The present invention relates to a modular carrying system for transporting loads and which further includes an improved hip belt and other means for carrying loads and protecting the user from injury from ballistic projectiles, stabbing weapons and the like.
MODULAR CARRYING SYSTEM

[0001] The present invention relates to a modular carrying system as set forth in the claims which follows.

[0002] The invention also relates to a modular carrying system having a back part which can be connected to further systems, and to a modular carrying system having a novel back pad.

[0003] The invention also relates to a hip belt for use with a modular carrying system, as will be described below, and wherein the hip belt has a connecting element for transmitting pressure forces as will be described, hereinafter.

[0004] A generic modular carrying system is known from DE 10 2009 042 455 A1. The carrying system known from this generic document has a ballistic protective vest. Such protective vests are commonly used in military and police applications in order to protect persons against injury resulting from attacks involving stabbing weapons or projectiles.

[0005] The protective vest has at least a back part with ballistic characteristics and usually also a front part with ballistic characteristics. Furthermore, means for fastening to a human torso are also provided, which means may be shoulder straps and a fastening belt. By means of these, the protective vest can be securely fastened to the torso of a person. Furthermore, the carrying system known from the generic document comprises a hip belt, laterally on which there are provided two bar-shaped supports. Here, the lateral supports are fastened at one end to the hip belt and at the other end to a carrying device. In this arrangement, the carrying device serves for being filled with loads to be carried. The carrying device may in particular be a rucksack. By means of the lateral supports, the weight of the carrying device is at least partially introduced into, or transmitted to, the hip belt. The supports are fastened laterally to the hip belt, in this context the word “lateral” should be understood to mean that the supports are situated to the left and to the right of the body of a person when the generic carrying system is worn correctly.

[0006] The modular carrying system known from the generic document has not only the carrying device but also a housing which is substantially matched, in terms of height and width, to the back part of the ballistic protective vest. The housing serves to accommodate electronic components and/or electronic units, for example a radio unit. The use of an electronics housing is advantageous in particular when the carrying system is used for military purposes.

[0007] In relation to known carrying systems such as what are known for example from U.S. Pat. No. 5,184,763, the carrying system known from this generic document has the advantage of a modular construction. Furthermore, in the case of the generic carrying system, it is possible for individual components to be quickly discarded in an emergency situation. In the case of the generic carrying system, it has furthermore proven to be advantageous that the ballistic protective vest has both shoulder straps and also a fastening belt, and that a hip belt is additionally provided which is separate from the protective vest and which runs below the fastening belt.

[0008] The carrying systems known from the general teachings of the prior art, with the exception of the generic carrying system, have only one fastening belt which is formed as a constituent part of the protective vest. A hip belt into which weight loads can be introduced directly from a rucksack or the like via lateral supports is not known from the prior art. For example, US published application 2000/0127299 A1 presents a carrying system having shoulder straps and having a fastening belt, and wherein baggage items, and if appropriate multiple baggage items located one behind the other in series, can be coupled to the rear side of the carrying system. An advantageous introduction of weight loads into a hip belt, such that the shoulders of the wearer are relieved of load, is not known from said document. A similar concept is also presented in U.S. Pat. No. 5,503,314. Although the fastening belt runs in the region of a hip, the fastening belt, owing to its construction, is not suitable for accommodating weight loads, for example from a rucksack that is additionally to be carried, in a configuration in which the main framework is bypassed.

[0009] A further carrying system is known from WO 2007/114702 A1. Here, a main support is provided which can be fastened to a human torso. A back part of the main body can in this case be connected to a separate hip belt via a connecting element. The connecting element engages, or is anchored, laterally on the hip belt. In WO 2007/114702 A1, the loads to be carried are coupled directly to the back part. This, in turn, has the effect that, owing to the coupling to the back part, the weight load of the load to be carried acts predominantly on the shoulders of a human torso.

[0010] A similar solution is also presented in WO 2008/089128 A2, see in particular Fig. 7 of this document. The loads to be carried are fastened to the back part, whereby the main weight load of the load to be carried acts on the shoulders of a human torso, and only a part of the load to be carried is transmitted from the back part to the hip belt. An additional fastening belt is not provided. By contrast, the generic carrying system known from DE 10 2009 042 455 A1 has the crucial advantage that the weight load of the load to be carried is introduced directly into the hip belt via the lateral supports, substantially bypassing the back part of the ballistic protective vest. The ballistic protective vest itself has not only the hip belt but also a fastening belt, so-called side wings, which can be connected to one another for example by means of a hook-and-loop connection. The carrying system as per DE 10 2009 042 455 A1 has proven to be highly advantageous in relation to the already-known prior art.

[0011] The inventor has however now identified that lateral supports such as are known from the teachings of the generic carrying system, or such as emerge from WO 2007/114702 A1, may be disadvantageous with regard to the freedom of movement of the wearer in particular situations. Furthermore, the inventor has identified that, in particular for military applications, it may be particularly important for the carrying system to be simple and intuitive to use, in particular if it is used in different configurations, that is to say with different system components. Furthermore, the inventor has identified that, again in particular for military applications, it is particularly crucial that the carrying system can be removed or discarded quickly when required. Furthermore, the inventor has identified that it is advantageous for the ballistic equipment to be available as an option, and in particular for an adaptation to the size and physique of the wearer to be possible.

[0012] It is therefore the object of the present invention to eliminate the disadvantages of the prior art, and in particular to provide a particularly practical and robust carrying system, which is of simple construction, and is particularly useful for military applications.

[0013] These objects are achieved according to the invention as claimed hereinafter by means of a modular carrying system composed of at least the following system components:
a protective vest with at least one back part and with means for fastening to a human torso,

b. a hip belt,

e. a carrying device for being filled with loads to be carried, and wherein the carrying device has carrying shoulder straps for fastening to a human torso, and

d. a housing for accommodating an electronic unit, wherein the housing can be attached to the rear side of the protective vest, and wherein further the hip belt has a connecting element for the connection of the protective vest without the interposition of the housing, and wherein the connecting element is designed to transmit weight loads from the protective vest to the hip belt.

These objects are also achieved according to the invention by means of a modular carrying system having a protective vest with at least one back part and having means for fastening to a human torso, and wherein the back part of the protective vest can be connected to further system components, and wherein at least one part of the means for fastening to a human torso has eyelets or receiving openings, and the back part is provided with fastening loops, and wherein the fastening loops can be inserted into the eyelets or receiving openings, and wherein at least one elongate fixing element is provided which can be guided through those ends of the fastening loops which are inserted into the eyelets or receiving openings, and the eyelets or receiving openings. The fastening loops and the elongate fixing element are designed such that the fastening loops can no longer pass through the eyelets or the receiving openings after the elongate fixing element has been guided through, and wherein the elongate fixing element has a manipulation element for pulling the fixing element out of the fastening loops.

Another object of the present invention is also achieved by means of a modular carrying system having at least one protective vest with at least one back part, and further having means for fastening to a human torso, and wherein a back pad can be attached to the inner side, which faces toward the human torso, of the back part of the protective vest, and wherein the back pad can be fastened in a height-adjustable fashion to the inner side of the back part by means of a hook-and-loop type connection. The back part has attached thereto at least one back pad fastening tab which, after the back pad has been positioned, can be folded over onto the inner side, which faces toward the human torso, of the back pad and can be fixed there by means of a hook-and-loop type connection.

A particularly advantageous hip belt for use with a modular carrying system is disclosed. Here, it is provided that the hip belt has a coupling for the direct coupling of a carrying device which is provided for being filled with loads to be carried, and wherein the hip belt has a connecting element, which is suitable for transmitting pressure forces, for the direct connection of a back part of a protective vest, and wherein the coupling of the hip belt and the connecting element of the hip belt are arranged on the back of a human torso, adjacent to a lower region of a human spine, when the hip belt is worn correctly.

The solutions according to the teachings of the present invention increase the wearing comfort of the carrying system considerably in relation to the already-known solutions. The solutions according to the invention also make the handling of said carrying system easier and ensures simple and fast connection and removal of the individual system components of the modular carrying system.

Advantageous solutions will emerge inter alia from the dependent claims, as provided, hereinafter, and which also constitute advantageous solutions with regard to, and which can be used for, the carrying system as disclosed.

By virtue of the fact that the connecting element between the hip belt and the protective vest is suitable for transmitting weight loads from the protective vest to the hip belt, and/or, owing to its configuration, for transmitting pressure forces, a good load distribution is achieved. The inventor has found that, to increase wearing comfort, it is particularly important for the hip belt to accommodate as great as possible a proportion of the loads to be carried, whereby the shoulders of the wearer are relieved of the load.

Here, it is advantageous for the connecting element to connect the hip belt to the protective vest without interposition of the housing. The advantages of the hip belt can then be utilized even when the wearer is not carrying a housing for accommodating an electronic unit. Furthermore, the inventor has identified that the force flow or transmission is improved in this way.

It is also advantageous if the hip belt is connected to the back part only via precisely one connecting element.

It is advantageous if the connecting element is formed on the rear side of the hip belt and runs upward on the back along a human spine when the hip belt is worn correctly, and wherein the upper region, which faces away from the hip belt, of the connecting element can be connected to the back part of the protective vest.

This solution has proven to be particularly suitable. By virtue of the fact that the connecting element runs upward on the back along the human spine. It has been discovered that it is firstly the case that the spine is relieved of load, and the forces are accommodated, in an effective manner. Secondly, by virtue of the fact that the connecting element runs along the spine, by contrast to a design with two lateral supports, the freedom of movement of the wearer is greatly improved. In this regard, the connecting element can substantially follow the movement of the spine. The connecting element may preferably be arranged on the rear side of the hip belt in the region of the human lumbar or in the lower region of the lumbar, and extend upwardly from there and in parallel with, and along the spine. Here, it is suitable for the connecting element to extend upwardly along the spine to such an extent that a secure and reliable connection to the protective vest can be produced.

It is also advantageous if at least one part of the connecting element is of a resilient and/or elastic and/or dampened form, and/or the connecting element is fastened, resiliently in a vertical direction, to the hip belt and/or to the protective vest.

The resilient arrangement or the elastic configuration may preferably be selected such that the damping, elastic or resilient characteristics are provided in a vertical direction when the carrying system is worn correctly. Furthermore, the connecting element should preferably be able to follow a movement of the spine. Here, it may be sufficient for one or more parts of the connecting element to be of an elastic form.

It is advantageous if the connecting element permits a relative pivoting movement between the back part of the protective vest and the hip belt about a pivot axis running perpendicular to the back part. In this way, a leaning movement of the torso of the wearer of the carrying system to the left or to the right that is relative to the hips of the carrier—is not restricted. In the case of a design with two lateral supports
that connect the hip belt to the protective vest, a lateral leaning of the torso relative to the hips was partially restricted.

[0031] It is also advantageous for the hip belt to have a coupling for the coupling of the carrying device to the hip belt without interposition of the housing.

[0032] In the solutions as disclosed from the prior art teachings, it is provided that the carrying device provided for being filled with loads to be carried, for example a rucksack or a baggage receptacle, is attached directly to the protective vest or to a main framework that is worn on the human torso. The weight loads of the carrying device (rucksack or baggage receptacle) are thus transmitted directly to the shoulders of the wearer, and thus adversely affected the wearing comfort. The inventor has now developed a solution in which the carrying device engages directly on, or can be coupled directly to, the hip belt, such that the weight loads are introduced from the carrying device directly into the hip belt. This is a crucial advantage in relation to the prior art teachings. Furthermore, it is possible to dispense with the interposition of a housing (for accommodating electronic components), such that the coupling of the carrying device is possible regardless of whether a housing for accommodating electronic components is provided.

[0033] It is advantageous if the carrying device has shoulder straps, such that the carrying device can be worn by the wearer similar to that of a rucksack. Forces thus duly also act on the shoulders of a human body, albeit to a considerably lesser extent than would be the case if the carrying device were coupled to the rear side of the protective vest.

[0034] It is advantageous if the coupling of the hip belt is formed on the rear side of the hip belt and is located adjacent to a human spine when the hip belt is worn correctly. It is also advantageous if the coupling is formed on the outside, and on the rear side of the hip belt, and below the connecting element.

[0035] It has proven to be advantageous for the coupling to be formed on the rear side, and in particular on the outside, of the hip belt and in the region of the spine because a particularly advantageous introduction of the weight loads is possible at this location. Furthermore, the mobility of the wearer is not restricted. Additionally, as a result of this arrangement, the coupling is, if appropriate, situated in alignment, and in relation to the profile of the spine, with the connecting element located between the hip belt and the protective vest, and whereby in turn, the mobility of the wearer is not unduly restricted.

[0036] It is also advantageous if the connecting element and the back part form multiple connecting points which are offset in a vertical direction, such that a releasable, height-adjustable connection of the connecting element to the back part can be produced.

[0037] A height-adjustable connection or attachment of the connecting element makes it possible for the spacing between the hip belt and the back part to be individually adjusted to the wearer. The spacing between the hip belt and the back part may thus be increased or decreased depending upon the connecting points at which the connecting element, as viewed in the vertical direction, is connected to the back part. Numerous releasable connections, and if appropriate also non-releasable connections, are conceivable for the connection of the connecting element to the back part. It is also advantageous if the connecting element can be fastened to the back part without the aid of tools. It is for example possible for the back part and the connecting element to be connected to one another by means of a loop system. It is also advantageous if the back part has fastening tabs which surround the connecting element and which can further be fixed for example by means of a hook-and-loop connection.

[0038] It is advantageous if at least one of the two laterally and vertically running side edges of the connecting element has a sawtooth-like profile section provided and which is defined by projections and grooves.

[0039] It is also advantageous if the connecting element has a substantially flat, plane-parallel structure, and wherein the main surfaces of the plate-shaped structure extend substantially plane-parallel with respect to the rear side of the back part of the protective vest, and wherein the two laterally and vertically running side edges of the connecting element have, in each case, one mirror-symmetrically arranged sawtooth-like profile section.

[0040] Multiple advantageous effects are achieved by means of this configuration of the connecting element. The sawtooth-like profile section of the two laterally and vertically running side edges of the connecting element may, in itself, permit a certain basic degree of elasticity or mobility, and in particular such that the wearer of the carrying system can lean to the left and to the right. Here, it may be advantageous if at least one part, which remains between two mirror-symmetrically arranged grooves, of the connecting element is of an elastic or resilient form. The one or more elastic or resilient parts may correspond in terms of their action to the intervertebral disks of a spine. Here, it may be provided that only one or two, or perhaps several, or if appropriate, all of the parts that are situated between two opposite grooves of two parallel-running, sawtooth-like side edges are of an elastic or resilient form.

[0041] A further particular advantage of the sawtooth-like design of a profile section is that the sawtooth-like profile section can be particularly advantageously used for connecting the connecting element to the back part. Here, it may, for example, be advantageous for the rear side of the back part to be provided with multiple fastening elements arranged vertically, one above the other, by means of which fastening elements and the connecting element of the hip belt can be fixed, variably in terms of height, to the back part. The sawtooth-like profile sections—if appropriate only one sawtooth-like profile section—make(s) it possible in a particularly advantageous manner to produce a form-fitting connection to the back part. Here, owing to the regular design of the sawtooth-like profile, the connecting element can be particularly easily arranged at different positions on the back part in the vertical direction. Here, it is advantageous for the inner side of the back part to also have multiple fastening elements arranged vertically, one above the other.

[0042] It is also advantageous if each fastening element has two fastening tabs which, in each case in the region of the grooves of the connecting element, are laid, one on top of the other, and can be further connected to one another preferably by means of a hook-and-loop fastener.

[0043] This configuration yields a particularly simple connection, which can be produced by hand, between the connecting element and the back part. The connection can be opened and closed easily. By virtue of the fact that the fastening tabs are laid one on top of the other in the region of the grooves or in the grooves of the connecting element, a form-fitting connection is realized in addition to the fixing by means of the hook-and-loop fastener. The connection has proven to be particularly stable if at least two, and preferably
three or more groove pairs of the connecting element are used for the production of a connection there by means of the fastening tabs of the back part. For this purpose, it is advantageous for the back part to have two, and preferably three, or more, fastening tab pairs. The spacing between the protective vest and the hip belt can be adjusted by virtue of the connecting element being placed at the desired location on the back part. The desired spacing between the protective vest and the hip belt can then be fixed by virtue of the fastening tabs being attached in the grooves of the connecting element.

[0044] The connection of the hip belt to the protective vest has been presented above (and will also be presented below) on the basis of a releasable fixing of the connecting element to the back part. It is, however, alternatively possible for the connecting element to be releasably arranged on the hip belt rather than on the back part. The description given above, and also the description which follows, should also be understood herein as encompassing an analogously precisely reversed fixing configuration.

[0045] It is advantageous if the means, as provided on the protective vest, for fastening to a human torso comprises a fastening belt, which runs above the hip belt, and/or two shoulder straps, which run over a human shoulder, and wherein the fastening belt and/or shoulder straps can be fastened or fixed in each case to the back part of the protective vest. Such fixing of the protective vest to a human torso has proven to be particularly suitable. What is particularly suitable is an embodiment in which the means for fastening to a human torso comprise two shoulder straps and a fastening belt which runs above the hip belt. The prior art discloses primarily either a fastening belt or a hip belt. Here, the fastening belt runs partially in the region of a hip. The inventor has, however, identified that it is advantageous for the protective vest to have a fastening belt which is independent of the hip belt and which runs above the hip belt.

[0046] The fastening belt can also preferably be closed by means of a hook-and-loop connection. The fastening belt may preferably be also formed from two side wings.

[0047] It is advantageous if those ends of the fastening belt which face toward the back part are provided with eyelets or receiving openings, and the back part has fastening loops, and wherein the fastening loops can be passed through the eyelets or receiving openings, and wherein at least one elongate fixing element is provided which can be guided through those ends of the fastening loops which have been inserted into the eyelets or receiving openings, and the fastening loops and the elongate fixing element are designed such that the fastening loops can no longer pass out through the eyelets or the receiving openings after the elongate fixing element has been guided through, and wherein the elongate fixing element has a manipulation element for pulling the fixing element out of the fastening loops.

[0048] The inventor has identified that, by means of this configuration, it is possible for the protective vest to be discarded quickly and in a simple and reliable manner. The elongate fixing element can be pulled out of the fastening loops by means of, and preferably, by a pulling movement on the manipulation part. As a result, the fastening loops can slide out of the eyelets or receiving openings of the fastening belt, whereby the fastening belt is released from the back part. Now, in order to take off the protective vest, the wearer need merely remove at least one shoulder strap (if provided). Furthermore, it may be necessary for the hip belt to also be released, said hip belt generally having a clasp similar to an aircraft seatbelt clasp. This, too, can be performed quickly and in a simple manner. Such an advantageous discarding mechanism as described, above, is not known from the prior art.

[0049] It has proven to be advantageous if the back part has fastening loops or fastening sleeves, and at least one end of the fastening belt has corresponding eyelets through which the loops or sleeves can be passed. The elongate fixing element may preferably be in the form of a wire or cable, and in particular a pindle wire.

[0050] Within the context of the present invention, fastening loops correspond in terms of function to fastening sleeves, and whereby only fastening sleeves will be discussed below. The disclosure is however intended to apply to both variants.

[0051] It is basically sufficient if, to release the fastening belt, one of the two ends of the fastening belt which is fixed to the back part is released. It is however self-evidently also possible for both ends to be connected to the back part in the manner described above, and to be able to be released, correspondingly, if required.

[0052] Here, it may be advantageous if the at least one end, and preferably both ends, of the fastening belt have/has, in each case, multiple eyelets or receiving openings arranged offset in the circumferential direction of the fastening belt. In this way, the fastening belt can be adapted to different girths in a particularly simple manner.

[0053] It is also advantageous if at least one of the two shoulder straps of the protective vest has at least one eyelet or one receiving opening at its end facing toward the back part, and the back part has fastening loops, and wherein, in each case, one fastening loop can be inserted into an associated eyelet or receiving opening, and wherein at least one elongate fixing element is provided which can be guided through that end of the corresponding fastening loop which has been inserted into the eyelet or receiving opening. The fastening loops and the elongate fixing element are designed such that the fastening loops can no longer pass out through the eyelet or the receiving opening after the elongate fixing element has been guided through, and wherein the elongate fixing element has a manipulation element for pulling the fixing element out of the fastening loops.

[0054] Simple handling is realized by virtue of the fact that the mechanism of the connection of at least one of the two shoulder straps to the back part corresponds to the mechanism of the connection of the fastening belt. If required, it is possible by means of a simple movement, and preferably a pulling movement, applied to the elongate fixing element (again preferably a wire or a cable, in particular a pindle wire) to be pulled out of the one or more fastening loops by means of which the shoulder strap is fastened to the back part, and whereby the connection is released. By virtue of the fact that the protective vest also has a fastening belt that is released in similar fashion, the entire protective vest can be discarded with one movement, by pulling out the elongate fixing elements.

[0055] The inventor has identified that it may be sufficient for only one shoulder strap to be released. The protective vest then, correspondingly, falls quickly and easily from the other shoulder. It is, however, advantageous if both shoulder straps are fastened to the back part by means of corresponding fastening loops and eyelets with the aid of the same elongate fixing element. In this way, both shoulder straps can be released from the back part by pulling out one elongate fixing
element, and whereby the protective vest falls, or can be removed, from the wearer in a particularly advantageous manner.

[0056] It is advantageous if the fastening loops for the connection of a first end of the fastening belt form a first loop row through which a first fixing element can be guided, and wherein a second fixing element can be guided at least through the fastening loop of a first shoulder strap arranged on the same half of the back part, and wherein the first and the second fixing element can be pulled out of the fastening loops by means of a common manipulation part in order to release the first end of the fastening belt, and at least the first shoulder strap from the back part.

[0057] By means of this solution, it can be achieved that both the fastening belt, and also at least one first shoulder strap are released by means of one movement, and preferably a pulling movement, on a common manipulation part. To realize an advantageous discarding of the protective vest, it is advantageous if the first end of the fastening belt and the first shoulder strap are arranged on the same half of the back part, for example, both on the left-hand side (when the protective vest is worn correctly) or both on the right-hand side. Thus, all of the fastenings on this side of the protective vest are released, whereby the protective vest can fall off particularly easily.

[0058] It is advantageous if the second elongate fixing element releases both shoulder straps. This is easy to achieve in terms of design.

[0059] It may be provided that a preferably third fixing element is used to fix the second end of the fastening belt to the back part. It has been found that, for fast discarding of the protective vest, it is not necessary for the second end of the fastening belt to also be released from the back part. Nevertheless, a third fixing element may be provided in order to permit a simple connection of the second end of the fastening belt to the back part, and in particular in view of the fact that the circumferential length of the fastening belt can be changed in a particularly simple manner owing to the presence of multiple eyelets or receiving openings in the region of the second end of the fastening belt.

[0060] It is advantageous if the shoulder straps have multiple eyelets or receiving openings arranged one behind the other, and wherein eyelets or receiving openings make it possible for the shoulder straps to be connected to the back part in a manner corresponding to the size of the wearer, that is to say make it possible for the length of the shoulder strap, which is relevant to the wearer, to be varied.

[0061] It is self-evidently basically also possible for the back part to have receiving openings or eyelets, and for the one or more shoulder straps and/or the fastening belt, or the ends thereof, to have fastening loops. A connection of the shoulder straps and/or of the fastening belt may also be realized by virtue of the eyelets or receiving openings and the fastening loops being formed specifically in each case on the other element. It has however proven to be advantageous for the back part to have fastening loops and for the means for fastening to a human torso to have eyelets or receiving openings. It is nevertheless the intention here for both variants to be disclosed.

[0062] It is advantageous if fastening points for the attachment of the fastening loops and/or of the fastening elements are integrated into the back part. It may be provided that the fastening loops or the fastening elements are screwed, riveted or connected in some other form-fitting, force-fitting or cohesive manner to the back part. It has, however, proven to be particularly advantageous for fastening points to be integrated into the back part, to which fastening points there are attached fastening loops which are preferably separate from said fastening points.

[0063] The fastening points on the back part for the connection of the shoulder straps, of the fastening belt and/or of the connecting element may be in the form of inlays which are integrated into bores, and preferably into through bores, of the back part. Here, the inlays may preferably be in the form of threaded sleeves. In this arrangement the threaded sleeves may have an internal thread which serves for receiving a screw. Further the screw may serve, for example, for the fastening of a shoulder strap guide element or of a fastening loop or of a fastening element. The fastening of an inlay, and in particular of a threaded sleeve, in a bore in the back part may be realized, for example, by virtue of the threaded sleeve, after it is inserted into the bore, and being flanged or deformed such that the threaded sleeve can no longer be pulled out of the bore. The threaded sleeve, or more generally the inlay, may preferably be formed from metal, and in particular from brass.

[0064] In one embodiment of the invention, it may also be provided that an additional element is screwed into the inlay or into the threaded sleeve, and which additional element has an elongated hole or a slot through which the fastening loops or the fastening elements, or the fastening tabs, can be passed.

[0065] Regardless of the configuration mentioned above, it may be advantageous for the fastening points to have an elongated hole or a slot through which the fastening loops or the fastening elements can be passed such that the fastening loops or the fastening elements are fixed, for example, by means of a thickened end, in the elongated hole or the slot. This makes it possible for the fastening loops or the fastening elements to be exchanged quickly and easily, for example, if they become damaged. Furthermore, in this way, the fastening loops or the fastening elements can be connected to the back part in a simple manner.

[0066] It is advantageous if the back part is provided or formed as a stab-proof panel or a panel formed from a stab-proof material. The backplate is preferably formed from aramid, and if appropriate, the backplate also has silicon.

[0067] It may be advantageous if the back part is formed from multiple layers in a plane-parallel arrangement. Advantageous stab protection characteristics can be attained, if appropriate, in this way. Here, it is advantageous if the fastening points are integrated into the back part during the pressing of the layers. In this way, the fastening points, which in this case preferably have an elongated hole, are connected to the back part in a reliable, simple and tough manner.

[0068] In one embodiment of the invention, it may be provided that the back part has one, multiple, or preferably four closed layers. Furthermore, the back part may have one, multiple, or preferably four layers provided with slots, the latter layers being oriented in a plane-parallel arrangement with respect to the former layers. Here, the fastening point may extend outward through the slots, and preferably in a fashion such that the fastening point protrudes by way of its elongated hole from an inner side of the back part, that is to say, from the side oriented in the direction of the body of the wearer. To prevent the fastening points from slipping out of the slots or slotted layers, the fastening points may have a correspondingly widened base region that preferably extends in flat form. The base region may, in this case, lie on a closed layer.
It is advantageous for a back pad to be attached to the inner side, which faces toward the human torso, of the back part of the protective vest.

The wearing comfort is considerably increased by means of the back pad; and in particular, the discarding mechanism, that is to say, the connection of the shoulder straps and of the fastening belt to the back part. Further also the other technical equipment of the back part, are covered, such that these do not act in a bothersome manner on the body of the wearer. It is advantageous if the back pad is fastened to the inner side of the back part in a height-adjustable fashion by means of a hook-and-loop connection. For this purpose, it may be provided that the inner side of the back part and the correspondingly facing side of the back pad each have corresponding hook elements and loop elements. The back pad can thus be attached to the inner side of the back part in a particularly simple manner, and in particular also at different heights.

It is advantageous if the back part has attached thereto at least one back pad fastening tab which, after the back pad has been positioned, can be folded over onto the inner side, and which faces toward the human torso, of the back pad, and fixed thereto by means of a hook-and-loop connection.

It is particularly advantageous if a fastening tab is attached to both of the vertically running side edges of the back part, and furthermore if a fastening tab, and preferably two fastening tabs, is/are also formed on the bottom side of the back part. The fastening tab(s) can be folded over after the placement of the back pad. The back pad is thus fixed to the back part in a particularly reliable manner.

It is advantageous if the back pad is provided with a bullet-proof and/or stab-proof safety inlet and/or if the back pad has a slot for a bullet-proof and/or stab-proof safety inlet.

The safety inlet is preferably in the form of a bullet-proof panel, for example in the form of a TSXI panel, or preferably SK4 panel. Any desired hard ballistic and/or soft ballistic embeddings of the safety inlet are, however, possible. In conjunction with the stab-proof embodiment of the back part, good protection is thus achieved. It is advantageous in this arrangement that the relatively heavy ballistic safety inlet is carried along, that is to say, inserted into, the back pad, only when required.

The insertion slot for the safety inlet is preferably formed in the upper region of the back pad.

It may be advantageous for the hip belt to have a feather trim which is adjacent to a human body when the hip belt is worn correctly. Greater friction is attained in this way, and thus slipping of the hip belt relative to the body is reduced.

It is advantageous if a shoulder strap guide element is provided which is fastened to the back part in such a way that, between the shoulder strap guide element and the back part, there remains a longitudinal gap through which that end of the shoulder strap which is provided for fastening to the back part can be guided, and wherein the shoulder strap guide element is arranged above a fastening loop, which is provided for the fixing of the shoulder strap, of the back part.

The inventor has identified that the fastening of the shoulder strap to the back part is relieved of a load by means of the shoulder strap guide element. A point of support is realized. On the other hand, however, a fast release of the shoulder strap from the back part is not hindered by the shoulder strap guide element. The shoulder strap guide element may, in a simple manner, be screwed to the back part. It has proven to be particularly advantageous in this arrangement for the shoulder strap guide element to comprise an elongate guide element which is attached in a pivotable or rotatable manner, and which further extends transversely or obliquely over the respective shoulder strap. Owing to the rotating or pivotable arrangement, the shoulder strap can be guided through the longitudinal gap in a particularly simple manner. Fast pulling-out is also facilitated.

It is advantageous if the hip belt is padded on the side facing toward the wearer.

It is also advantageous if the hip belt has a zip fastener preferably in the region of the left-hand and/or right-hand side of the wearer when the hip belt is worn correctly, such that further elements can be connected.

It is additionally advantageous if the fastening belt of the protective vest has, preferably on the left-hand or right-hand side of the wearer when the fastening belt is worn correctly, a zip fastener for the connection of further elements.

The fastening belt and/or the hip belt may further be provided with a flap which projects over the zip fastener and which preferably has a hook-and-loop connection, whereby it is possible for the zip fastener to be covered and protected against damage, and in particular also against dirt.

With regard to the support of the protective vest on the hip belt, it may be of particular importance for the vertically acting loads to be damped, and nevertheless, for a maximum degree of mobility of the wearer, analogous to the mobility of a human spine, to be maintained. The introduction of the loads into the hip belt is of particular significance in this invention. It is advantageous for the loads to be introduced over as large an area of the hip belt as possible, and if possible, over at least approximately the entire area of the hip belt. Here, in particular, undue loading of a human spinal canal should be avoided. It may be further advantageous for the connecting element to be formed in one piece with a hip belt inlay, and wherein the hip belt inlay at least partially follows the profile of the hip belt in the circumferential direction. In this way, the weight loads are distributed over the entire hip belt inlay via the connecting element. In particular, it may be advantageous for the hip belt inlay at least to follow the profile of the hip belt in the circumferential direction in the region of the rear side of the hip belt, that is to say, in that region of the hip belt which bears against the back of a human body when the hip belt is worn correctly. It is advantageous if the hip belt inlay extends to both sides from the center of the rear side of the hip belt as far as the front side of the hip belt, or at least approximately as far as the clasp of the hip belt.

The hip belt inlay may preferably have one or more damping cutouts below the connecting element in the vertical direction, and wherein such damping cutouts permit a targeted deformation of the hip belt inlay. The hip belt inlay with the integrated connecting element may, for example, be produced from rubber or natural rubber, and preferably from multiple layers of rubber or natural rubber, and particularly preferably in conjunction with one or more textile layers. Here, it is particularly expedient for a composite to be laminated from the above-stated materials.

The hip belt inlay may be integrated into the hip belt, such that the wearing comfort remains advantageous. That is to say, the hip belt has the hip belt inlay as an insert or inlay. The hip belt inlay may preferably be a panel of material that runs, or is curved, correspondingly to the profile of the hip belt. The hip belt inlay may also preferably extend from the
The hip belt inlay may be combined with all of the already-known features, in particular also with all of the features of the exemplary embodiment described below. The description, and also the claims that are provided hereinafter should be understood here as also disclosing a connecting element that is formed in one piece with a hip belt inlay, or that the hip belt inlay has an integrated connecting element. It may be advantageous if the housing for accommodating the electronic components has an aluminum-coated foil or an aluminum foil and/or a spacer knit on a front and/or rear side. Furthermore, the housing may have apertures, for example for an antenna.

Exemplary embodiments of the invention are presented in principle below, on the basis of the figures as provided. For simplicity, preferred combinations of the system components of the carrying system according to the invention are also presented. The individual variants of the invention as illustrated, and as described below may be used in any desired combination. Individual figures also show feature combinations that are advantageous when considered individually. The features, however, need not be combined in this way. The features illustrated in the individual figures may each be used individually, or in any desired combination, even in combination with individual features, or multiple features from other figures of the drawing.

In the drawings:

FIG. 1 shows a perspective view of a variant of the carrying system according to the present invention.

FIG. 2 shows a plan view of the inner side of a back part of a protective vest, and wherein the back part is connected via a connecting element to a hip belt, in an illustration in which a back pad is attached to the inner side of the back part, and wherein further, additional back pad fastening tabs for the fastening of the back pad are illustrated in an open state.

FIG. 3 is an illustration as per FIG. 2, wherein the additional back pad fastening tabs are illustrated in a closed state.

FIG. 4 is an illustration as per FIG. 3, and with a greater spacing shown between the back part and the hip belt.

FIG. 5 is a detailed illustration of a first variant of a hip belt.

FIG. 6 is a detailed illustration of a second variant of a hip belt.

FIG. 7 is a detailed illustration of a third variant of a hip belt.

FIG. 8 is a detailed illustration of a fourth variant of a hip belt.

FIG. 9 is a detailed illustration of a fifth variant of a hip belt.

FIG. 10 shows a plan view of the inner side of the back part of a protective vest, and wherein the shoulder straps, a fastening belt and a hip belt are attached to the back part.

FIG. 11 is a detailed illustration of a back part of a protective vest which is provided with fastening points for the attachment of fastening loops and/or fastening tabs.

FIG. 12 is a sectional illustration through the back part in the region of fastening point as per the line XII-XII in FIG. 11.

FIG. 13 is a detailed illustration of a shoulder strap guide element.

FIG. 14 is a diagrammatic illustration of a housing for accommodating electronic components.

FIG. 15 is a sectional illustration through the back part in the region of fastening point, and in an alternative embodiment in relation to FIG. 12.

FIG. 16 shows a threaded sleeve and a counterpart disk for forming a fastening point.

FIG. 17 is an illustration as per FIG. 9, and wherein the connecting element is formed in one piece with a hip belt inlay.

FIG. 1 shows a modular carrying system which, as per FIG. 1, is made up of substantially four system components. The system components in FIG. 1 are a protective vest 2, a hip belt 3, a carrying device 4 and a housing 5. The above-mentioned system components are also illustrated, hereinafter, in FIGS. 2 to 14, respectively, but merely by way of example. A combination of the system components as illustrated in FIG. 1 is not imperative; rather, the system components may also be used individually or in other combinations, in particular also with other equipment features.

As per FIG. 1, the protective vest 2 has at least one back part 6 and means for fastening to a human torso. As per FIG. 1, the means for fastening to a human torso are in the form of shoulder straps 7 and a fastening belt 8. Furthermore, the protective vest 2 optionally also has a front part 9. The back part 6 and/or the front part 9 may optionally be formed from a composite material. In the exemplary embodiment, it is optionally provided that the back part 6 itself offers only stab protection.

The hip belt 3 as per FIG. 1 has a connecting element 10 for the connection of the protective vest 2 to the hip belt 3. In this arrangement the connecting element 10 is designed to transmit weight loads from the protective vest 2 to the hip belt 3. Furthermore, the hip belt 3 has a coupling 11. The coupling 11 serves for the coupling or connection of the carrying device 4. In this way, the shoulders of the wearer are relieved of the load. The coupling 11 as illustrated in FIG. 1 has an insertion region with an insertion bevel in order that the coupling member 12 to be coupled into the coupling 11, which coupling member may for example be a peg, a bolt or a pin, can be inserted particularly easily. For the coupling of the carrying device 4 to the hip belt 3, various embodiments of the coupling are conceivable and may be combined with the other features illustrated in the exemplary embodiments. It is advantageous for the coupling of the carrying device 4 to the hip belt 3 to be realized only via one point, specifically such that the carrying device 4 can perform a pivoting or rotational movement relative to the hip belt about an axis running perpendicular to the back part.

The coupling 11 of the hip belt 3 is formed on the rear side of the hip belt 3 and is located adjacent to a human spine, and more precisely to the lower region of a lumbar, when the hip belt is worn correctly.
As can be seen from FIG. 1, the fastening belt 8 runs above the hip belt 3.

0113. The hip belt 3 may preferably be closed by means of a clasp 25, such as is known for example from aircraft seats.

0114. A padding 26 may be formed on the inner side, which faces toward the body of the wearer, of the hip belt 3.

0115. On the rear side of the hip belt, in particular in the region of the human spine, there may optionally be formed a pocket for accommodating a pedometer, for example.

0116. In the exemplary embodiment, the housing 5 serves preferably for accommodating an electronic unit. Of said electronic unit, an antenna 13 is illustrated, merely by way of example, in FIG. 14. In FIG. 1, the housing 5 is attached to the rear side of the protective vest 2, and more precisely to the outer side of the back part 6 of the protective vest 2. In an optional embodiment, the housing 5 may also be omitted. The housing 5 may be attached to the protective vest 2 by various measures, for example a zip fastener, a form-fitting or force-fitting connection, or by means of a hook-and-loop system, for example with the aid of fastening tabs, and/or an oral hook-and-loop connection. In the exemplary embodiment, it is provided, as one possible variant to which the exemplary embodiment, however, should not be restricted, that the protective vest 2 has a loop system 14 (not illustrated in any more detail), and a similar loop system 14 is also formed on the outer side of the housing 5. Such loop systems 14, which are known in particular in military applications, enable components to be fastened in a simple and flexible manner. A loop system of said type is also referred to as MOLE loops. The loop system 14 may, in a known way, have a multiplicity of loop rows for this purpose. The loops of the loop rows of the components to be connected, in the present case of the protective vest 2 and of the housing 5, are in this case arranged such that the loops of one loop row can be fitted into the spacings between the loops of the other loop row. In this way, it is possible for a strip-shaped loop row connecting element, preferably a plastics strip which is also preferably encased with a textile, to be pushed through the loops of the loop rows that have been placed together. Here, the plastics strip may be designed so as to be longer than the loop rows through which it is to be pushed, such that the protruding ends of the plastics strip can be folded over. The folded-over ends of the plastics strip can preferably be closed by means of a hook-and-loop fastener. This yields a stable connection between components to be fastened to one another. This concept is basically already known for use in particular in the military field, and is therefore not illustrated in any more detail in the exemplary embodiment. The illustration shows merely the loop system in principle, for example on the outer side of the housing 5 in FIG. 14, and on the outer side of the carrying device 4, on the fastening belt 8 and on the hip belt 3 in FIG. 1.

0117. The housing 5 may, for example, be of a design such as that illustrated in FIG. 14. The invention, and also the exemplary embodiment, are however not restricted to this. As can be seen from FIG. 14, the housing 5 may have an aluminum-coated foil 15 and/or a spacer knit 16 on the front side 5a, and/or on the rear side 5b. Furthermore, on the encircling side edge, there may be provided a mesh 17, whereby good breathability is attained. An air-permeable textile net fabric is mentioned as a mesh 17. The housing 5 may also have a base plate onto which the electronic components and parts are screwed.

0118. The carrying device 4 has shoulder straps 4a which, similar to a conventional rucksack, enable the wearer to fasten the carrying device 4 to his or her shoulders. The weight load is, in this case, however, introduced substantially via the coupling member 12 into the coupling 11 of the hip belt 3.

0119. FIG. 1 optionally also shows an embodiment with a drinking hose 18.

0120. The carrying device 4 as illustrated in FIG. 1 may also be in the form of a bagage receptacle. In the exemplary embodiment, the carrying device 4 is shown as a rucksack. The exemplary embodiment and the invention are, however, not restricted to these.

0121. As can be seen from the various optionally illustrated exemplary embodiments of FIGS. 1 to 10, the connecting element 10 on the rear side of the hip belt 3 runs upwards on the back of the wearer and along a spine (not illustrated) of the wearer when the hip belt 3 is worn correctly. The upper region, which faces away from the hip belt 3, of the connecting element 10 can, in this case, be connected to the back part 6. One possible connecting method is illustrated in principle in FIG. 10. The invention, and the exemplary embodiments, are however not restricted to the connecting method illustrated in FIG. 10.

0122. The connecting element may preferably be formed from steel, if appropriate with a plastics lining, or from carbon or from a composite material.

0123. FIGS. 5, 6 and 7 show an embodiment of the invention in which at least one part of the connecting element 10 is of resilient and/or elastic form. For this purpose, use may be made, for example, of a synthetic rubber joint.

0124. FIG. 8 shows one possible variant of a resilient arrangement of the connecting element 10 on the hip belt 3, and which is such that the connecting element 10 has resilient characteristics in the vertical direction when the carrying system 1 is worn correctly and the wearer of the carrying system is in a standing position. In the embodiment illustrated in FIG. 8, a spring device 19 is used. The spring device 19 is composed of two spring elements 19a which preload the connecting element 10 in the direction of the protective vest 2. In this arrangement the connecting element 10 has two longitudinal slots 19b into which there is inserted, in each case, one bolt 19c. The bolts are connected to the hip belt 3. When a load is exerted on the connecting element 10 in the direction of the hip belt 3, the connecting element 13 can, owing to the longitudinal gap 19d, move downwardly, that is to say, in the direction of the hip belt 3, and counter to the force of the spring elements 19a, such a damping action is provided between the hip belt 3, and the protective vest 2. In this way, it is possible, inter alia, for footstep loads to be absorbed with resilient action. It is self-evident that the embodiment illustrated in FIG. 8 represents merely one of several possible spring devices 19. The spring device 19 as illustrated in FIG. 8, or some other spring device, may alternatively, or additionally, also be formed at that end of the connecting element 10 which is fastened to the back part 6. Furthermore, the spring device 19 as illustrated in FIG. 8, or some other spring device, may also be combined with the embodiments of FIGS. 5 to 7.

0125. A pivot axis 21 is diagrammatically illustrated in FIG. 8. The pivot axis 21 runs perpendicular to the surface of the back part 6. In the exemplary embodiments as seen in FIGS. 5 to 8, it is provided that the connecting element 10 is of an elastic or resilient form, and/or is arranged to produce resilient action on the hip belt 3 or on the back part 6, such that the connecting element 10 permits a relative pivoting movement between the back part 6, and the hip belt 3 about the pivot axis 21 running perpendicular to the back part 6.
FIG. 7 shows an embodiment of the connecting element with damping cutouts 20, and which makes it possible for the connecting element 10, when subjected to pressure loading by the protective vest 2, in the direction of the hip belt 3 (or vice versa), to reduce its axial length, that is to say to be compressed. Here, the damping cutouts 20 extend, preferably, substantially horizontally in the connecting element 10. It is preferable for multiple damping cutouts 20 to be arranged spatially, adjacent, and vertically, one above the other.

Alternatively or in addition, the connecting element 10 may have one or more elastic or resilient regions arranged preferably vertically and one above the other.

As can be seen from FIGS. 1 to 10, and in particular from FIGS. 5 to 8, the connecting element 10 as illustrated in the exemplary embodiment has a substantially flat, plate-shaped structure, and wherein the two main surfaces 10a of the plate-shaped structure extend substantially plane-parallel with respect to the rear side of the back part 6 of the protective vest 2, and wherein the two laterally and vertically running side edges 10b of the connecting element 10 have, in each case, a mirror-symmetrically arranged sawtooth-like profile section. In this arrangement the sawtooth-like profile section forms projections 22 and grooves 23. The grooves 23, and the projections 22 of the side edges 10b are preferably situated in each case in mirror-symmetrically opposite orientations one relative to another, as illustrated in the figures.

The design of the side edges 10b with a sawtooth-like profile section has proven to be particularly suitable in particular for the connection of the connecting element 10 to the back part 6. This will be presented in even greater detail, below, on the basis of FIG. 10.

FIGS. 5 and 6 show an optional embodiment in which a part 24 that is located between two mirror-symmetrically arranged grooves 23 of the profile sections is of elastic or resilient form. It is self-evidently also possible for multiple elastic or resilient parts to be provided. The parts may for example be formed from synthetic rubber or natural rubber.

FIG. 9 shows a further variant of the hip belt 3 which can also be realized in the case of the other embodiments. In this form of the invention it is provided that the hip belt 3 has one, and preferably two or more zip fasteners 27. It is additionally possible for covering tabs 28 to be provided which cover the zip fastener 27 and a corresponding counterpart. Additional containers, adapter plates or auxiliary elements can be suspended from, or connected to, the zip fastener 27. The two zip fasteners 27 as illustrated in FIG. 9 are arranged on the hip belt 3 so as to run or be located in the region of the side of a wearer when the hip belt 3 is worn correctly. Furthermore, FIG. 9 illustrates an optional leather trim 29, which may also be realized in the case of the other exemplary embodiments. The leather trim is intended to increase the friction between the hip belt 3 and the wearer, and thereby permit an improved fit.

FIG. 10 shows an optional embodiment with two zip fasteners 27, two covering tabs 28, and leather trims 29 on the hip belt 3.

In the exemplary embodiment, the connecting element 10 and the back part 6 are preferably designed so as to form multiple connecting points which are offset in a vertical direction (when the carrying system is worn correctly and the wearer is in a standing position), such that a releasable, height-adjustable connection of the connecting element 10 to the back part 6 can be produced. In this way, the spacing between the hip belt 3 and the protective vest 2 can be varied. Two different spacings are illustrated, in principle, in FIGS. 3 and 4. The spacing of the connecting points may preferably be selected so as to permit a height adjustment with a grid interval of 1 to 5 cm, and preferably 2.5 cm.

One possible embodiment of such connecting points which permit a height-offset connection is illustrated in FIG. 10. The inner side, which faces toward the wearer of the carrying system 1, of the back part 6—which is illustrated in FIG. 10—is provided with multiple fastening elements 30 which are arranged vertically and one above the other, by means of which fastening elements the connecting element 10 can be fixed, variably in terms of height, to the back part 6. Here, the number of fastening elements 30 may be selected as desired. FIG. 10 also illustrates six such fastening elements 30 which are vertically oriented one above the other. Here, in the illustrated connection between the connecting element 10 and the back part 6, only the four lower fastening elements 30 are used. The two upper fastening elements 30 are not utilized in the view illustrated in FIG. 10. More specifically if the hip belt 3 is to be arranged closer to the protective vest 2, if appropriate also so as to overlap the latter, the connecting element 10 is fastened to the back part 6 at a higher position with the aid of the fastening elements 30 situated further above. In this way, the hip belt 3 can be moved toward or away from the protective vest 2 in a stepped manner. To illustrate this, a double arrow is provided in FIG. 10.

The number of fastening elements 30, and the design of the connecting element 10 in this regard, may self-evidently be selected as desired. In one particularly simple embodiment, it is also possible for only one fastening element 30 to be provided. It has however proven to be advantageous for at least two, and preferably more than two, fastening elements 30 to be provided for fixing the connecting element 10.

FIG. 10 optionally shows a particularly suitable embodiment of the connecting elements 30. Here, the fastening elements 30 are composed in each case of two fastening tabs 30a. This can be seen particularly clearly from the two uppermost fastening elements 30 which are not being utilized. The two fastening tabs 30a of a fastening element 30 are laid one on top of the other, and preferably connected to one another by means of an optionally provided hook-and-loop connection, and preferably in the region of the grooves 23 of the connecting element 10.

The fastening elements 30, or the fastening tabs 30a, may be connected to the back part 6 in any desired manner, for example, by means of rivets, screws, adhesive bonding or the like. One optionally provided, and particularly preferred possibility for the connection of the fastening elements 30 to the back part 6 is illustrated in FIGS. 11 and 12. In FIGS. 11 and 12, the back part 6 is composed of multiple layers. For this purpose, use may be made of a so-called STM material. In the exemplary embodiment, the back part 6 has stab-proof characteristics, and/or is formed from a material that offers stab protection, preferably from an aramid material that is preferably provided with silicon.

The back part 6 as illustrated in FIG. 11 has a multiplicity of fastening points 32 for the attachment of the fastening elements 30 or of the fastening tabs 30a or of further fastening loops 33, which will be presented in more detail below on the basis of FIG. 10. In the exemplary embodiment illustrated in FIG. 11, the fastening points 32 are integrated into the back part 6. In this arrangement, the integration is
realized preferably by virtue of the fastening points 32 being integrated already during the pressing of the layers of which the back part 6 as per FIG. 11 is composed. The fastening points 32 may preferably be in the form of metal inlays. Here, the fastening points 32 may have an elongated hole 32a or a passage opening. Here, a fastening element 30, one or two fastening tabs 30a or a fastening loop 33 may be attached in each elongated hole 32a or each passage opening.

[0139] FIG. 12 illustrates an optional possibility for the integration of fastening points 32 into the back part 6. It is provided in this form of the invention that the back part 6 has one or two, and preferably more than two, and particularly preferably two to eight, and more particularly four, closed layers 600. Furthermore, the back part 6 has one or two, and preferably more than two, and particularly preferably two to eight, in particular four, slotted layers 601. The closed layers 600 form a stack of closed layers, and the slotted layers 601 form a further stack of slotted layers. The fastening points 32 are plugged through the slots 601a of the stack with the slotted layers 601, such that the elongated hole 32a protrudes beyond the outer side of the stack of slotted layers 601. Here, the fastening points 32 have, on their rear side, and in particular in the region of a base 32b, a design such that the fastening point 32 cannot be pulled all the way through the associated slot 601a, that is to say, the base 32b of the fastening point 32 has a dimension larger, at least in a relevant direction, than the slot 601a. The stack with the closed layers 600 is attached to the rear side, which faces away from the outer side, of the stack of slotted layers 601, such that the base 32b of the fastening point 32 is fixed between the stack of slotted layers 601 and the stack of closed layers 600. The layers 600, 601 may optionally and subsequently be pressed together such that a permanent and fixed connection is produced. The layers 600, 601 may preferably be designed so as to ensure stab protection and/or protection against projectiles.

[0140] Alternatively to the illustration as per FIG. 12, provision may also be made for the fastening points 32 to be screwed to the back part 6. For this purpose, the back part 6 may, for example, have an internal thread.

[0141] The embodiment of the back part 6 illustrated in FIG. 11 has fastening points 32 for the attachment of the fastening elements 30 or of the fastening lugs 30a and also for the attachment of fastening loops 33 or fastening sleeves. The illustration shows, merely in principle, how a fastening tab 32 may be attached to the back part. FIG. 10 shows an elongated hole 32a or the fastening point 32. For this purpose, the fastening loop 33 has a thickened portion 33b on its end facing away from the loop part 33a. It is achieved in this way that the fastening loop 33 can be threaded or pulled through the elongated hole 32a but cannot be passed completely through the latter. A thickened portion 33b of the fastening loop 33 can be realized in a technically particularly simple manner.

[0142] The illustrated manner of fastening the fastening loops 33 in the elongated hole 32a is optional, and may also be realized in some other way. The fastening loops 33 and the fastening elements 30 and the fastening tabs 30a may, if appropriate, be attached in a similar fashion.

[0143] FIG. 10 shows one optional and advantageous possibility by which those ends of the fastening belt 8 which face toward the back part 6 can be connected to the back part 6. For this purpose, the fastening belt 8 has eyelets 34 or receiving openings. An embodiment with eyelets 34 will be described below, but the invention is not restricted to this. The back part 6 as per FIG. 10 is provided with the above-mentioned fastening loops 33, which may be connected to the back part 6 in any desired manner. The fastening loops 33 are designed such that they can be passed through the eyelets 34 at the one or more ends of the fastening belt 8. The illustration of the exemplary embodiment shows that the fastening belt 8 is provided with eyelets 34 at both ends. The illustration also shows that, at each end, the fastening belt 8 has two rows of eyelets arranged one above the other. Both of these features are optional. It is sufficient for the fastening belt to have eyelets at one end. Furthermore, it is also possible for only a single eyelet, a single row of eyelets, or else multiple eyelets or rows of eyelets arranged one above the other, to be provided.

[0144] After the fastening loops 33 have been passed through the eyelets 34, it is provided as per FIG. 10 that an elongate fixing element 35 can be guided through those ends of the fastening loops 33 which have been passed through the eyelets 34 (more precisely through the loop part 33a). The elongate fixing element 35 is also illustrated in FIG. 11 (by dashed lines in said figure). The eyelets 34 of the fastening belt 8 are, however, not illustrated in FIG. 11. The eyelets 34, the fastening loops 33, and the elongate fixing element are designed such that the fastening loops 33 can no longer pass out through the eyelets 34 after the elongate fixing element 35 has been guided through. The elongate fixing element 35 has a manipulation element 36 for pulling the fixing element 35 out of the fastening loops 33. The manipulation element is illustrated merely schematically in FIG. 10. The manipulation element may, for example, be a simple handle or a loop of the fixing element 35. The elongate fixing element 35 may for example be in the form of a wire or cable, preferably a pintle wire.

[0145] In the exemplary embodiment illustrated in FIG. 10, the back part 6—optionally—has additional fastening loops 33 through which the fixing element 35 is guided but which have not been passed through eyelets 34 of the fastening belt 8. Said fastening loops 33 improve the guidance of the fixing element 35. The additional fastening loops 33 also permit a height adjustment of the fastening belt 8 relative to the back part 6.

[0146] In FIG. 10, it is optionally provided that the ends of the fastening belt 8 have multiple eyelets 34 arranged offset in the circumferential direction of the fastening belt 8. In this way, the circumference of the fastening belt 8 can be adapted to the wearer. FIGS. 3 and 4 illustrate an adjustment of the fastening belt 8 by one eyelet 34, that is to say FIG. 4 shows a fastening belt 8 whose circumference relevant to the wearer is larger by one eyelet spacing.

[0147] As can be seen from FIG. 10, it is provided—again optionally—that at least one, and preferably—as illustrated—both, shoulder straps 7 of the protective vest 2 have at least one eyelet 37, or one receiving opening at their end facing toward the back part 6. The invention is described below merely on the basis of the embodiment with one eyelet 37. The invention, and in particular the exemplary embodiment, are however not restricted to this. The back part 6 has the fastening loops 33 already described. It is provided in the exemplary embodiment that in each case one fastening loop 33 can be inserted into an associated eyelet 37 of the shoulder strap 7. It is also possible for multiple eyelets 37, and if appropriate also multiple fastening loops 33, to be provided per shoulder strap 7. In one advantageous embodiment, however, it has proven to be sufficient for each shoulder strap 7 to be connected only by means of one fastening loop 33. After
the fastening loop 33 has been passed through an eyelet 37 strap 7, an elongate fixing element 38 can be guided through that end of the corresponding fastening loop 33 that has been inserted into the eyelet 37. Here, the elongate fixing element 38 may again be in the form of a wire or cable, and in particular a pindle wire. The eyelet 37, the elongate fixing element 38, and the fastening loops 33 may be designed such that the fastening loop 33 can no longer pass out through the eyelet 37 after the elongate fixing element 38 has been guided through. The elongate fixing element 38 may have a manipulation element 36 for pulling the fixing element 38 out of the fastening loops 33. The manipulation element may be the same manipulation element 36 as that by which the elongate fixing element 35 can also be pulled out. It is however alternatively or optionally also possible for a separate manipulation element 36 to be provided for the two fixing elements 35 and 38, respectively.

[0148] It is provided in the exemplary embodiment as per FIG. 10 that the elongate fixing element 38 fastens both shoulder straps 7. Alternatively, however, it may also be provided that only one of the shoulder straps 7 is fastened by means of the elongate fixing element 38. In this case, it is advantageous if the fastening loops 33 for the connection of a first end of the fastening belt 8 form a first loop row 39 through which a first fixing element 35 can be guided, and wherein a second fixing element 38 can be guided at least through the fastening loop 33 of a first shoulder strap 7 which is arranged on the same half of the back part 6, and wherein the first and the second fixing element 35, and 38 can be pulled out of the fastening loops 33 by means of a common manipulation part 36 in order to release the first end of the fastening belt 8, and at least the first shoulder strap 7 from the back part 6.

[0149] FIG. 10 optionally illustrates a third elongate fixing element 40 which serves for fastening a second end of the fastening belt 8 to the back part 6. In the 10 exemplary embodiment as illustrated in FIG. 10, the third elongate fixing element 40 can be manipulated independently of the other two elongate fixing elements 35, and 38, and for this purpose has a manipulation loop at its end which faces away from the fastening belt 8.

[0150] The fastening belt 8 as illustrated in FIG. 10 optionally has at least one zip fastener 41. Here, two zip fasteners 41 are provided which are situated in each case in the region of the side of a human torso when the fastening belt 8 is worn correctly. Furthermore, for each zip fastener, a covering tab 42 is provided which covers the zip fastener 41 in each case. The zip fasteners 41 can be used for the attachment of adapter plates, for example.

[0151] Fastening tabs 44 are likewise optionally formed in FIG. 10, and wherein for clarity, however, the fastening tabs will be described on the basis of FIGS. 2 to 4.

[0152] As can be seen from FIGS. 2 to 4, it is optionally possible for a back pad 43 to be attached to the inner side, which faces toward the human torso, of the back part 6 of the protective vest 2. In this arrangement, the connection of the back pad 43 to the inner side of the back part 6 is realized, preferably, by means of a hook-and-loop connection (not illustrated in any more detail), and whereby a height adjustment is possible. In FIG. 10, the hook-and-loop connection is optionally, likewise, provided on the inner side, and is illustrated in said figure, of the back part 6. So as not to complicate the illustration of FIG. 10, however, an illustration of the hook-and-loop connection on the inner side of the back part 6 by means of dashed lines has been omitted. Alternatively or in addition to the already-described hook-and-loop connection in the exemplary embodiment, the fixing of the back pad 43 is also realized by virtue of the back part 6 having fastening tabs 44. Here, one or multiple fastening tab(s) 44 may be provided. After the back pad 43 has been positioned, the fastening tabs 44 are folded over onto the inner side, which faces toward the human torso, of the back pad 43, and are fixed there preferably by means of a hook-and-loop connection. FIG. 2 shows the fastening tabs 44 in an open state. FIGS. 3 and 4 show a view in which the fastening tabs 44 have been folded over onto the inner side, which faces toward the human torso, of the back pad 43. That is to say, the fastening tabs 44 are closed. In FIGS. 2 to 4, a hook-and-loop fastener is illustrated on the inner side, which faces toward the human torso, of the back pad 43. The back pad 43 has hook-and-loop zones. A corresponding hook-and-loop fastener is also indicated on the fastening tabs 44.

[0153] In the exemplary embodiments as seen in FIGS. 2, 3, 4 and 10, respectively, four fastening tabs are provided, and wherein, in each case, one fastening tab 44 is attached to the back part 6, laterally on the left and on the right, and two fastening tabs are attached to the bottom side of the back part 6. The exemplary embodiment should however not be restricted to this specific configuration. The configuration has nevertheless proven to be particularly suitable.

[0154] The back pad 43 may optionally be provided with a bullet-proof and/or stab-proof safety inlay, a so-called ballistic inlay, and/or the back pad 43 may likewise optionally have an insertion slot for a bullet-proof and/or stab-proof safety inlay. This is however not illustrated in any more detail in the exemplary embodiment. The safety inlay may preferably be a hard ballistic panel, composed for example of ceramic, preferably packaged in aramid.

[0155] What is advantageous is a purely ballistic (hard and/or soft ballistic) embodiment of the safety inlays in conjunction with an insertion slot in the back pad 43. In this way, the ballistic safety inlay can be removed if ballistic protection is not required.

[0156] FIG. 13 shows a further possible optional configuration for the exemplary embodiments, to which said exemplary embodiments should, however, not be restricted. FIG. 13 shows a shoulder strap guide element 45 which, in a slightly different configuration and illustrated in simplified form, is also provided in FIG. 10 (also optionally in said figure). The shoulder strap guide element 45 as illustrated in FIG. 13 is fastened to the back part 6 such that, between the shoulder strap guide element 45, and the back part there remains a longitudinal gap 46 through which that end of a shoulder strap 7 which is provided for fastening to the back part 6 can be guided. Here, the shoulder strap guide element 45 is arranged above a fastening loop 33, which is provided for the fixing of the shoulder strap 7, of the back part 6. In this regard, reference is made to the illustration of FIG. 10. The shoulder strap guide element 45 serves to provide a point of articulation for the shoulder strap 7, and whereby the guidance is improved and the fastening loop 33 is relieved of a load. In FIG. 10, the shoulder strap guide element 45 is merely in the form of a simple plate which is correspondingly attached, and preferably by means of screws, to the back part 6. In FIG. 13, it is provided that the shoulder strap guide element 45 comprises a rotatable pin, or more generally a rotatable elongate element, which can pivot or rotate when the shoulder strap 7 is guided into and out of the longitudinal gap.
46. FIG. 13 also shows that the shoulder strap guide element 45 may have holes 48 which are provided for the leadthrough of screws (not illustrated) for screwing the shoulder strap guide element 45 to the back part 6.

[0157] FIG. 15 shows an alternative possibility for the design of a fastening point 32. The fastening point 32 is, for example, suitable for the fastening of a shoulder strap guide element 45, such as is illustrated for example, in FIG. 13, to the back part 6. The fastening point 32 may however also serve for the attachment of fastening loops 33 or fastening elements 30 or fastening tabs 30a. The back part 6 may be of any desired design, for example also of a design such as has already been described in more detail with regard to the embodiment as seen in FIG. 12. All of the above-mentioned exemplary embodiments may be combined with the fastening point 32 as illustrated in FIG. 15.

[0158] As per FIG. 15, it may be provided that the fastening point 32 is formed by virtue of the back part 6 being provided with a through bore 602. In this arrangement the fastening point 32 is in the form of an inlay, which in the exemplary embodiment is in the form of a sleeve, and preferably a threaded sleeve, and in particular with an internal thread 320. The threaded sleeve 32 is plugged into the bore 602, and fixed therein. Numerous variants are conceivable for this purpose. It is particularly advantageous, as illustrated in FIG. 15, for the threaded sleeve 32 to have, at one end, an encircling collar 321 which has a diameter at least partially larger than the internal diameter of the bore 602. After the threaded sleeve 32 has been plugged into the bore 602, a counterpart disk 49 can be mounted or pushed onto that end of the threaded sleeve 32 which faces away from the collar 321. It is preferable here for the end facing away from the collar 321 to be flanged, such that reliable fixing of the threaded sleeve 32 in the bore 602 is realized, this being reinforced by the counterpart disk 49. As already stated, various elements can be screwed into, and fastened in, the internal thread 23.

[0159] The shoulder strap guide element 45 can be screwed on preferably directly by means of one or more screws. The fastening loops 32 and/or the fastening elements 30 or the fastening tabs 30a may likewise be screwed on directly by means of a screw. For this purpose, the fastening loop 32 and/or the fastening element 30 or the fastening tab 30a may have a screw passage hole through which the screw is passed and subsequently fixed into the threaded sleeve 32. Alternatively, the screw may also be screwed directly through the fastening loop 32 and/or the fastening element 30 or the fastening tab 30a. A screw passage hole is not necessary for this purpose. It may alternatively also be provided that an auxiliary element (not illustrated) is screwed into the threaded sleeve, which auxiliary elements has an elongated hole 32a or a slot, analogously to the illustration of the fastening point 32 in FIG. 11. It is then possible for a fastening loop 32 or a fastening element 30 or a fastening tab 30a to be passed through the elongated hole 32a or the slot, and fastened there as illustrated and described in FIG. 11.

[0160] FIG. 16 shows in detail the assembly composed of the threaded sleeve 32 and the counterpart disk 49.

[0161] The formation of a fastening point by means of a through bore 602 in the back part 6 may be realized in a variety of ways and in particular, the exemplary embodiment described above on the basis of FIGS. 15 and 16 is not restricted to the use of a threaded sleeve 32. It is basically possible for any desired inlay to be provided that permits fixing in the bore 602.

[0162] FIG. 17 shows one possible alternative embodiment of the hip belt 3 with a hip belt inlay 100. The hip belt inlay 100 is illustrated by dashed lines in FIG. 17. The hip belt inlay 100 is formed in one piece with the connecting element 10. In the exemplary embodiment as per FIG. 17, the hip belt inlay 100 extends at least partially in the circumferential direction of the hip belt 3, and/or preferably at least approximately completely follows the profile of the hip belt 3 at least over one part. In the exemplary embodiment, the hip belt inlay 100 is integrated into the hip belt 3, that is to say, the hip belt 3 receives the hip belt inlay 100 such that the hip belt inlay 100 is surrounded by textile material or by the hip belt 3, preferably at least in those regions which are adjacent to a human body when the hip belt 3 is worn correctly. The hip belt inlay 100 may be formed from synthetic rubber, natural rubber or a similar elastic material. It may be provided that the hip belt inlay 100 is formed from multiple layers of synthetic, natural rubber or a similar elastic material. Here, the layers may preferably be combined with textile layers and may preferably be laminated to form a composite. The hip belt inlay 100 is preferably a material panel. The hip belt inlay 100 may be provided with cutting cuts 101 that facilitate a deformation of the hip belt inlay 100 such that the hip belt inlay 100 can, in a particularly effective manner, absorb vertical loads that are exerted by the protective vest 2 via the connecting element 10. In the exemplary embodiment, a cutting cut 101 is illustrated which is situated vertically, and below the connecting element 10, and which can thus weaken vertical loads in a particularly effective manner. It is, however, alternatively also possible for multiple cutting cuts 101 to be provided at different locations.

[0163] The use of a hip belt inlay 100 has proven to be particularly suitable for absorbing loads. All of the exemplary embodiments illustrated on the basis of FIGS. 1 to 16 may be combined with a hip belt inlay 100 which has a connecting element 10 as an integral constituent part. In this respect, the specific design of the connecting element 10, for example with a sawtooth profile, or the connection thereof to the back part 6, is not of significance. The hip belt inlay 100 constitutes an independent invention, in particular also in conjunction with the hip belt as claimed herein.

[0164] As already stated, advantageous components and optional advantageous combinations of the system components are illustrated in the exemplary embodiment. It is pointed out that, in particular, the four main design variants mentioned below need not be combined with one another, and wherein it should rather be understood that, in the exemplary embodiment, too, the four main design variants may be used in isolation from the other components and are illustrated merely so as to highlight the combination thereof. The first is in particular the illustration of the hip belt 3 with the connecting element 10 for attaching the hip belt 3 to the protective vest 2 such that weight loads can be transmitted from the protective vest 2 to the hip belt 3. The second is the illustration of the hip belt 3 for use with a modular carrying system 1 of any desired construction. The third is the embodiment of the modular carrying system 1 with a back pad 43 which can be attached in height-adjustable fashion to the back part 6 of the protective vest 2 by means of a hook-and-loop connection and which can additionally be fixed by means of the fastening tabs 44. The fourth is a modular carrying system 1 in which the back part 6 is provided with fastening loops 33, and the means for fastening to a human torso have eyelets 34,37 assigned to the protective vest 2, which eyelets interact with the fastening
loops 33 and an elongate fixing element 35, 38 such that the
means for fastening to a human torso (shoulder straps 7 and/or
fastening belt 8) can be releasably attached to the back part 6
by means of the elongate fixing elements 35, 38, wherein the
elongate fixing element 35, 38 has a manipulation element 36
for pulling out the corresponding fixing element 35, 38. The
above-mentioned solutions may be used individually and
also in combination.
1. A modular carrying system composed of at least the
following system components comprising:
a. a protective vest with at least one back part and with
means for fastening to a human torso,
b. a hip belt,
c. a carrying device for being filled with loads to be carried,
wherein the carrying device has carrying shoulder straps
for fastening to a human torso, and
d. a housing for accommodating an electronic unit,
wherein the housing can be attached to the rear side of
the protective vest,
and wherein
the hip belt has a connecting element for the connection of
the protective vest without the interposition of the housing,
and wherein the connecting element is designed to transmit weight loads from the protective vest to the hip belt.
2. The carrying system as claimed in claim 1,
and wherein
the connecting element is formed on the rear side of the hip
belt and runs upward on the back along a human spine
when the hip belt is worn correctly, wherein the upper region,
which faces away from the hip belt, of the connecting element can be connected to the back part of the
protective vest.
3. The carrying system as claimed in claim 1,
and wherein
at least one part of the connecting element is of resilient
and/or elastic form, and/or the connecting element is
fastened, resiliently in a vertical direction, to the hip belt
and/or to the protective vest.
4. The carrying system as claimed in claim 1,
and wherein
the connecting element permits a relative pivoting move-
ment between the back part of the protective vest and the
hip belt about a pivot axis running perpendicular to the
back part.
5. The carrying system as claimed in claim 1,
and wherein
the hip belt has a coupling for coupling the carrying device
to the hip belt without interposition of the housing.
6. The carrying system as claimed in claim 5,
and wherein
the coupling of the hip belt is formed on the rear side of the
hip belt and is adjacent to a human spine when the hip
belt is worn correctly.
7. The carrying system as claimed in claim 5,
and wherein
the coupling is formed on the outside, on the rear side of the
hip belt, and below the connecting element.
8. The carrying system as claimed in claim 1,
and wherein
the connecting element and the back part form multiple
connecting points offset in a vertical direction, such that
a releasable, height-adjustable connection of the connect-
ing element to the back part can be produced.
9. The carrying system as claimed in claim 1,
and wherein
at least one of the two laterally and vertically running side
dges of the connecting element has a sawtooth-like
profile section provided with projections and grooves.
10. The carrying system as claimed in claim 9,
and wherein
the connecting element has a substantially flat, plate-
shaped structure, wherein the main surfaces of the plate-
shaped structure extend substantially plane-parallel
with respect to the rear side of the back part of the
protective vest, and wherein the two laterally and verti-
cally running side edges of the connecting element have
in each case one mirror-symmetrically arranged saw-
tooth-like profile section.
11. The carrying system as claimed in claim 9,
and wherein
the inner side of the back part is provided with multiple
fastening elements arranged vertically one above the
other, by means of which fastening elements the con-
necting element of the hip belt can be fixed, variably in
terms of height, to the back part.
12. The carrying system as claimed in claim 11,
and wherein
each fastening element has two fastening tabs which, in
each case in the region of the grooves of the connecting
element, are laid one on top of the other and can be
connected to one another preferably by means of a hook-
and-loop fastener.
13. The carrying system as claimed in claim 9,
and wherein
at least one part, which remains between two mirror-sym-
metrically arranged grooves, of the connecting element
is of elastic or resilient form.
14. The carrying system as claimed in claim 1,
and wherein
the means for fastening to a human torso comprise a fasten-
ing belt, which runs above the hip belt, and/or two
shoulder straps, which run over a human shoulder,
which fastening belt and/or shoulder straps can be fasten-
d or fixed in each case to the back part of the
protective vest.
15. The carrying system as claimed in claim 14,
and wherein
the ends of the fastening belt which face toward the back
part are provided with eyelets or receiving openings, and
the back part has fastening loops, wherein the fastening
loops can be passed through the eyelets or receiving
openings, and wherein at least one elongate fixing ele-
ment is provided which can be guided through those
des of the fastening loops which have been inserted into
the eyelets or receiving openings, and the eyelets or receiv-
ing openings after the elongate fixing element has been
guided through, wherein the elongate fixing element has
a manipulation element for pulling the fixing element
out of the fastening loops.
16. The carrying system as claimed in claim 15,
and wherein
the ends of the fastening belt have in each case multiple
eyelets or receiving openings arranged offset in the cir-
cumferential direction of the fastening belt.
17. The carrying system as claimed in claim 1, and wherein a back pad can be attached to the inner side, which faces toward the human torso, of the back part of the protective vest.

18. The carrying system as claimed in claim 17, and wherein the back pad can be fastened in height-adjustable fashion to the inner side of the back part by means of a hook-and-loop connection.

19. The carrying system as claimed in claim 17, and wherein the back part has attached thereto at least one back pad fastening tab which, after the back pad has been positioned, can be folded over onto the inner side, which faces toward the human torso, of the back pad and fixed by means of a hook-and-loop connection.

20. The carrying system as claimed in claim 17, and wherein the back pad is provided with a bullet-proof and/or stab-proof safety inlay and/or the back pad has an insertion compartment for a bullet-proof and/or stab-proof safety inlay.

21. The carrying system as claimed in claim 1, and wherein fastening points for the attachment of the fastening loops and/or of the fastening elements are integrated into the back part.

22. The carrying system as claimed in claim 21, and wherein the back part is formed from multiple layers in a plane-parallel arrangement, and the fastening points are integrated into the back part during the pressings of the layers, wherein the fastening points have an elongated hole to which the fastening loops and/or the fastening elements can be attached.

23. The carrying system as claimed in claim 14, and wherein at least one of the two shoulder straps of the protective vest has at least one eyelet or one receiving opening at its end facing toward the back part, and the back part has fastening loops, wherein in each case one fastening loop can be inserted into an associated eyelet or receiving opening, and wherein at least one elongate fixing element is provided which can be guided through that end of the corresponding fastening loop which has been inserted into the eyelet or receiving opening, and the eyelets or receiving openings, the fastening loops and the elongate fixing element are designed such that the fastening loops can no longer pass out through the eyelet or the receiving opening after the elongate fixing element has been guided through, wherein the elongate fixing element has a manipulation element for pulling the fixing element out of the fastening loops.

24. The carrying system as claimed in claim 23, and wherein the fastening loops for the connection of a first end of the fastening belt form a first loop row through which a first fixing element can be guided, and wherein a second fixing element can be guided at least through the fastening loop of a first shoulder strap arranged on the same half of the back part, and wherein the first and the second fixing element can be pulled out of the fastening loops by means of a common manipulation part in order to release the first end of the fastening belt and at least the first shoulder strap from the back part.

25. The carrying system as claimed in claim 15, and wherein the elongate fixing element is in the form of a wire or cable, in particular a pintle wire.

26. The carrying system as claimed in claim 1, and wherein aluminum-coated foil and/or a spacer knit on a front and/or rear side.

27. The carrying system as claimed in claim 1, and wherein the connecting element is formed in one piece with a hip belt inlay, wherein the hip belt inlay at least partially follows the profile of the hip belt in the circumferential direction.

28. A hip belt for use with a modular carrying system comprising: a hip belt with a coupling for the direct coupling of a carrying device which is provided for being filled with loads to be carried, and wherein the hip belt also has a connecting element, which is suitable for transmitting pressure forces, for the direct connection of a back part of a protective vest, wherein the coupling of the hip belt and the connecting element of the hip belt are arranged on the back of a human torso, adjacent to a lower region of a human spine, when the hip belt is worn correctly.

29. A modular carrying system having a protective vest with at least one back part and having means for fastening to a human torso, wherein the back part of the protective vest can be connected to further system components, comprising: at least one part of the means for fastening to a human torso has eyelets or receiving openings, and the back part is provided with fastening loops, wherein the fastening loops can be inserted into the eyelets or receiving openings, and wherein at least one elongate fixing element is provided which can be guided through those ends of the fastening loops which are inserted into the eyelets or receiving openings, and the eyelets or receiving openings, the fastening loops and the elongate fixing element are designed such that the fastening loops can no longer pass out through the eyelets or the receiving openings after the elongate fixing element has been guided through, wherein the elongate fixing element has a manipulation element for pulling the fixing element out of the fastening loops.

30. The carrying system as claimed in claim 29, and wherein the means for fastening to a human torso have at least one fastening belt and two shoulder straps which run over a human shoulder.

31. The carrying system as claimed in claim 30, and wherein the fastening loops for the connection of a first end of the fastening belt form a first loop row through which a first fixing element can be guided, and wherein a second fixing element can be guided at least through the fastening loop of a first shoulder strap arranged on the same half of the back part, and wherein the first and the second fixing element can be pulled out of the fastening loops by means of a common manipulation part in order to release the first end of the fastening belt and at least the first shoulder strap from the back part.
32. The carrying system as claimed in claim 29, and wherein
the elongate fixing element is in the form of a wire or cable.

33. The carrying system as claimed in claim 30, and wherein
a shoulder strap guide element is provided which is fastened to the back part in such a way that, between the shoulder strap guide element and the back part, there remains a longitudinal gap through which that end of the shoulder strap which is provided for fastening to the back part can be guided, wherein the shoulder strap guide element is arranged above a fastening loop, which is provided for the fixing of the shoulder strap, of the back part.

34. A modular carrying system having at least one protective vest with at least one back part and having means for fastening to a human torso, comprising:

a back pad can be attached to an inner side, which faces toward the human torso, of the back part of the protective vest, wherein the back pad can be fastened in height-adjustable fashion to the inner side of the back part by means of a hook-and-loop connection, and wherein the back part has attached thereto at least one back pad fastening tab which, after the back pad has been positioned, can be folded over onto the inner side, which faces toward the human torso, of the back pad and fixed there by means of a hook-and-loop connection.

35. The carrying system as claimed in claim 34, and wherein
the back pad is provided with a bullet-proof and/or stab-proof safety inlay and/or the back pad has an insertion compartment for a bullet-proof and/or stab-proof safety inlay.

36. The carrying system as claimed in claim 34, and wherein the fastening points for the attachment of the fastening loops and/or of the fastening elements are integrated into the back part.

37. The carrying system as claimed in claim 36, and wherein
the back part is formed from multiple layers in a plane-parallel arrangement, and the fastening points are integrated into the back part during the pressing of the layers, wherein the fastening points have an elongated hole to which the fastening elements and/or the fastening loops can be attached.

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