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(54) Rucksack frame fastening means.

(57) At least one end of a rucksack frame member (22 or 23) may be secured to a fabric sack (21) by being accommodated in a passageway defined by a raised portion (12) of a fastening device (10), a further portion (11) of which is fixed to the sack (21). Movement of the frame member end through the passageway is limited by abutment against a stop member in the form of a resilient flange (13) projecting into the passageway. However, during assembly of the rucksack in the case where the frame member is a bar (22 or 23), it can be inserted right through the passageway, past the stop member (13), the latter springing back to block the passageway once the trailing end of the bar has passed thereby.

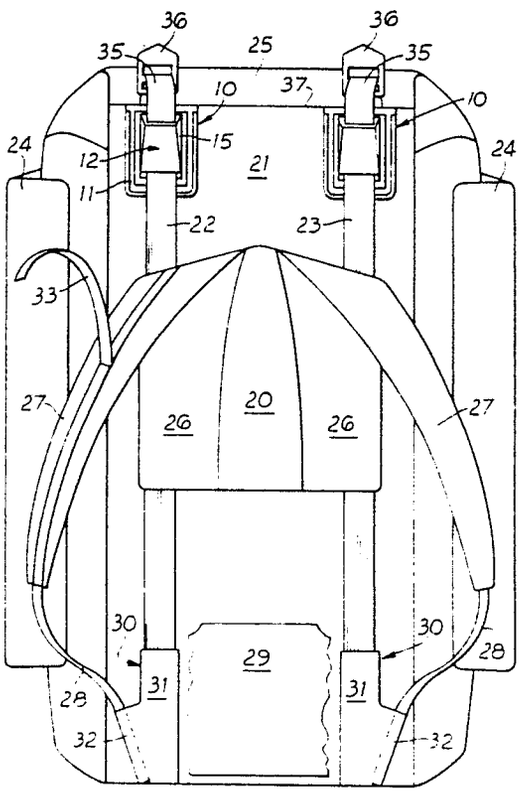

Fig. 4

EP 0 260 800 A2

RUCKSACK FRAME FASTENING MEANS

This invention relates to means for fastening a substantially rigid rucksack supporting frame to a fabric sack.

A rucksack supporting frame conventionally comprises either a generally rectangular metal structure or else a pair of vertically arranged metal bars or rods attached to each other by straps or other webbing. More recently, a pair of substantially parallel metal bars have been used as a frame, which bars are connected only by way of a slideable plate bearing scapula pads. In all cases, the frame is connected to the exterior of the fabric sack, at the rear thereof, i.e. the side designed to face the back of a user. Conventionally, such connection has been achieved by fabric pockets, sewn or otherwise secured to the rear of the sack, into which the ends of frame members, or the corners of a rectangular frame or else projections from a substantially rectangular frame are inserted. For strength and resistance to tearing, the fabric used for such pockets is usually tough woven webbing of synthetic material, or else leather or imitation leather.

It is an object of the present invention to provide improved fastening means for a rucksack frame as an alternative to the conventional "pocket" manner of frame attachment.

With this object in view, the present invention provides a fastening device made of resilient material and comprising a portion which is adapted for securement to a first element, such as a fabric sack, and a portion which defines a passageway for insertion therethrough (from either end) of an end region of a second element, such as a rucksack frame member, as well as a stop member which limits subsequent movement of any second element inserted into the passageway by abutment of the end of the element thereagainst.

Preferably the portion adapted for securement to the first element and the portion defining the passageway and the stop member are integrally formed from pliable plastics material.

Preferably, the portion adapted for securement to the first element, e.g. the fabric sack, is generally rectangular in shape and surrounds the portion defining the passageway and the stop member.

The invention also provides, as a second aspect a rucksack comprising a fabric sack and a supporting frame therefor in the form of at least one metal bar which is attached in generally vertical disposition to the rear of the fabric sack, the metal bar of the frame being connected to the sack, at least at its upper end, by means of a fastening device having the features specified above.

Preferably two parallel bars constitute the frame, these being connected to the sack at their upper ends either by respective fastening devices or by a common fastening device of the type defined above.

Advantageously, the lower end of the or each metal bar of the rucksack frame is connected to the fabric sack by means of a piece of webbing which is attached to the sack so as to provide a pocket (i.e. a receptacle with a closed end) as well as a fan-shaped flap or gusset for attachment of one or more straps.

The invention will be described further, by way of example, with reference to the accompanying drawings, in which:

Fig. 1 is a perspective view of a preferred embodiment of the fastening device of the invention;

Fig. 2 is a longitudinal cross-section along the line II-II indicated in Fig. 1;

Fig. 3 is a perspective view of a webbing pocket which may be used in conjunction with the fastening device of Figs. 1 and 2 for attachment of a frame to a rucksack; and

Fig. 4 is a diagrammatic view of the rear of a rucksack (with the lumbar flaps and hip belt straps cut away) in accordance with the second aspect of the invention and incorporating a pair of fastening devices as shown in Figs. 1 and 2 together with webbing pockets as shown in Fig. 3.

With reference to Figs. 1 and 2 a preferred practical embodiment 10 of the fastening device of the invention comprises a single piece of resilient plastics material which is moulded to provide an outer generally rectangular and generally planar attachment portion 11 which surrounds a central, raised portion 12 defining a tunnel or passageway. The upper surface of the outer portion 11 is formed with grooves 14 which provide thinner areas of material whereby the device can be stitched onto a fabric sack or other element. The corners of the device are rounded, as shown.

The central portion 12 is raised to form the tunnel or passageway by having low side walls 15, which taper in the longitudinal direction of the device and which serve to support a frontal wall 17, which is correspondingly inclined in the longitudinal direction of the device. A transverse elongate opening 18 exists at that end of the tunnel or passageway at the lowest end of the walls 15, 17. At the other end of the tunnel or passageway (i.e. at the

highest end of the walls 15, 17) the front wall 17 is extended by a flange 13 projecting downwards to the level of the outer portion 11 and thereby providing a stop member for any element located in the tunnel or passageway. When viewed from the end of the device nearest the highest ends of the tunnel forming walls 15, 17, this flange 13 extends behind an end wall of the central portion 12 as constituted by a low ridge 19 extending between the walls 15.

The use of the above-described fastening device 10 will be explained with reference to Fig. 4 which shows a preferred rucksack construction incorporating a pair of such devices.

The rucksack comprises a fabric sack 21 and a supporting frame in the form of two aluminium bars 22, 23 which are attached in generally parallel vertical disposition to the rear panel of the sack 21. The sack 21 also has side pockets 24 and an upper opening flap 25, which are not shown in any detail. The metal bars 22, 23 are connected to one another by a slideable plate 20 upon which scapula pads 26 are mounted. Respective shoulder pads 27 leading to shoulder straps 28 extend from the aforesaid scapula pads 26, as shown in Fig. 4. Between the lower ends of the metal bars 22, 23 a lumbar pad 29 is secured to the rear panel of the sack 21, e.g. by stitching. Lumbar flaps leading to hip belt straps extend from the respective sides of the lumbar pad 29, but in the drawing these have been cut away to reveal the underlying frame member connections.

The upper end of each of the metal frame members 22, 23 is secured to the rear of the sack 21 by a fastening device 10 as shown in Figs. 1 and 2 and as described above, whilst the lower end of each frame member is secured by a webbing component 30, illustrated separately in Fig. 3.

During manufacture of the rucksack, the fastening devices 10 are precisely positioned at a predetermined distance apart and at a predetermined distance from the respective side edges of the rucksack rear panel. They are orientated with the stop members 13 facing the top of the sack 21 and the upper edges of the attachment regions 11 closely adjacent the upper edge of the rucksack rear panel. The devices 10 are then firmly secured by stitching all around the grooving 14 in the respective regions 11. The upper margins of the regions 11 may additionally be stitched into the seam 37 between the rear panel and the opening flap 25 of the sack. Moreover, as in the illustrated example, webbing loops 35 with attached buckles 36 may also be incorporated, being secured at one end in the upper seam 37 and at the other end by extending under the respective stop members 13, and through the longitudinal passageways 12 to beneath the lower edge of each device 10.

The webbing components 30 are arranged on the lower margin of the rucksack rear panel and are secured thereto by stitching so as to provide upwardly-open longitudinal pockets 31 which are in exact alignment with the raised portions 12, and thus the passageways, of the devices 10. The webbing components 30 are so shaped that in each case a fan-shaped flap or gusset 32 remains outside the pocket stitching and projects towards the respective side edge of the rucksack rear panel. The webbing used for the components 30 is preferably tough flexible plastics material.

In each case the fastening device 10 at the top and the webbing component 30 at the bottom must be precisely aligned and spaced a precisely determined distance apart, for reasons to be shortly explained. The necessary accuracy is achieved by the components being positioned and subsequently held during stitching, by a computer-controlled jig.

The aluminium bars 22, 23 can then be mounted onto the fabric sack by being, in each case, inserted through the top of the raised portion 12 of the fastening device 10, thus pushing back temporarily the resilient flange 13. The length of each bar 22, 23 is chosen such that when the lower end thereof is inserted as far as possible into the aligned pocket 31 in the corresponding lower component 30, the upper end thereof is positioned in the passageway of the fastening device 10 and just clears the flange 13 so that the latter snaps back to act as an upper stop member. The precise positioning of the fastening devices 10 and the components 30 enables this operation of frame member mounting to be carried out by machine, yet without allowing for any play between the ends of the bars and the passageway or pocket which would decrease the rigidity of the structure and could lead to premature wear.

Subsequently, the plate 20 is mounted transversely between the bars 22, 23 on respective sliders (not shown). The ends of the shoulder straps 28 are stitched to the gussets 32. This is more convenient and also gives a stronger connection than separate attachment of the ends of the straps 28 to the base of the sack 21. The height of the slideable plate 20 is adjusted to the torso length of the user and when the position of the plate 20 is approximately determined, straps 33 attached to the shoulder pads 27 are secured to the buckles 36. (In the illustrated example the strap 33 is only shown on one of the shoulder pads 27 to avoid complicating the drawing).

The particular embodiment of the fastening device which has been described above is particularly economical to produce since as there are no double thicknesses it can be integrally moulded from a flat piece and the amount of material required is minimized. Moreover, as mentioned it lends itself to automated production techniques.

However, the invention is not limited to the exact details of the illustrated embodiment and many variations are possible. For example, the fastening device need not be rectangular and it could be in the form of a broad strip for attachment right across the top of a rucksack rear panel and incorporating two raised portions for securement of the upper ends of two metal bars. Also similar devices could be used at the base of the metal bars, although obviously the bars only need to be inserted from one end. Whichever form the device takes, however, it undoubtedly leads to a stronger fastening of the frame to the sack than achieved by means of conventional webbing pockets.

Claims

1. A fastening device (10) made of resilient material and comprising a portion (11) which is adapted for securement to a first element (21), and a portion (12) which defines a passageway for insertion therethrough (from either end) of an end region of a second element (22,23), as well as a stop member (13) in the form of a resilient flange which projects into the passageway and limits subsequent movement of any second element (22,23) inserted into the passageway by abutment of the end of the element thereagainst.

2. A fastening device as claimed in claim 1 wherein the portion (11) adapted for securement to the first element (21) and the portion (12) defining the passageway and the stop member (13) are integrally formed from pliable plastics material.

3. A fastening device as claimed in claim 1 and 2 wherein the portion (11) adapted for securement to the first element (21) is generally rectangular in shape and surrounds the portion (12) defining the passageway and the stop member (13).

4. A fastening device as claimed in claim 1, 2 or 3 wherein the portion (11) adapted for securement to the first element (21) is provided with grooves (14) to accommodate stitching.

5. A fastening device as claimed in any preceding claim wherein the stop member (13) is disposed at or adjacent one end of the passageway.

6. A rucksack comprising a fabric sack (21) and a supporting frame in the form of a least one bar (22,23) which is attached in generally vertical disposition to the rear of the fabric sack, the or each bar of the frame being connected to the sack (21) by fastening means at its upper and lower ends, characterised in that the fastening means at at least the upper end of the or each metal bar (22,23) consists of a fastening device (10) of resilient material comprising a portion (11) which is secured to the sack (21) a portion (12) which defines a passageway in which the upper end of the bar (22,23) is accomodated, and a stop member (13) in the form of a resilient flange projecting into the passageway, upward movement of the bar (22,23) being prevented by abutment of its upper end against the stop member (13).

7. A rucksack as claimed in claim 5 wherein the frame consists of two parallel bars (22,23) which are connected to the sack (21) at their upper ends by a common fastening device.

8. A rucksack as claimed in claim 5 or 6 wherein the lower end of the or each bar (22,23) of the rucksack frame is connected to the fabric sack (21) by means of a webbing component (30) which is attached to the sack (21) so as to provide a pocket (31) as well as a fan-shaped flap or gusset (32) for attachment of one or more straps (28).

9. A method of manufacturing a rucksack (21) wherein a fastening device (10) as claimed in claim 1 is secured in a predetermined position adjacent the top of a rear panel of the rucksack, the device being so orientated that the passageway defined by the central portion (12) extends longitudinally of the panel and the stop member (13) lies at or near the top of the passageway, a webbing component (30) is secured adjacent the bottom of the rear panel of the rucksack so as to provide an upwardly opening pocket (31) in alignment with the passageway, and a frame member in the form of a bar (22,23) is inserted through the top of the fastening device (10) and pushed past the resilient stop member (13) until its lower end is received in the pocket (31) and its upper end, having passed the stop member (13), lies in the passageway of the device (10) in abutment against said stop member (13).

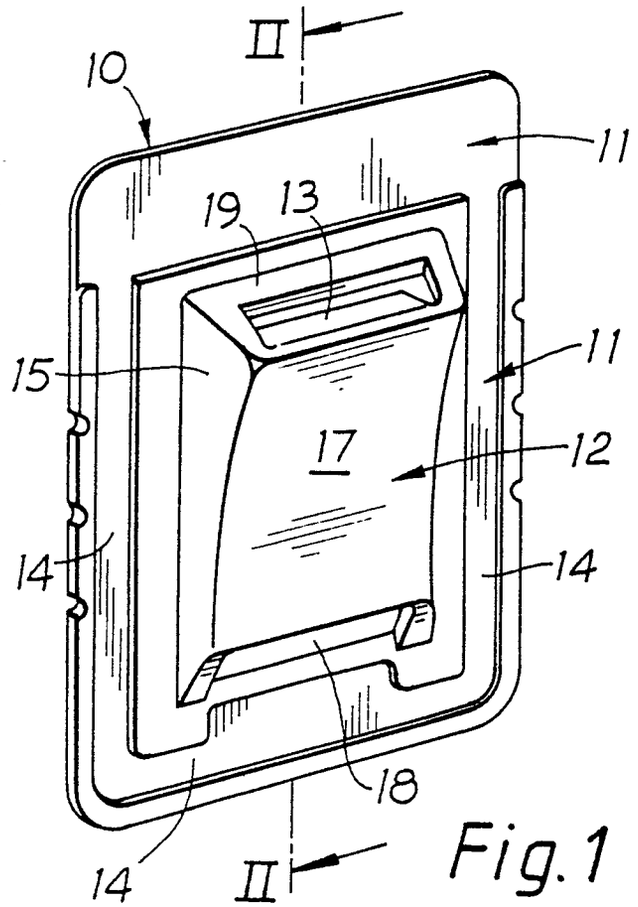

Fig. 1

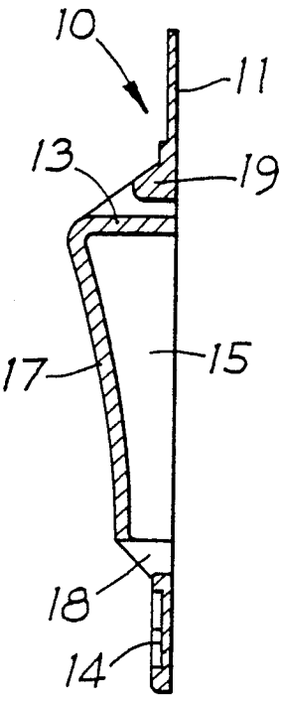

Fig. 2

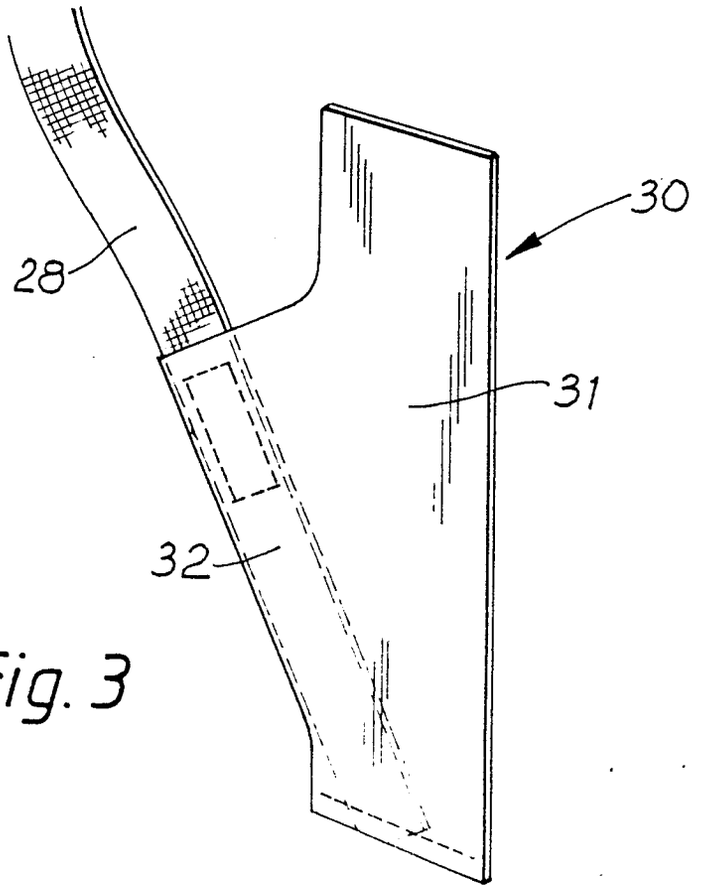

Fig. 3

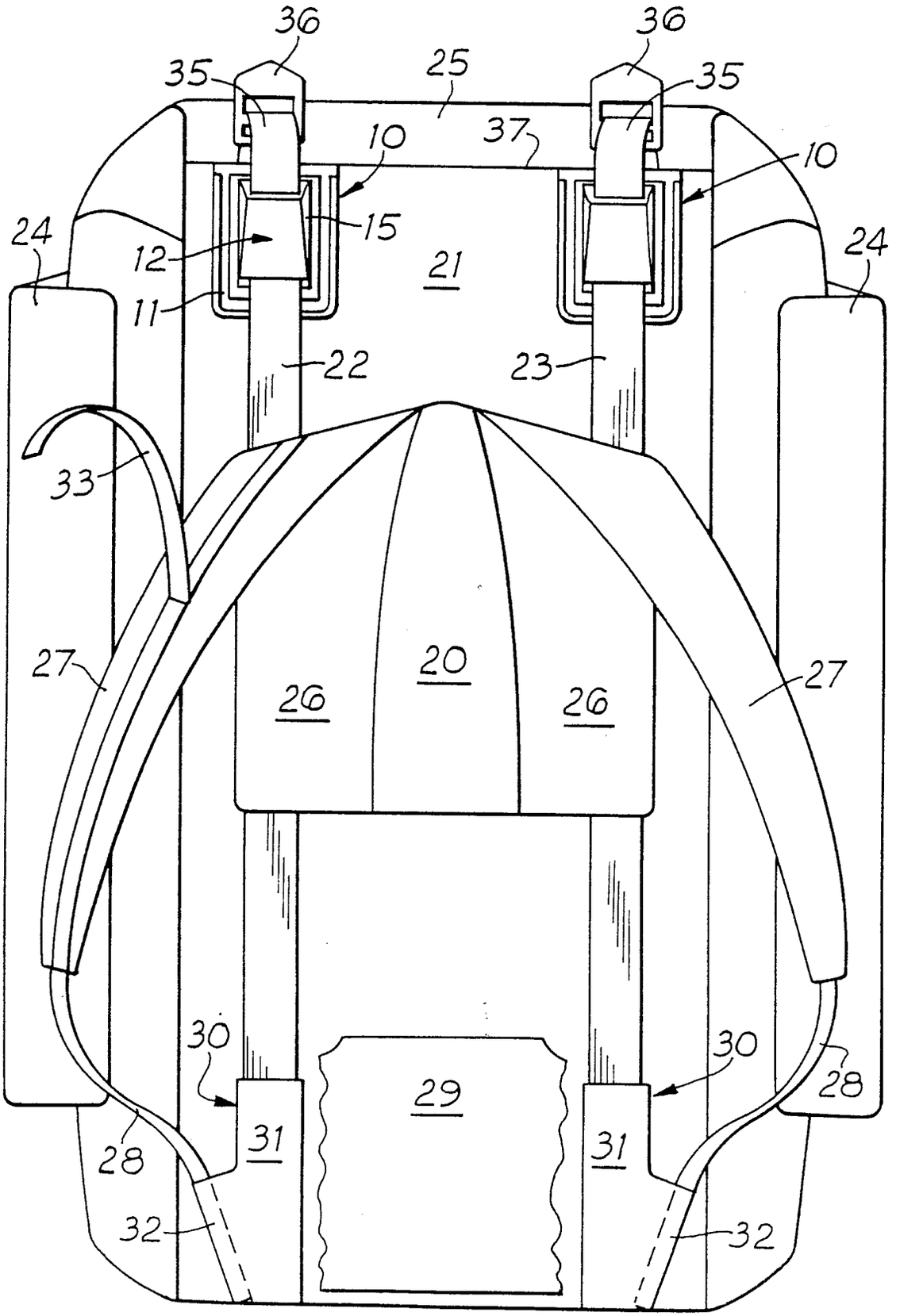

Fig. 4