1
characterized in that,

- the strap element (3) comprises at least one protrusion (6) and;
- the closure element (7) comprises a hook (10);

wherein the hook (10) can interact with the protrusion (6) and can thereby be held in position by tension applied to the elastic strap element (3).

5. The strap device (1) according to claim 4
characterized in that,

the hook (10) of the closure element (3) comprises an arm (16) spaced apart from the closure element (7) by a gap (12), wherein at least the thickness of a portion of the strap element (3) is smaller than the dimensions of the gap (12) and the thickness of the strap element (3) at the location of the protrusion (6) is greater than the dimensions of the gap (12); so that the portion of the strap element (3) with the smaller thickness can be inserted into the gap (12) and the strap element (3) locks through the thicker location comprising the protrusion (6) with a lateral movement with regards to the longitudinal axis of the strap element (3).

6. The strap device (1) according to any of the preceding claims

characterized in that,

the elastic strap element (3) is made of an elastomer.

7. The strap device (1) according to any of the preceding claims

characterized in that,

the multifunctional closure element (7) serves as a handheld tool which, in addition to the function of closing the strap device (1), fulfils at least one further function while it is not bound to the constrained objects.

8. The strap device (1) according to any of the preceding claims

characterized in that,

the closure element (7) is designed to serve as a handheld tool for removing ice, snow or any other debris from any surface, such as skis, snowboard, windshields, glasses, helmets, boots, in particular by providing a sharp edge (13).

9. The strap device (1) according to any of the preceding claims

characterized in that,

the closure element (7) is designed to serve as a handheld tool for breaking and/or scarring ice and/or as a comb for removal of snow, ice or debris, in particular by providing serrated protrusions (15) which are preferably arranged on one edge of the closure element (7).

10. The Strap device (1) according to any of the preceding claims

characterized in that,

the closure element (7) is non-permanently coupled to the strap element (3), wherein the closure element (7) comprises a clamp which is arranged to hold the strap element (3) in a form-fitting and/or force-fitting manner.

11. The strap device (1) according to any of the preceding claims 1 - 9

characterized in that,

the closure element (7) is permanently coupled to the strap element (3), wherein the closure element (7) comprises a beam (25) and the strap element (3) is over molded onto the beam (25).

12. The strap device (1) according to any of the preceding claims

characterized in that,

the stiffness of the elastic strap element (3) is sufficiently high to be used as a handle extension of the closure element (7) for performing any of the additional functions of the closure element (7), preferably the elastic strap element (3) is made of a material stiffer than Shore A 40.

13. Use of a strap device for winter sports comprising an element with serrated protrusions, preferably the strap device (1) according to any of the preceding claims, for breaking ice.

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14. Use of a strap device for winter sports comprising an element with serrated protrusions, preferably the strap device (1) according to any of the preceding claims, as a comb for touring-skins.

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15. Use of the strap device (1) according to any of the preceding claims for removing ice or snow from a surface such as skis, snowboard, windshields, glasses, helmets, boots.

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Fig. 1

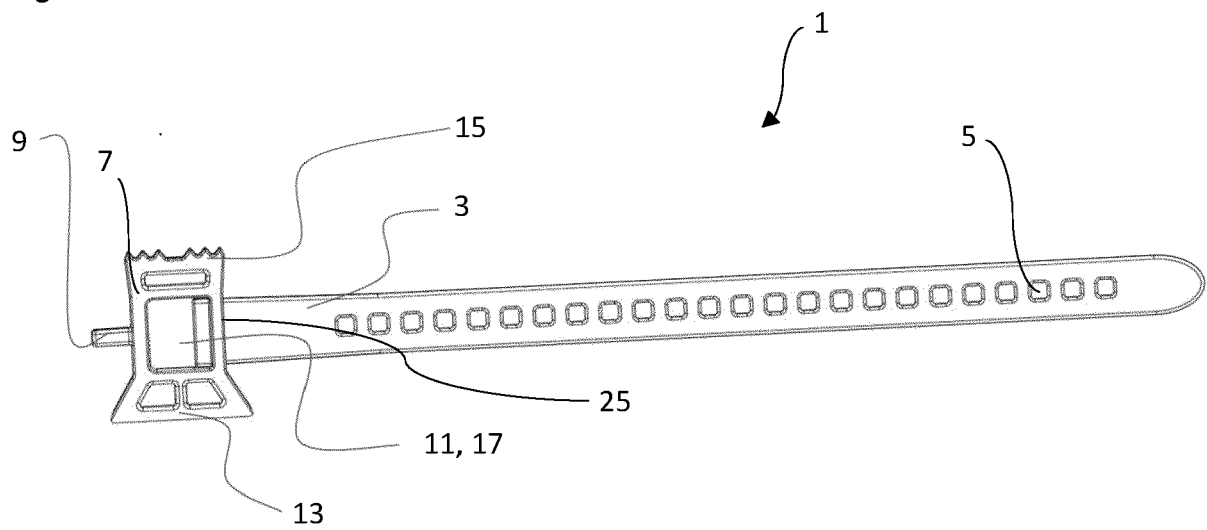


Fig. 2

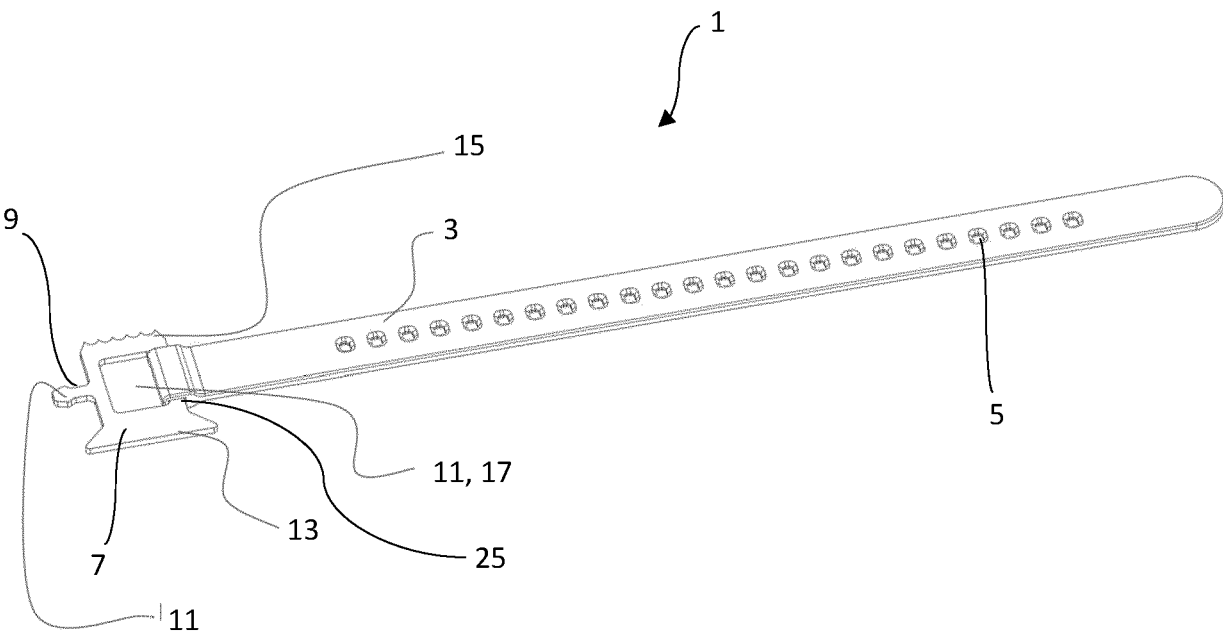


Fig. 3

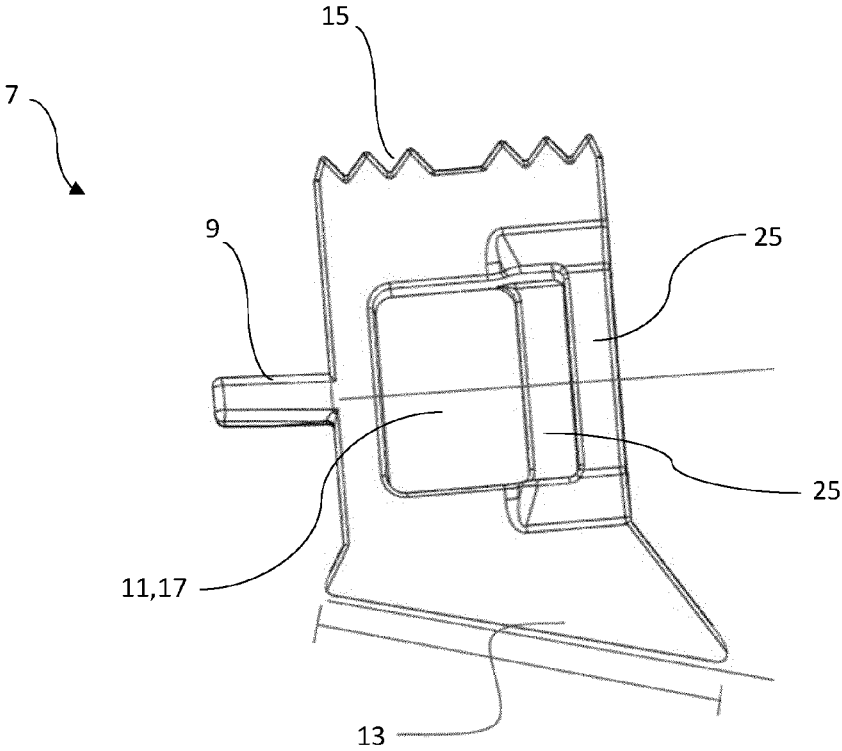


Fig. 4

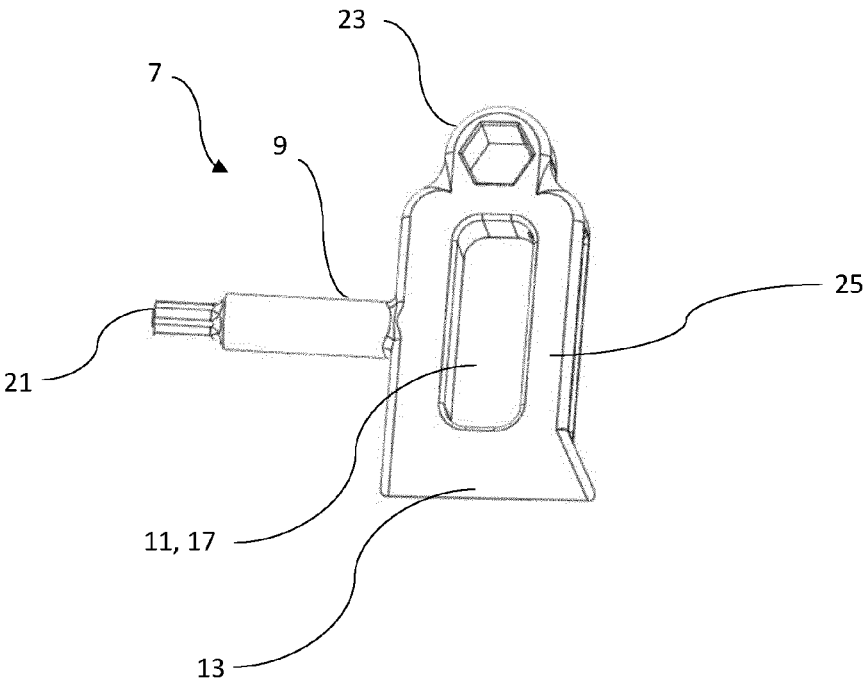


Fig. 5

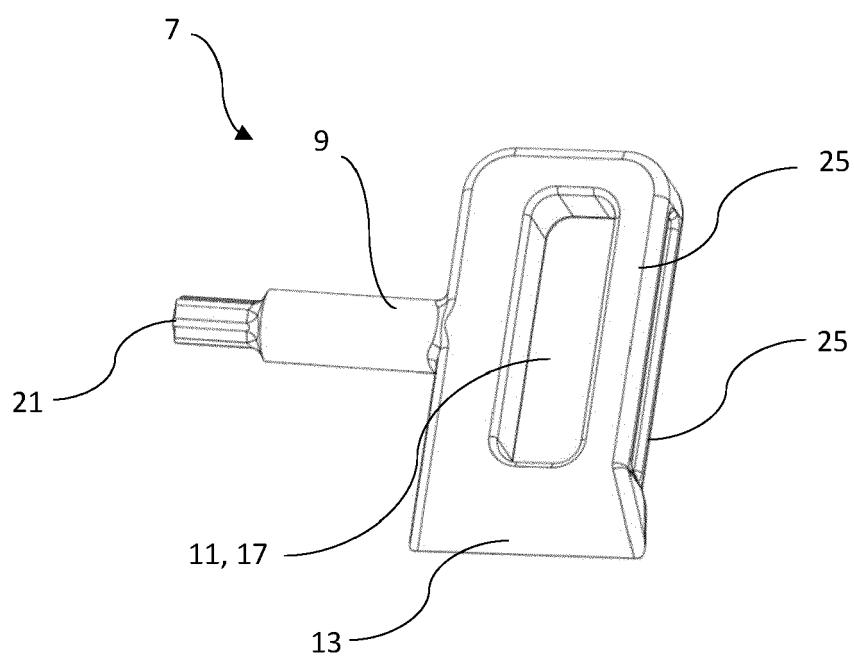


Fig. 6

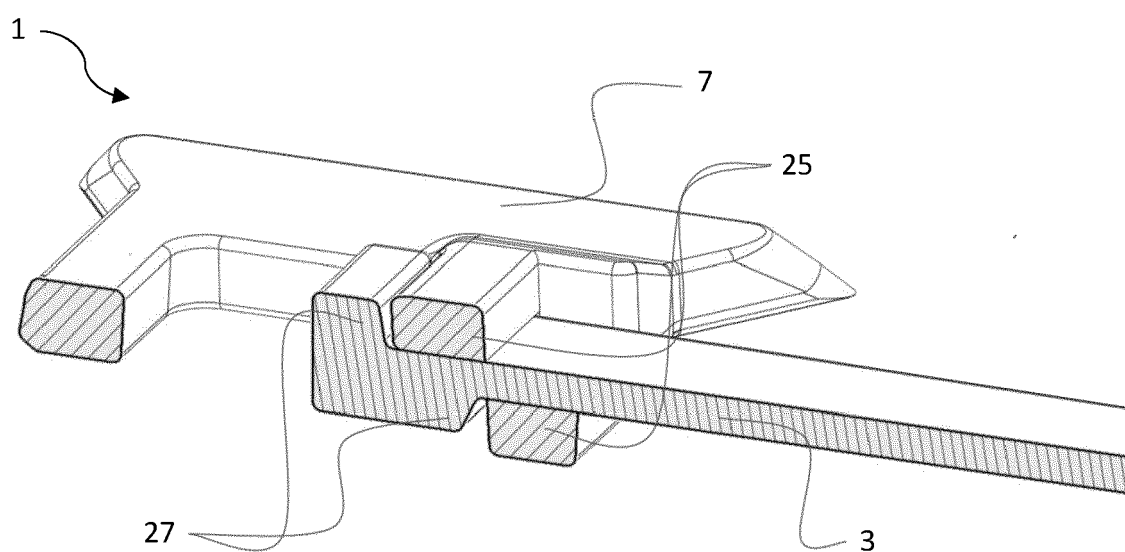


Fig. 7

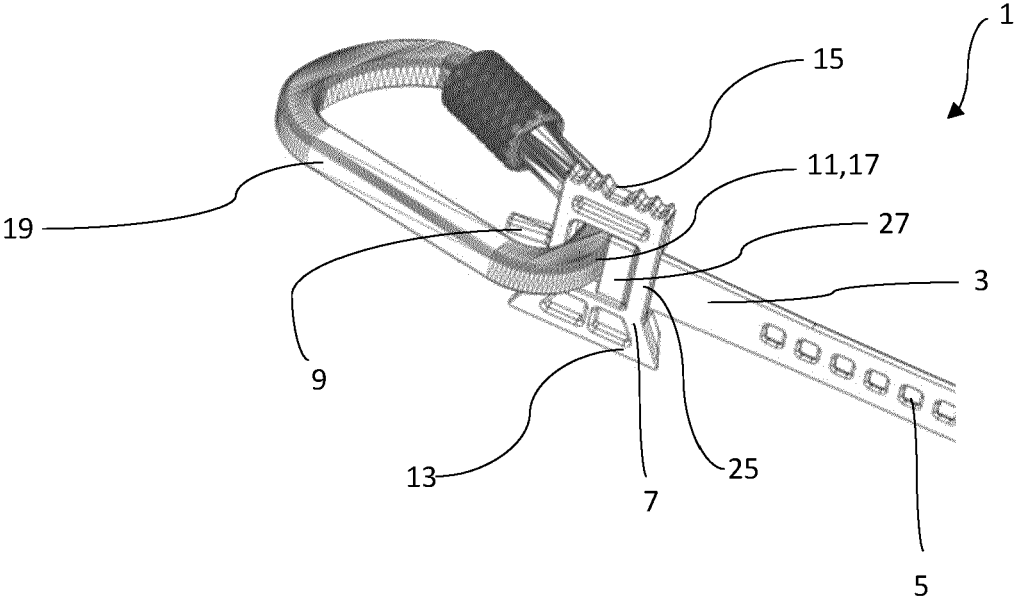


Fig. 8

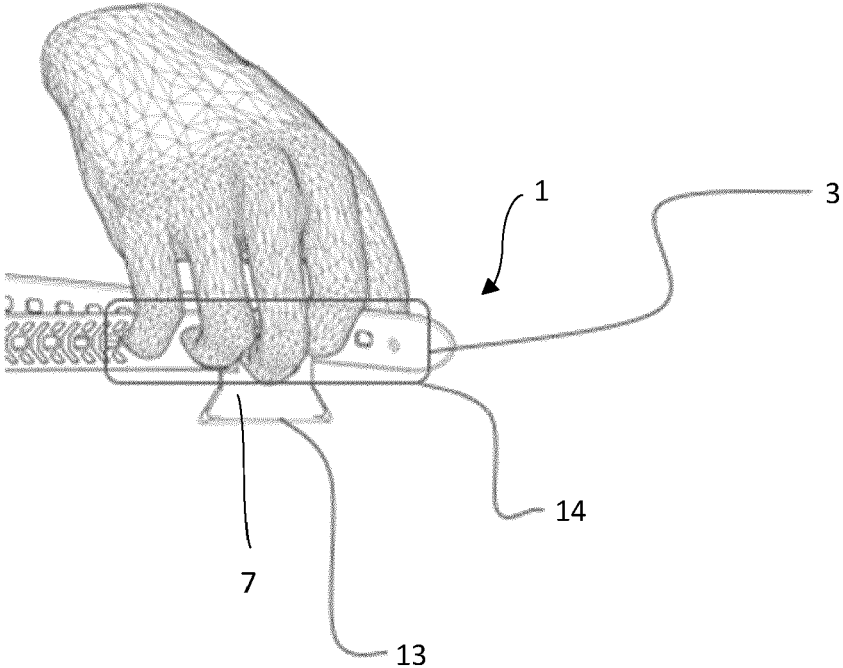


Fig. 9

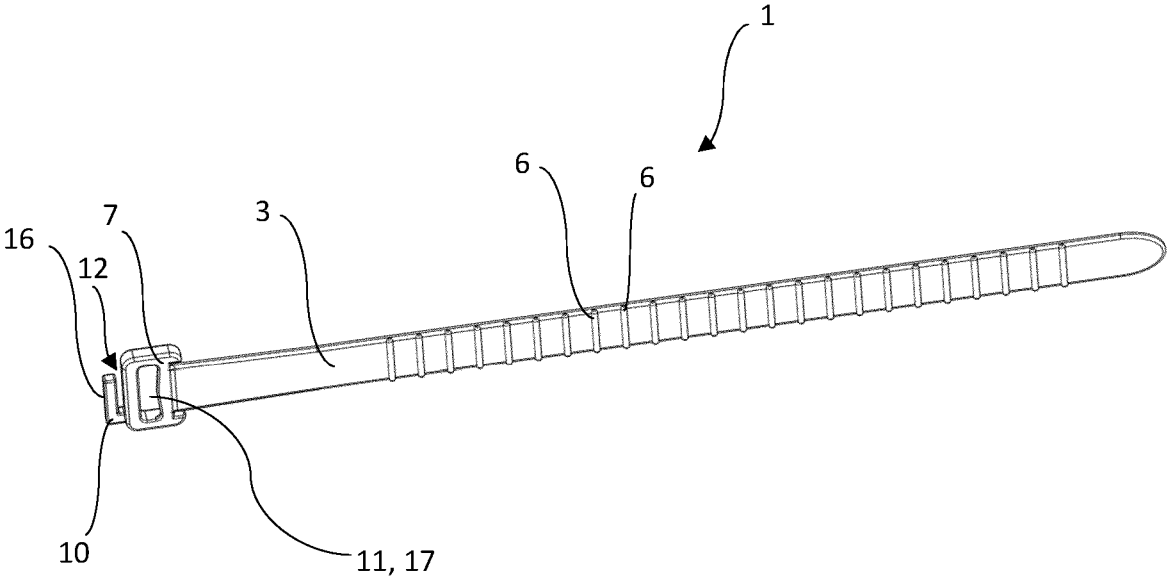
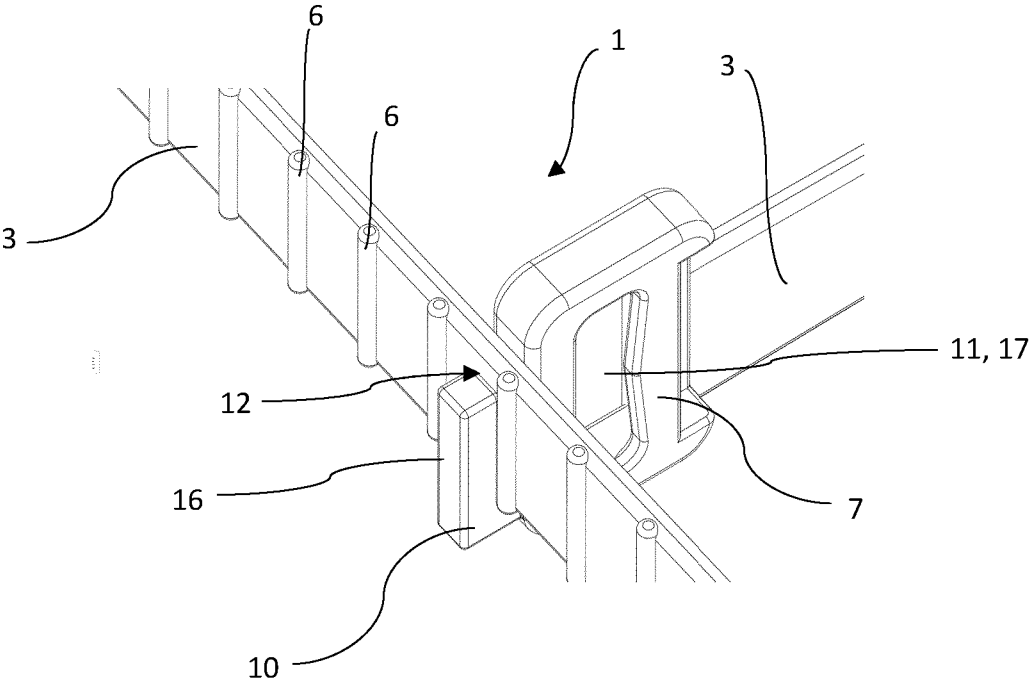


Fig. 10





EUROPEAN SEARCH REPORT

Application Number

EP 23 21 6126

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Y	* paragraphs [0002], [0061] - [0086];	9	A63C11/04
A	figures 9b,9a,3a,2,8a-8d *	4,5, 11-14	A63C11/18 A44B11/22 B62J11/00
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A	* column 3, line 47 - column 5, line 18; figures 5,6,7,8 *	4,5,9, 13,14	
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Place of search		Date of completion of the search	Examiner
Munich		23 May 2024	Murer, Michael
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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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