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(54) **CARRYING DEVICE**

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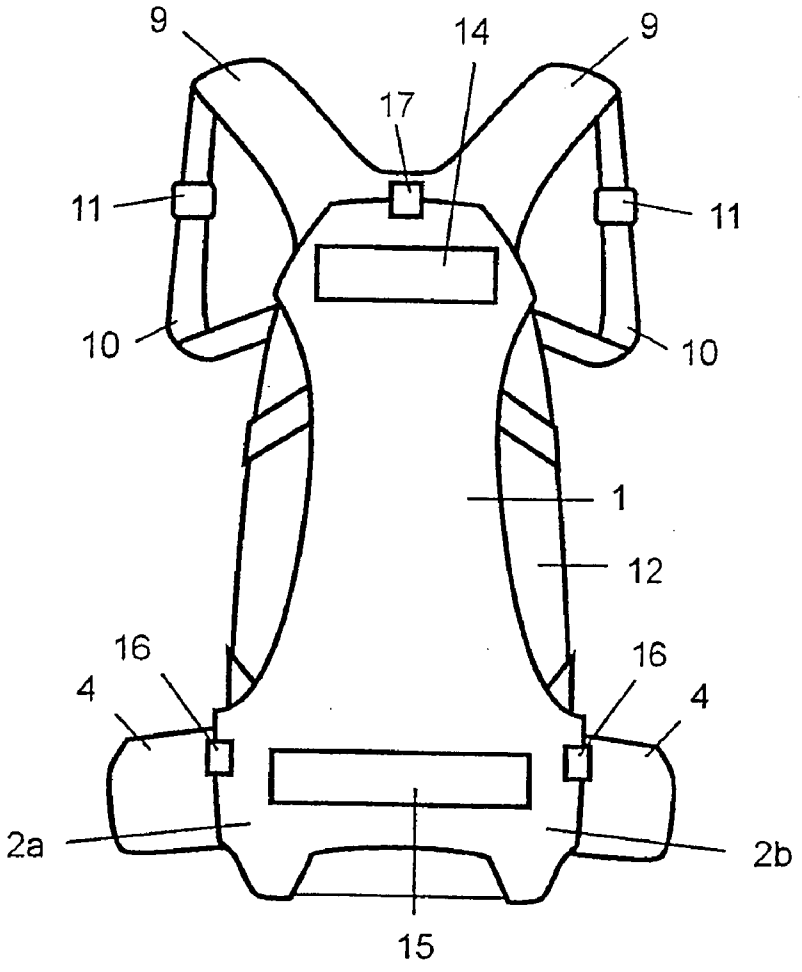
(57) **ABSTRACT**

A support having two extensions which protrude forward on both sides in the final lower region, and an identical shoulder rest form a monolithic plastic hard shell. Vertically adjustable strips that support a waist belt are fixed to the extensions while a should mounting adjoins the shoulder rest via a ball-and-socket joint. The should mounting supports shoulder belt arrangements encompassing one respective top belt and a bottom belt which is joined to the top belt via a buckle, is pulled all the way to the extension through the buckle, and is anchored there. A bag for carrying material that is to be transported is disposed on the front face of the support, in the hard shell, the bag being accessible from the front, while straps for fastening a snowboard, showshoes, a helmet, or other large objects are mounted on the rear face thereof. The position of the objects relative to the body of the wearer is reliably fixed by the stationary or rigid connection of the support to the shoulder belt arrangements and the waist belt.



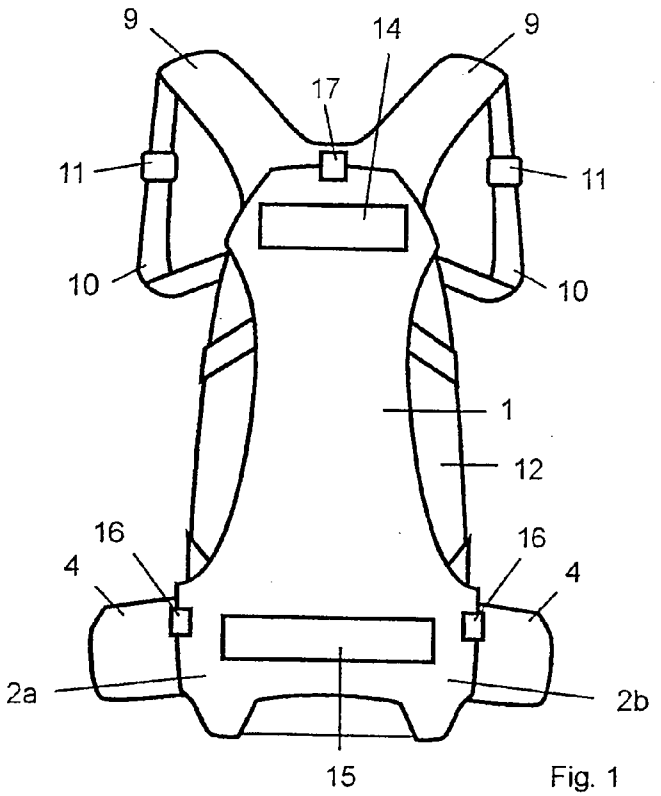

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Fig. 1

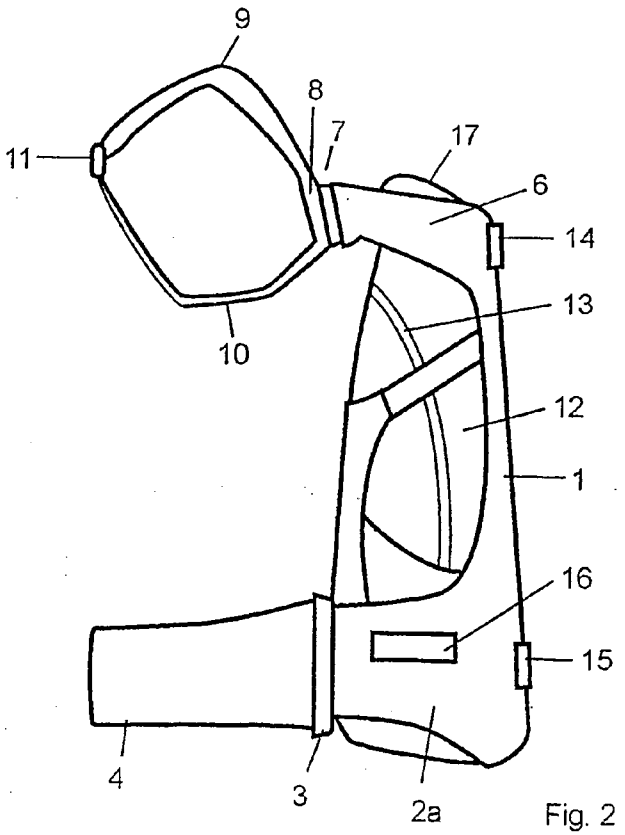
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Fig. 2

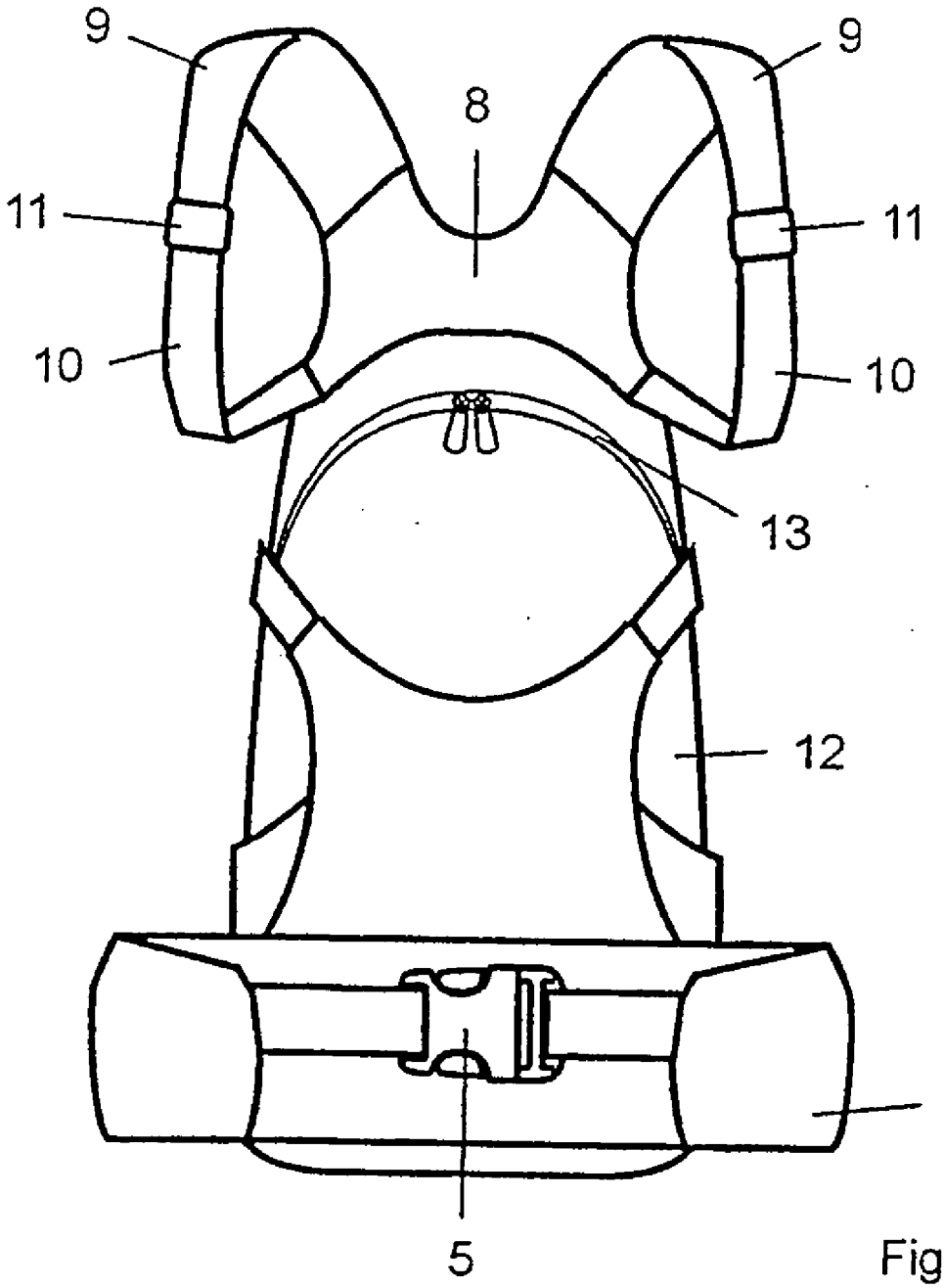

Fig. 3

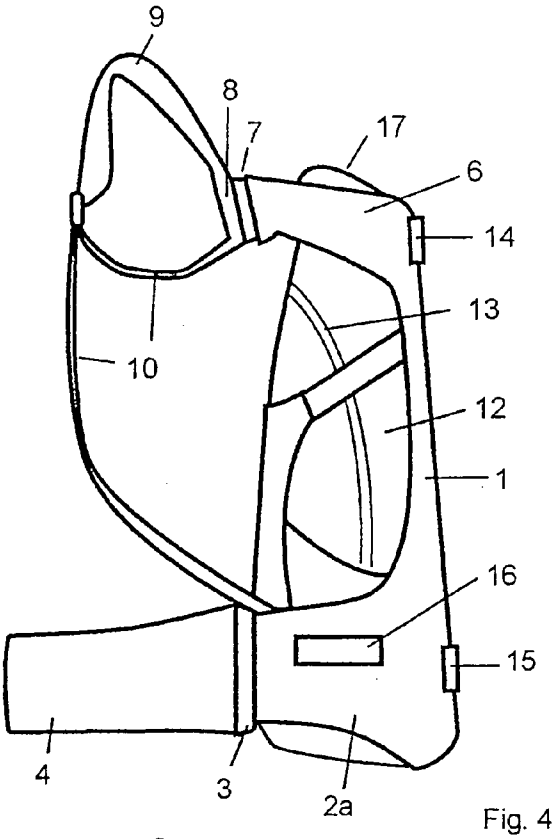

Fig. 4

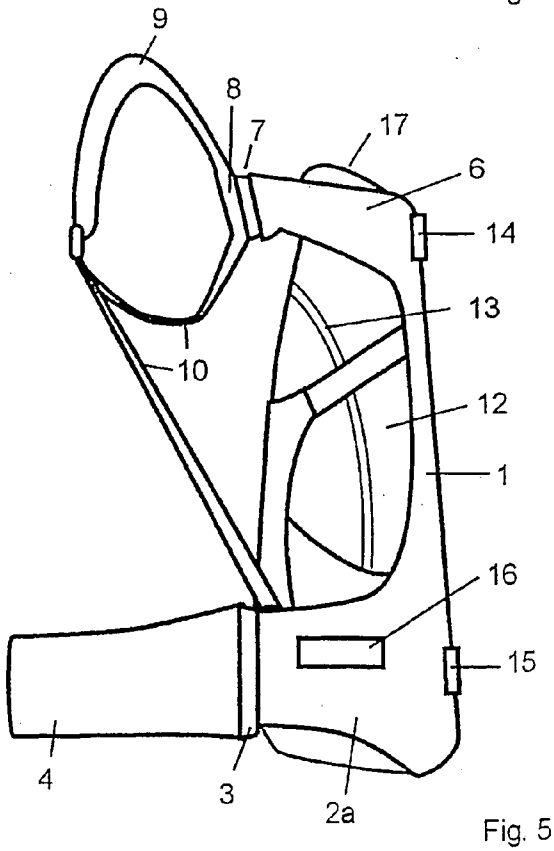

Fig. 5

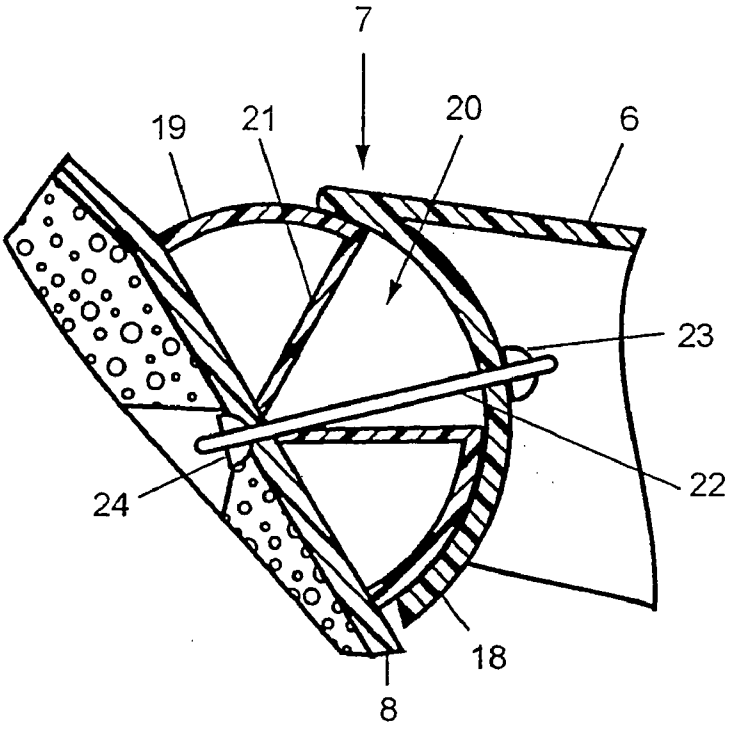

Fig.6

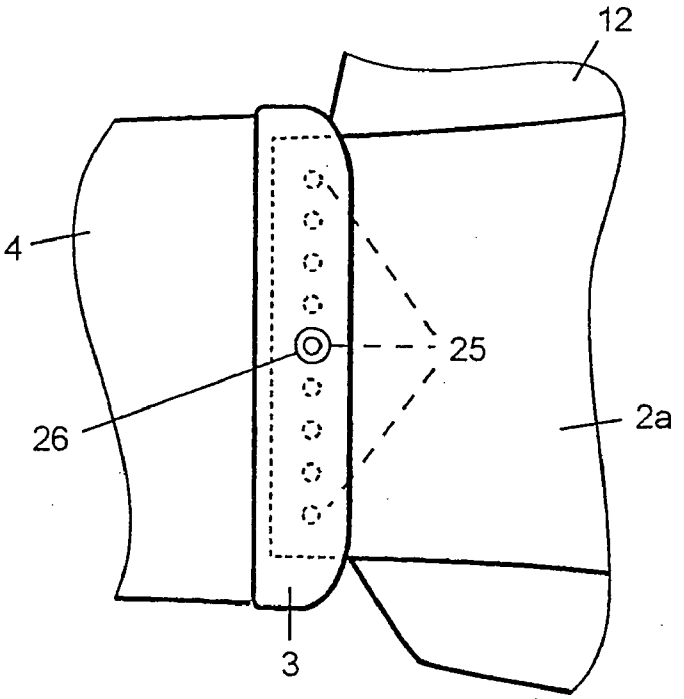

Fig. 7

CARRYING DEVICE

TECHNICAL FIELD

[0001] The disclosure relates to a backpack-like carrying device as used, e.g., on hiking tours, on bicycle rides or on skiing and snowboard tours.

STATE OF THE ART

[0002] Generic carrying devices of the usual type are normally formed as backpacks made of firm textile material, wherein the front side of the carrying device in the region of its lower end is provided with a cushioned waist belt attached thereto, comprising a central portion sewed to the backpack and lateral portions extending beyond the lateral edges of the backpack, the ends of the lateral portions being adapted to be fastened to each other by a buckle; the carrying device further comprises two stationary cushioning strips extending on the edges of the front side towards the upper end, which cushioning strips are effective to lend the carrying device a slightly more rigid structure and keep the front side at a distance from the back of the user, allowing for the circulation of air and thus reducing the development and accumulation of perspiration. The upper ends of the shoulder belts are arranged to join the ends of the cushioning strips while the lower ends of the shoulder belts are fastened e.g. immediately laterally of the backpack bag in the upper region of the waist belt.

[0003] Carrying devices are less suitable for carrying relatively large and heavy objects, such as e.g. snowboards or snowshoes, skis, ski shoes or helmets, which for lack of space cannot be accommodated within the bag but have to be fastened to the outer side, particularly the rear side, of the backpack; this is the case because such objects are connected to the waist belt and the shoulder belts only via the flexible bag so that their position is not reliably fixed relative to the these parts which are firmly attached to the user. Thus, it may easily happen that the object, e.g. a snowboard, will slide or turn. This may cause an imperfect load distribution on the user's back and resultant muscular distortion; further, the object may collide with the user's head or legs. Since, further, the bag is to be opened on the rear, the contents accommodated within the bag will be accessible only with difficulties when an object of the above kind has been fastened in this region. Often, such an object must be removed before the bag can be opened.

[0004] Similar disadvantages exist in a known generic carrying device (see U.S. Pat. No. 6,179,188 A) comprising a firm but not fully rigid rack which has the waist belt and the shoulder belt arrangements directly attached to its front side while the bag is arranged on the rear side of the rack.

[0005] Further, smaller carrying devices have been proposed wherein the bag has for the most part been replaced by a hard shell and only the front side is flexible (U.S. Pat. No. 6,179,186 B1, WO 01/97 651). Such devices, however, are not provided with a waist belt and for this reason are already right away unfit for carrying larger loads. Further, the flexible front side will bear on the user's back in full-faced abutment. Thus, in case of heightened physical stress, considerable perspiration will accumulate on the user's back and soak his or her clothing. If hard objects are accommodated, these will possibly be felt through the flexible front side and cause disturbing pressure spots. On the whole, devices of this type are unfit for more-demanding sports activities such as mountain, bicycle, skiing or snowboard tours.

[0006] Further, from U.S. Pat. No. 5,184,873 A, there is known a carrying device consisting of two mutually superposed boxlike modules, the upper module having its front side provided with vertical cushioning strips and shoulder belts and the lower module being provided with a cushioned waist belt. The two modules are connected to each other by a ball-and-socket joint. Due to the mobility of the upper module relative to the lower module, also this device is unsuited for the fastening of larger objects to its outer side. The subdivided configuration entails the further disadvantage that objects of relatively great length cannot be stored within the carrying device.

SUMMARY

[0007] It is an object of the invention to improve a generic carrying device in such a manner that the device is rendered suitable for carrying larger objects fastened to the outer side.

[0008] The carrying device of the invention makes it possible to fasten also larger objects, such as e.g. snowboards or snowshoes, skis, ski shoes, helmets and the like, to the outer side, and to do so to the effect that their position relative to parts tightly attached to the user, e.g. the waist belt, is substantially fixed. Collisions of any one of such objects with the user's body and resultant injuries or handicaps are thus widely prevented.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] The invention will be explained in greater detail hereunder with reference to the Figures which illustrate only one embodiment. In the Figures—

[0010] FIG. **1** is a lateral view of the carrying device of the invention,

[0011] FIG. **2** is a rear view of the carrying device of the invention,

[0012] FIG. **3** is a front view of the carrying device of the invention,

[0013] FIG. **4** is a view of an embodiment of a carrying device of the invention modified with regard to the shoulder belt arrangements, showing the shoulder belt arrangements in a first setting,

[0014] FIG. **5** is a view of the carrying device according to FIG. **4**, showing the shoulder belt arrangements in a second setting,

[0015] FIG. **6** is an enlarged sectional view of a part of a shoulder rest of the carrying device of the invention, and

[0016] FIG. **7** shows an enlarged portion of a sectional view of the carrying device of the invention with a hip mounting and a part of a hip rest.

DETAIL DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0017] The carrying device of the invention comprises (FIGS. **1-3**) a rigid support rack formed as a hard shell of plastic and including a support **1** configured as a substantially flat wall which on its sides is slightly bent forward. In the normal position of the carrying device as shown in FIGS. **1**,**2**, which the carrying device will assume when placed on the ground and also while being carried, the support rack is oriented largely vertically with a slight forward inclination.

[0018] The lower region of the support **1** is joined by a hip rest comprising two plate-shaped extensions **2***a*,*b* of a length of about 20 cm which are formed integrally with the support **1** and which, in parallel arrangement, project substantially

horizontally in forward directions from the lateral edges of the support. Attached on each of the extensions **2***a,b* is a strip **3**. The strips **3** form a hip mounting having connected thereto a cushioned waist belt **4** whose inner side forms an abutment face. The waist belt comprises a central portion arranged between the strips **3** and being joined on both sides by integrally formed side portions, the ends of the side portions being releasably attached to each other by a waist buckle **5**.

[0019] In the region of the upper end, the support **1** is joined by a shoulder rest **6** which is also formed integrally therewith, having a length of about 20 cm, being slightly obliquely inclined in an upward direction and projecting towards the front; further, the shoulder rest has a roof-like shape. Connected to the shoulder rest via a ball-and-socket joint **7** is a plate-shaped shoulder mounting **8**. On its front side which serves as an abutment face, the shoulder mounting is cushioned and carries, on both sides of the ball-and-socket joint **7**, respectively one shoulder belt arrangement consisting of a cushioned top belt **9** and a lower belt **10** as well as a buckle **11** connecting them. The lower belt **10** is connected to the buckle **11** in such a manner that the length of the belt arranged between the attachment to the shoulder mounting **8** and the buckle **11** is adjustable. Thus, the overall length of the loop formed by the top belt **9** and by said portion of the lower belt **10** is adjustable and can be adapted to the user's needs. The loop is normally dimensioned to pass relatively tightly over the shoulder and under the armpits. Thus, the loop lends a safe hold to the carrying device, allow only little freedom for uncontrolled movements of the device. Due to the ball-and-socket joint **7**, this will nonetheless cause no substantial restriction to the mobility of the user.

[0020] In the embodiment of the waist belt arrangement shown in FIGS. **4**,**5**, the lower belt **10** has been pulled through the buckle **11** all the way to the end of extension **2***a;b* and has its end attached to the upper side of the extension. The waist belt arrangement is adjustable between the first setting as shown in FIG. **4**. in which the portion arranged between buckle **11** and extension **2***a;b* is tensioned and the loop is wide, and the second setting as shown in FIG. **5**, in which the loop is narrow and the portion arranged between buckle **11** and extension **2***a;b* is slack.

[0021] The first setting is more convenient e.g. when the user moves uphill with a snowboard fastened to the carrying device because the pull in the rearward direction at the shoulder is slightly reduced and the support rack is more tightly fixed to the user. The circumstance that the flexibility of the back is somewhat more restricted will hardly cause disturbances when moving up-hill. The second setting is better suited for downhill movement because the flexibility of the back is hardly restricted. The lower belt **10** is fixed at the buckle **11** in such a manner that it cannot be shifted by a pulling force alone but only by intervention of the user. In both embodiments, the two shoulder belt arrangements can be connected by a chest belt extending horizontally along the front.

[0022] The space between the support **1** and the mountings arranged at distances from the latter, the hip mounting and the shoulder mounting **8**—which space is partially enclosed by the support **1**, the extensions **2***a;b* of the hip rest and the roof-like shoulder rest **6** which together form an integral bowl-like part while, however, being largely freely accessible from the front and the sides—is partially filled by a bag **12** fastened e.g. by belts to support **1** on whose front side it abuts while also resting on bent-in bottom portions of the extensions **2***a,b*. The bag is dimensioned to the effect that it will not fill out the space completely and thus be arranged at a distance from the user's back in all places. The front side of the bag has an opening **13** formed therein which is closeable e.g. by means of a zipper so that, when the carrying device has been taken off, the contents of the bag are directly accessible, irrespective of whether or not objects are fastened to the rear side of support **1**. Further, the bag can be provided with separate pockets which are accessible from all sides.

[0023] The support **1** comprises, on its rear side in the region of its upper end and its lower end, respectively one transverse fastening strap **14** and **15**. The fastening straps **14** and **15** can be used for strapping larger objects such as snowboards, skis, snowshoes, ski shoes, helmets, a bag or container to the support rack and thus fasten them safely and substantially without leaving clearances. Laterally attached to the extensions **2***a,b* are additional fastening straps **16** on which further objects such as e.g. bottler holders, spring safety hooks, cameras etc. can be suspended while keeping them accessible also without taking off the carrying device. Another fastening strap **17** is attached in the upper region of the shoulder rest **6**. In addition, fastening straps can be provided also laterally on the shoulder rest **6**. In this case, also skis can be attached by strapping them into place on the sides.

[0024] The ball-and-socket joint **7** between the shoulder rest **6** and the shoulder mounting **8** is illustrated in FIG. **6**. The shoulder rest **6** comprises a centrally arranged socket **18** forming a concave, spherically calotte-shaped outer joint face. Opposite thereto, the shoulder mounting **8** has a head portion **19** integrally formed thereto, constituting a corresponding semispherical convex inner joint face arranged in abutment with the outer joint face but being slightly larger so that the head portion **19** can be turned through a limited spatial angle relative to the socket **18**. Centrally in the inner joint surface, a circular recess **20** is provided, with a wall **21**, having the shape of a conical shell, extending from the edges of the recess. Wall **21** is interrupted below the tip of the cone and thus, in this region, is formed with a hole located substantially in the center of the inner joint face, while another hole is formed opposite thereto in the center of socket **18**.

[0025] Passing through the two holes is an elongate connection member **22**, e.g. a length of wire or preferably a pin, provided with abutment members **23**,**24** which, respectively on the outer side, extend laterally beyond the holes so that the connection member **22** is effective to hold the ball-and-socket joint together. The abutment member **23** arranged on the outer side of the socket **18** is configured to be displaced on the connection member **22**, e.g. is formed as an internally threaded nut engaging a threaded portion of connection member **22**. By shifting the abutment member **23**, the press-on force between the outer and inner joint surface can be adjusted, thus allowing for adjustment of the resistance of the ball-and-socket joint **7** against rotation. It is also possible to remove the abutment member **23** completely whereupon the shoulder mounting **8** can be taken off. Of course, instead of the abutment member **23**, it can also be the abutment member **24** which is formed to be adjustable and removable.

[0026] The anchoring of the strips **3** of the hip mounting to the ends of the extensions **2***a;b* of the hip rest is configured to allow for height adjustment of the strips. For this purpose, it is provided that, along the linear, substantially vertical edge at the end of the extension **2***a*—the connection between the extension **2***b* and the corresponding strip is configured identically—a number of mutually equidistant holes **25** are

arranged while the corresponding strip **3** is also formed with a hole at a medium height, which hole is arranged in congruence with one of the holes **25**. Arranged to extend through these holes is a bolt **26** which is fixed by a nut. After removal of the bolt **26**, the strip **3** can be displaced, another one of the holes **25** can be brought into congruence with the hole in the extension **2***a*, and the bolt **26** can be passed through and be fixed again. In this manner, the distance of the waist belt **4** from the shoulder belt arrangements can be adapted to the length of the user's back.

[0027] Numerous modifications of the described embodiment are possible without departing from the scope of the invention. Thus, for instance, the support can be perforated in the manner of a frame, or the shoulder rest can be can have a bracket-like configuration. If no larger object is fastened to the support, the bag is accessible also from behind and from above, respectively, and can also extend beyond the support towards the rear or upwardly, particularly when the bag has been filled to a considerable extent. It is also possible to provide bags of different sizes for exchange, for instance—in case of a frame-like configuration of the support—a smaller bag for day-trips, which on the rear side does not project beyond the support and thus will not impede the attachment of an object there, and a larger bag for several days' excursions, which does project on the rear side. In the latter case it may happen, depending on the circumstances, that larger objects can be attached only on the sides of the support. Further, it is possible to provide a plurality of bags and pockets for alternative or simultaneous attachment on the support. It is essential that the hip mounting and the shoulder mounting, at any rate their abutment faces provided to abut on the user's body, are arranged with sufficient distance, normally about 10 cm to 25 cm and preferably 15 cm to 20 cm, in front of the support so that the user will not collide with them and will not be impeded in his or her movements. The hard shell construction can also be replaced by a rack structure consisting of rods or hollow rods made of metal. Instead of a ball-and-socket joint, an elastic connection or, depending on the circumstances, a linear joint can be provided. It is also possible, should this appear more beneficial with regard to the prevailing usage and the kinds of motions associated with that usage, to form the hip mounting as one integral part and to couple the same via a joint, e.g. again a ball-and-socket joint, to a hip rest formed e.g. in the manner of a bracket. In case of such a provision, however, it is advisable that the shoulder mounting is rigidly connected to the shoulder rest to ensure a sufficient fixation of the position of the support rack. Also the height adjustment of the waist belt can be realized by a construction different from the one mentioned above.

What is claimed is:

1. A carrying device, comprising a bag for accommodating objects to be carried, a waist belt and two shoulder belt arrangements, characterized in that said device comprises a rigid support rack including a substantially vertical support and a hip mounting arranged in the region of the lower end of the support at a distance from the support and having the waist belt connected thereto, and a shoulder mounting arranged in the region of the upper end of the support also at a distance from the support and having the shoulder belt arrangements attached thereto at least on one of their ends while the bag is fastened to the support rack in such a manner that the bag is arranged at least partially spaced in front of the support but does not extend beyond the hip mounting and the shoulder mounting.

2. The carrying device according to claim **1**, wherein the hip mounting and the shoulder mounting are respectively spaced from the support by at least 10 cm.

3. The carrying device according to claim **1**, wherein the hip mounting is attached to a hip rest which comprises preferably two extensions projecting in a substantially parallel arrangement from the sides of the support towards the front.

4. The carrying device according to claim **1**, wherein the shoulder belt arrangements respectively comprise a top belt and a lower belt which are anchored at the shoulder mounting, and that, respectively, the top belt is connected via a buckle to the lower belt, and that the overall length of the portion of the top belt arranged between the shoulder mounting and the buckle and of the portion of the lower belt arranged between the shoulder mounting and the buckle can be adjusted at the buckle.

5. The carrying device according to claim **4**, wherein the lower belt is arranged to extend, via the buckle where it can be fixed, to an anchoring site arranged in the region of the lower end of the support rack.

6. The carrying device according to claim **4**, wherein the shoulder mounting is fastened to a shoulder rest tightly connected to the support.

7. The carrying device according to claim **1**, wherein the shoulder mountings or the hip mounting is articulated to the support.

8. The carrying device according to claim **7**, wherein said articulated connection is realized by a ball-and-socket joint.

9. The carrying device according to claim **8**, wherein the ball-and-socket joint comprises a socket with a spherical concave outer joint surface, and a head portion with a convex inner joint surface arranged in abutment with the outer joint surface, which head portion can be turned through a limited spatial angle relative to the socket, and further an elongate connection member which, via a recess formed in the inner joint surface, connects the socket to the head portion where the connection member is anchored in the region of the center of the inner joint face.

10. The carrying device according to claim **9**, wherein the pressure exerted by the outer joint surface on the inner joint surface is adjustable by varying the anchoring connection of the connection member, preferably at the socket.

11. The carrying device according to, claim **1**, wherein the waist belt is height-adjustable relative to the support.

12. The carrying device according to claim **1**, wherein the support is formed as a substantially planar wall member having the bag arranged on its front side.

13. The carrying device according to claim **3**, wherein the support, the hip rest and the shoulder rest are integrally formed in a shell-shaped configuration.

14. The carrying device according to claim **1**, wherein the support has its rear side provided with at least one fastening strap arranged respectively in the region of the upper end and the lower end of the support.

15. The carrying device according to claim **1**, wherein the bag is provided with at least one closeable opening on its front side.

16. The carrying device according to claim **2**, wherein said hip mounting and the shoulder mounting are respectively spaced from the support in the range between about 15 cm to 20 cm.

17. The carrying device according to claim **14**, wherein said fastening strap is at least one transverse fastening strap.

18. The carrying device according to claim **6**, wherein the support, the hip rest and the shoulder rest are integrally formed in a shell-shaped configuration.

19. The carrying device according to claim **12**, wherein the support, the hip rest and the shoulder rest are integrally formed in a shell-shaped configuration.

* * * * *