(12) UK Patent Application (19) GB (11) 2569152 (13) A

(43) Date of A Publication 12.06.2019

(21) Application No: 1720399.3

(22) Date of Filing: 07.12.2017

(71) Applicant(s):
Wayne Arthur Bronser
Hardwick Lodge, Hardwick, Hardwick, Abergavenny, Monmouthshire, NP7 9AB, United Kingdom

(72) Inventor(s):
Wayne Arthur Bronser

(74) Agent and/or Address for Service:
Wayne Arthur Bronser
Hardwick Lodge, Hardwick, Hardwick, Abergavenny, Monmouthshire, NP7 9AB, United Kingdom

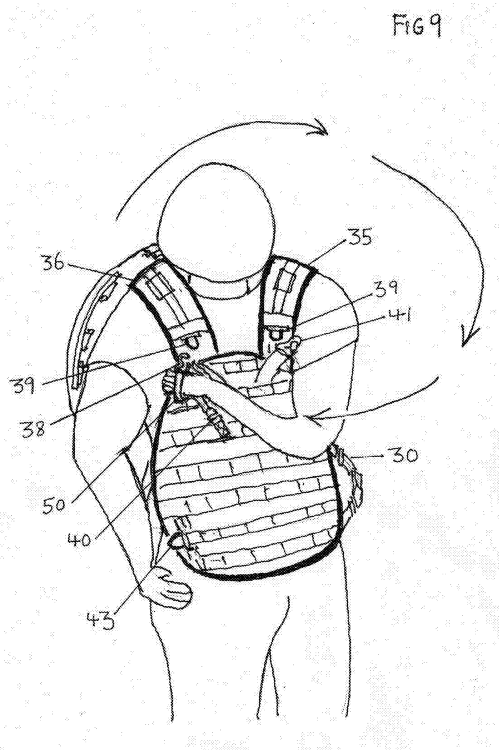
(51) INT CL:
A41D 13/015 (2006.01) ***A45F 3/04*** (2006.01)
A45F 3/06 (2006.01) ***F41H 1/02*** (2006.01)

(56) Documents Cited:
WO 2016/062745 A1 **WO 2012/001112 A1**
CN 206182618 U **CN 106037232 A**
US 9820558 B1 **US 6419132 B1**
US 20170318941 A1

(58) Field of Search:
INT CL **A41D, A45F, F41H**
Other: **WPI, EPODOC**

(54) Title of the Invention: **Shade**
Abstract Title: **Backpack convertible into body armour**

(57) In a first aspect a device is worn on the upper body and incorporates body armour which in a first configuration (fig.1) is worn on a user's back but with the use of a single hand can be deployed to a second configuration (fig. 3) where armour is deployed over the user's chest. This keeps the second hand free, for example for wielding a weapon. In a second aspect (figs. 8-9) a rucksack comprises two bags, an inner bag (23, fig.2) worn against the back and an outer bag (24, fig. 2) which when in a stored configuration are attached together but which can be deployed by detachment of a releasable fastening means 37 and then directed around the side of the body by handle 50 so that additional fastening means 38-43 can be engaged to hold the outer bag in its new position in front of the user. Preferably the fastening means comprise snap-hooks and D-rings. A deployable equipment pocket (28, fig. 2) may be provided. In use the backpack allows bulletproof armor to be hidden from view but deployed quickly in a crisis.



GB 2569152 A

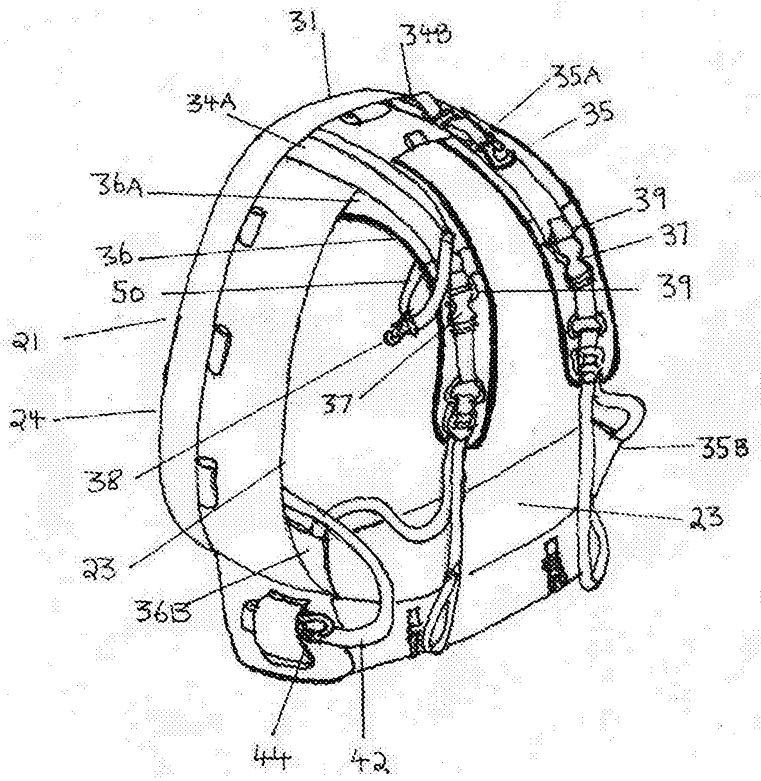


FIG 1.

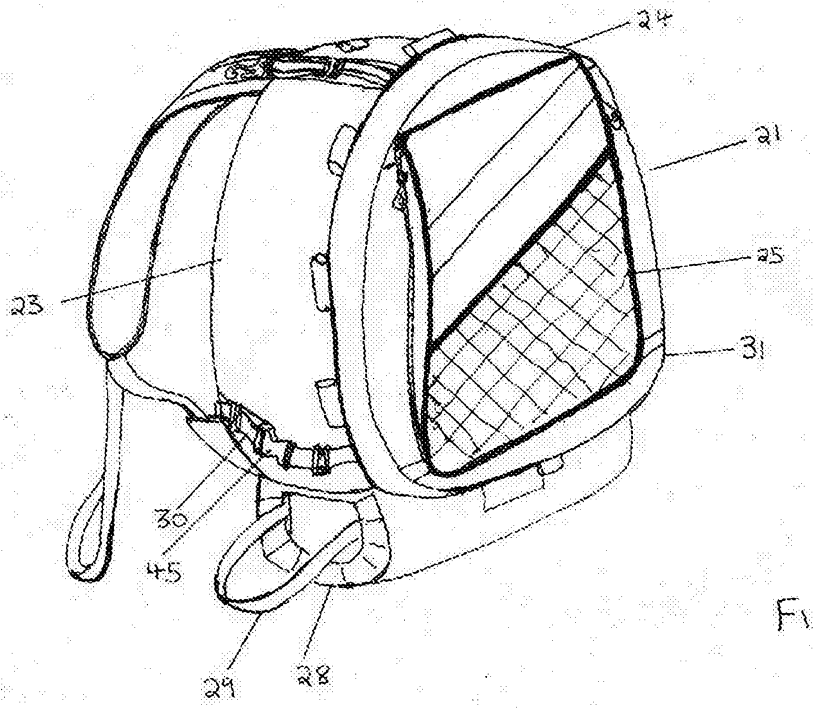


FIG 2

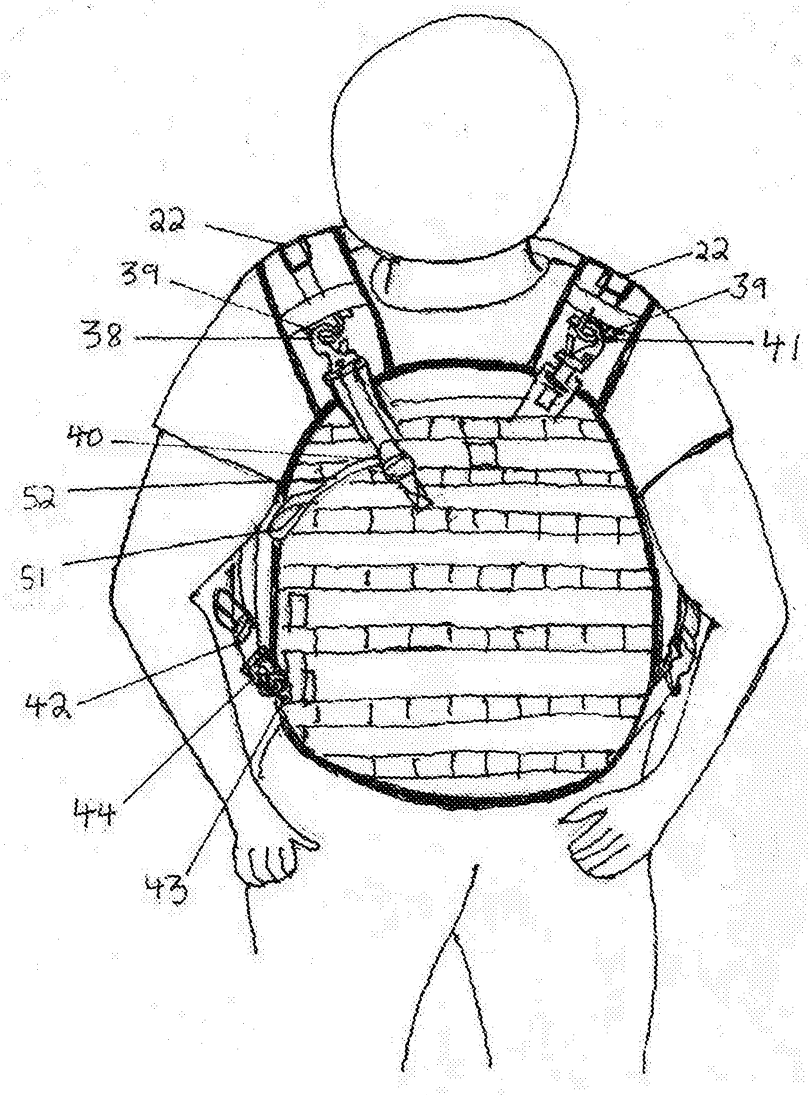


FIG 3

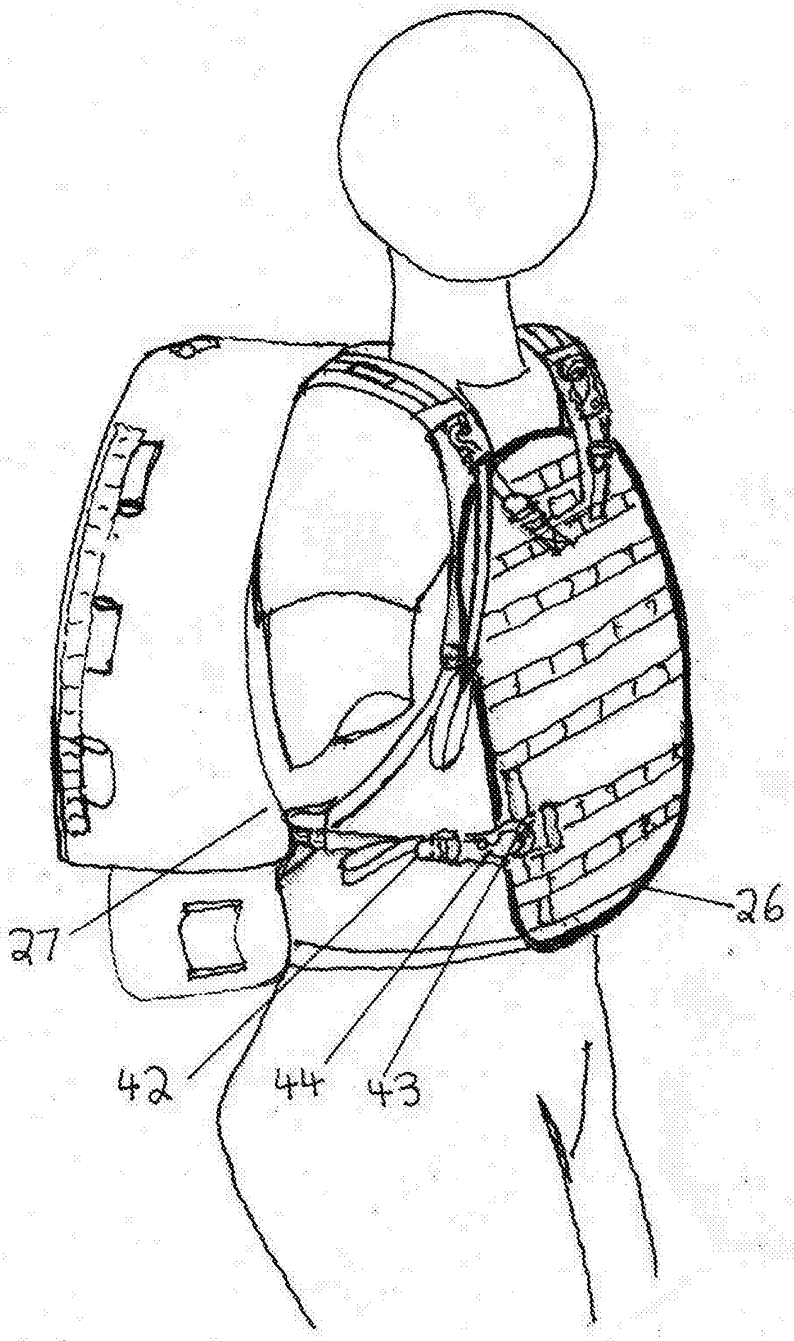


FIG 4

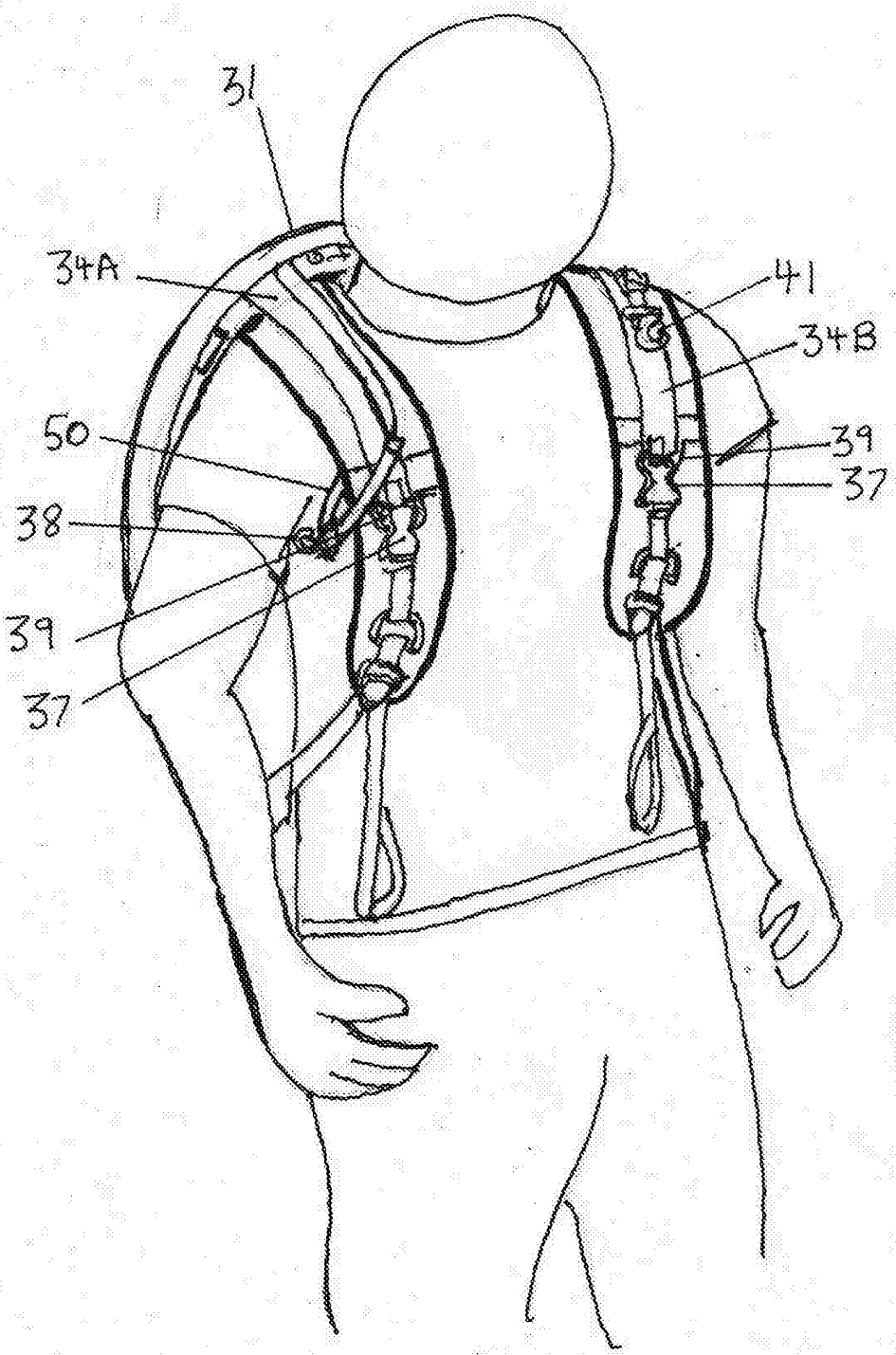


FIG 5

FIG 6

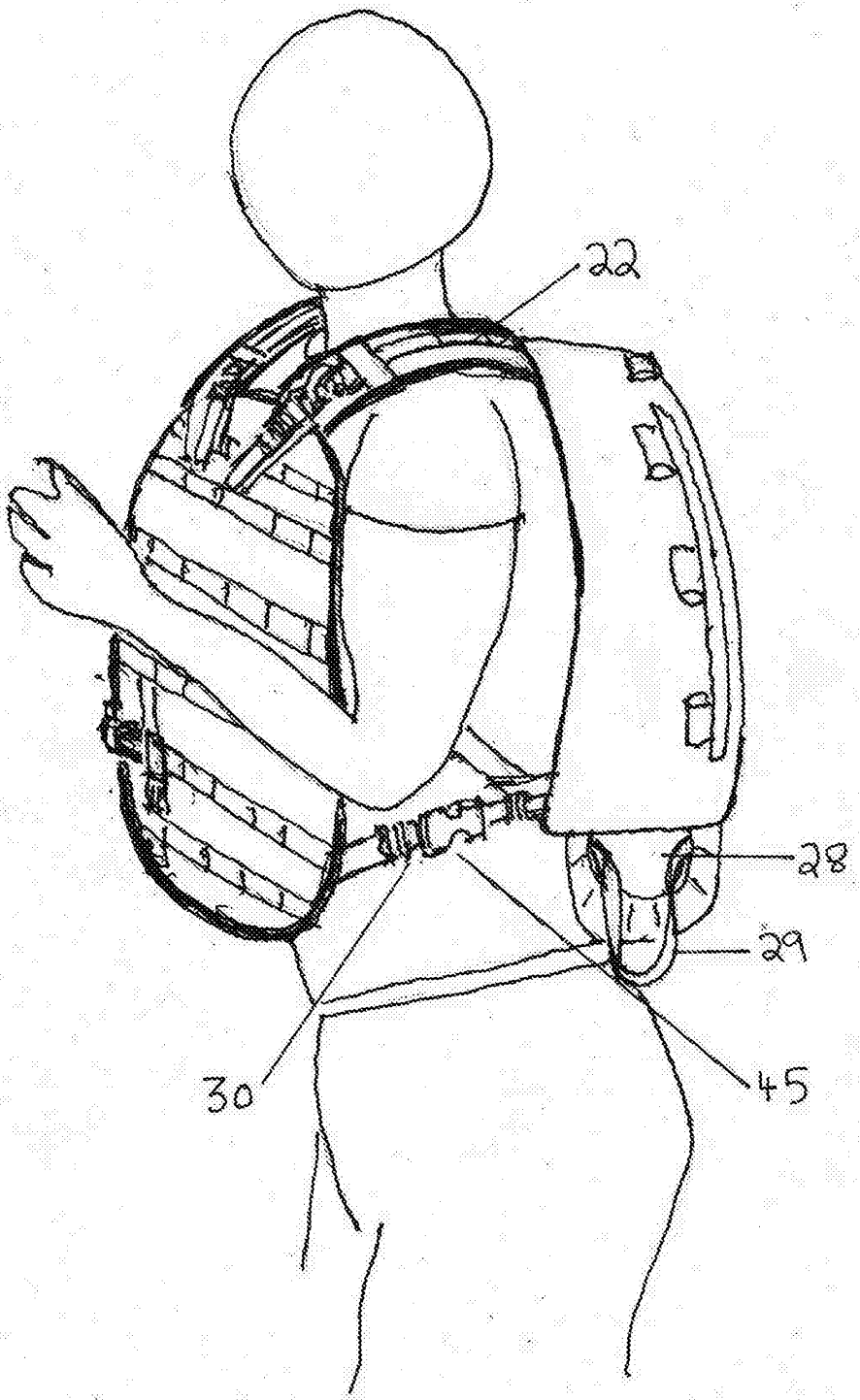
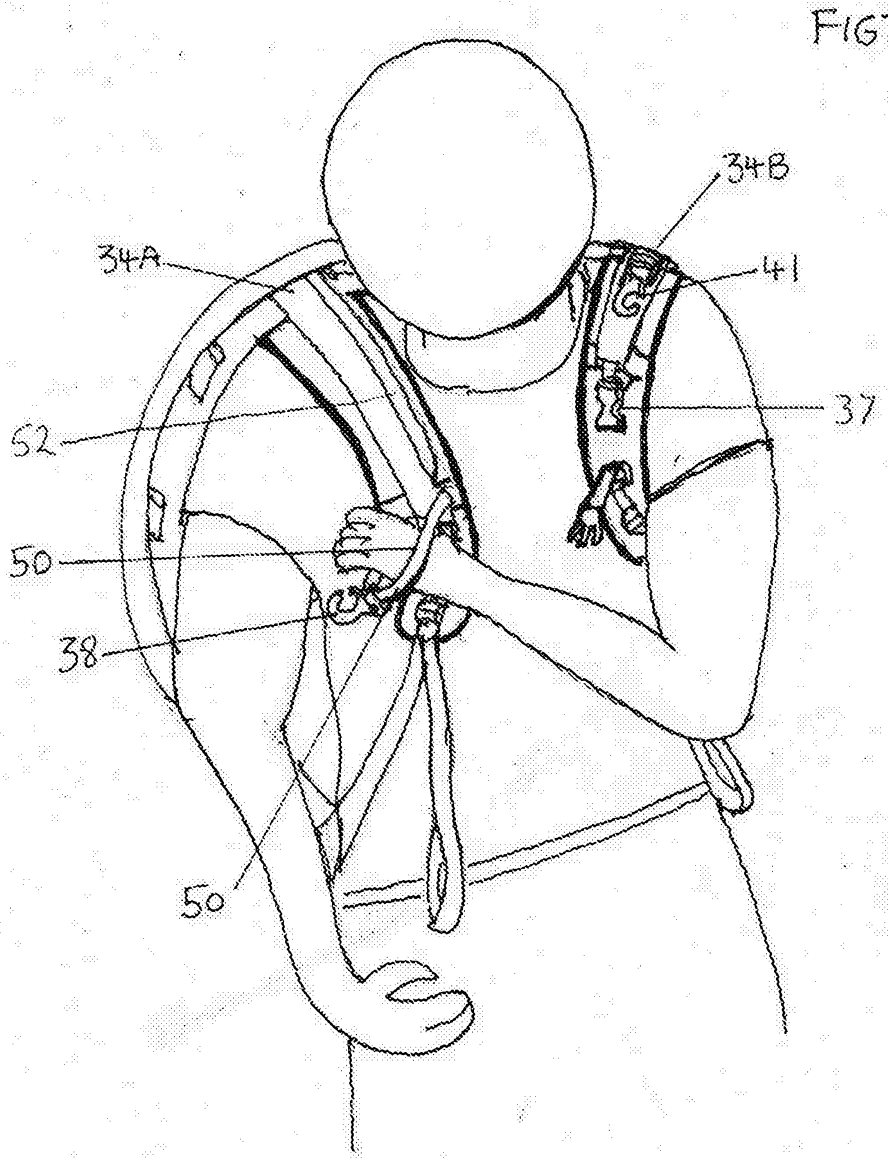


FIG7



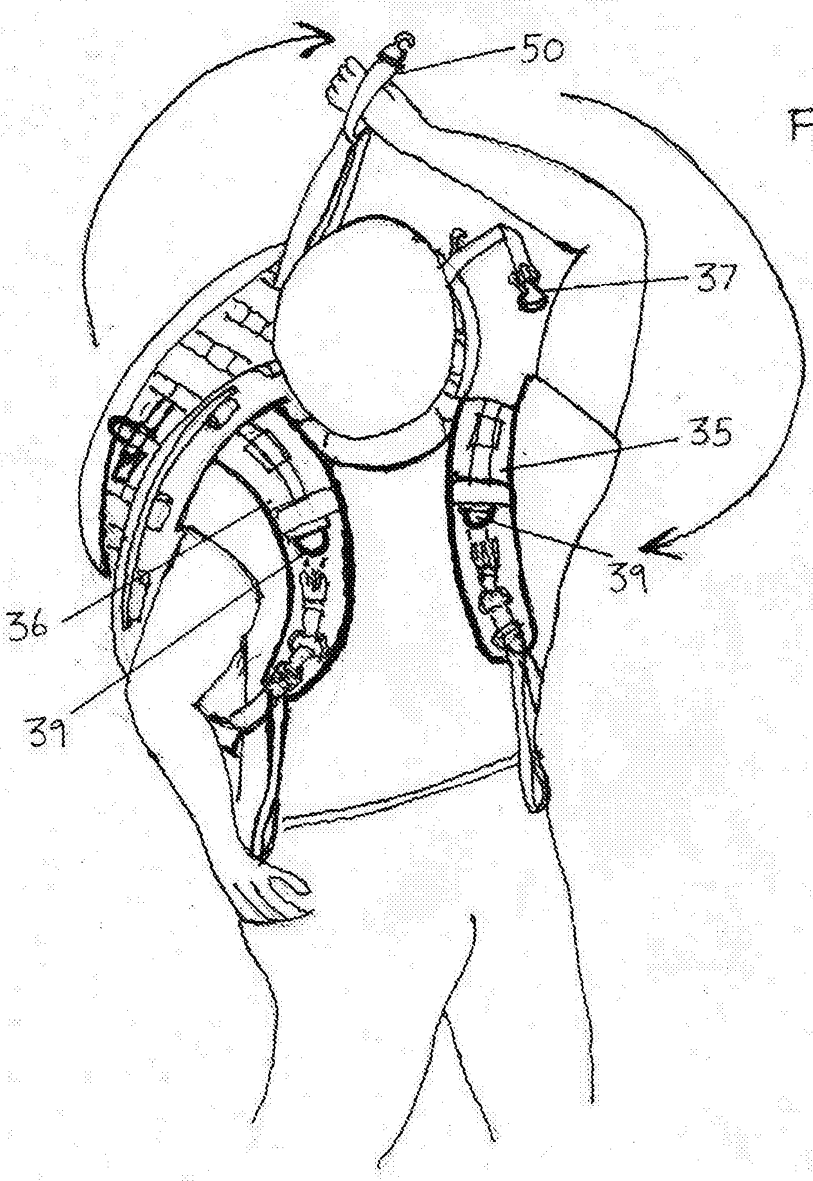


Fig 8

FIG 9

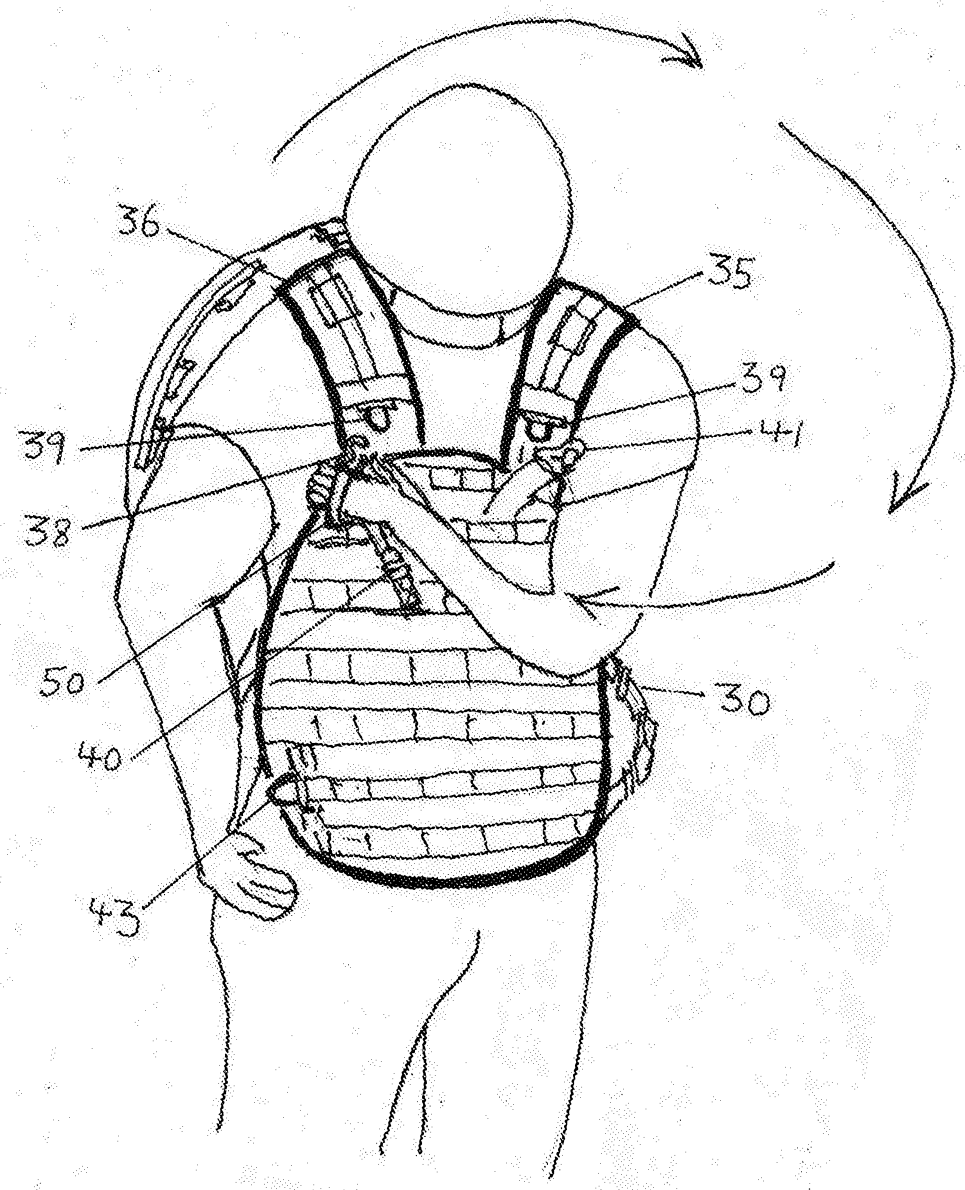
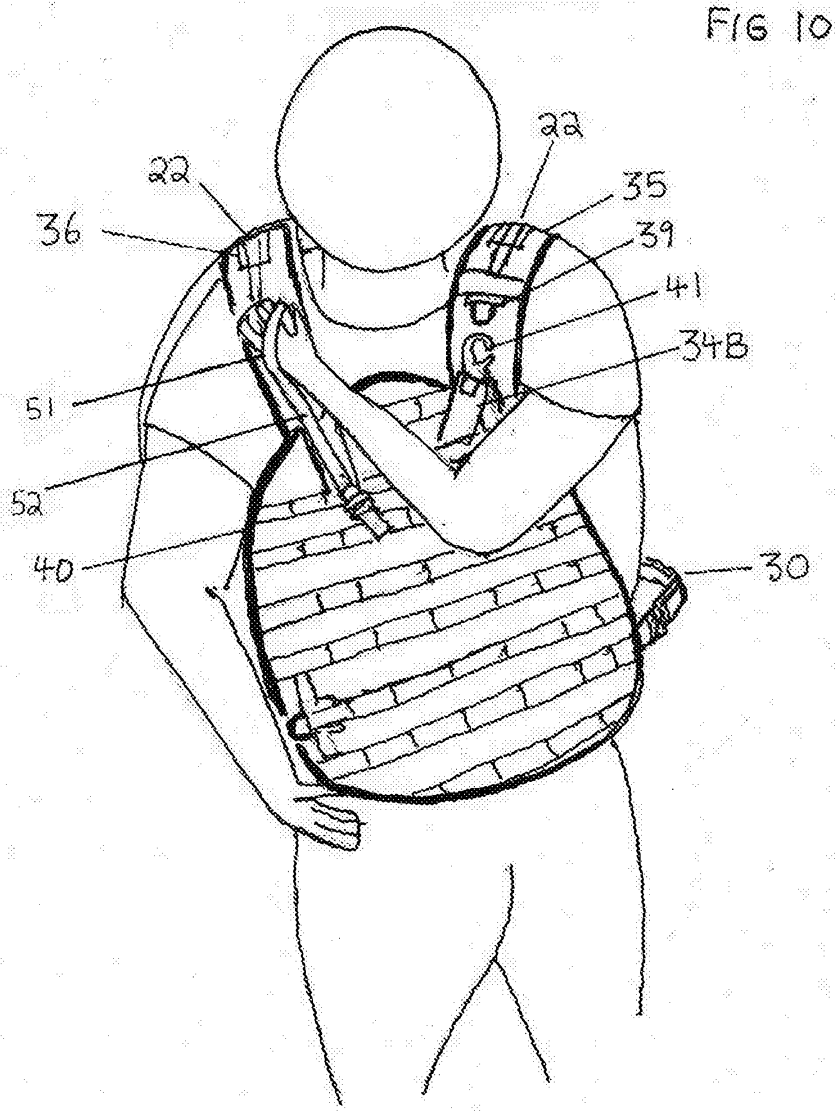


FIG 10



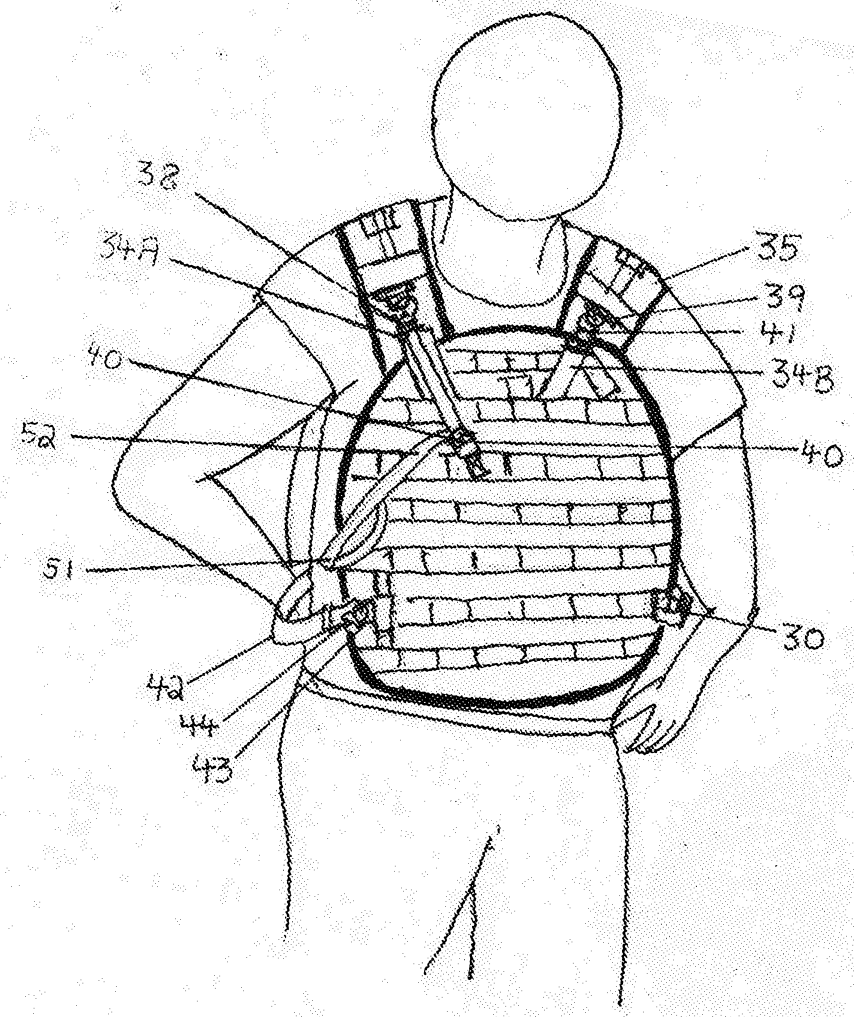


FIG 11

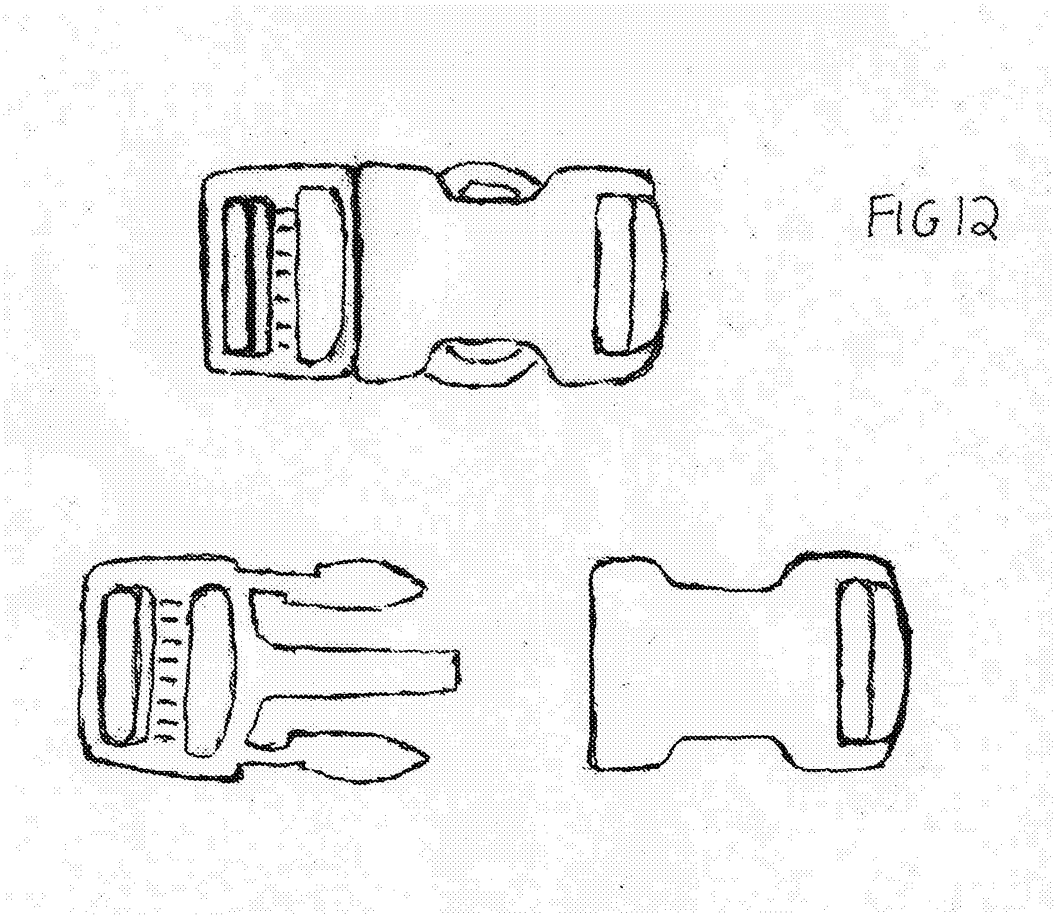


FIG 12

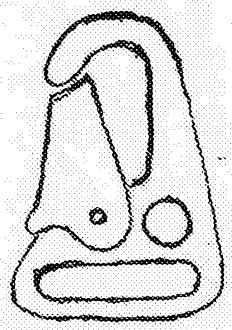


FIG 15

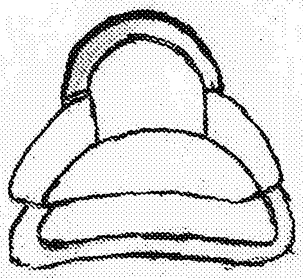


FIG 14

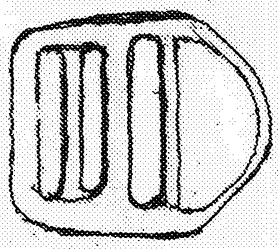


FIG 13

Body Armour

This invention relates to body armour for use by security guards, police, the armed forces etc.

The traditional bullet proof vest provides protection for the chest and upper torso, but has the disadvantage that it is permanently in place over the front of the wearer's chest, whether or not there is danger, and so limits and obstructs what the wearer can do.

There is therefore a need for body armour which leaves the wearer free of obstruction when protection is not required, but when danger arises, the wearer can rapidly move the armour from a storage position into a deployed position in which it protects the chest. There is also a need for such an arrangement in which the wearer can move the armour from the stored position into the deployed position using just one hand, so as to continue to leave the other hand free, for instance to hold a weapon.

In accordance with a first aspect of the invention, there is provided a device for wearing on the upper body and incorporating armour which, when the device is worn, is normally stored on the wearer's back, but can be rapidly moved into a deployed position over the front of the wearer's chest, the arrangement being such that the wearer can move the armour from the stored position into the deployed position using just one hand, leaving the other completely free, for instance to hold a weapon.

In accordance with a second aspect of the invention, there is provided a backpack comprising two bags, a back bag with shoulder straps which when worn lies over the wearer's back and a front (or outer) bag, which when in a stored position is releasably attached to the front bag behind the wearer and when moved into a deployed position lies over the wearer's chest, the back bag being arranged to receive armour to protect the wearer's back (back armour) and the front bag being arranged to receive armour which, when deployed, protects the wearer's front (front armour), the backpack further comprising:

first releasable fastening means for attaching the two bags together with the front bag in the stored position, and being releasable by the wearer using one of his or her hands;

a handle connected to the front bag to be grasped by the wearer using the same said hand;

whereby when the wearer has released the first releasable fastening means, he or she can grasp the handle and move the front bag from the stored position behind the wearer into the deployed position over the front of the wearer's chest;

and second releasable fastening means operable by the wearer using the same said hand to attach the two bags together when the front bag is in the deployed position;

the arrangement being such that the wearer can release the first releasable fastening means, move the front bag from the stored position into the deployed position and then operate the second releasable fastening means to attach the front bag to the back bag in the deployed position, all using just one hand, leaving the other completely free, for instance to hold a weapon.

Other aspects of the invention are set out in the claims.

It will be clear to the person skilled in the art that when reference is made to the 'stored position' or to 'the deployed position', this can refer either to the armour or to the bag containing the armour, as the context demands.

The invention will now be described with reference to the accompanying drawings in which:

Figures 1 and 2 are perspective views of a backpack in accordance with an embodiment of the invention. Figure 1 is a view with the shoulder straps to the fore; Figure 2 is a view from the opposite direction;

Figures 3 to 6 show the backpack being worn, with the armour in its stored position in Figure 5 and in its deployed position in Figs 3, 4 and 6

Figures 7 to 11 show successive steps in the deployment of the armour.

Figures 12 to 15 are close up views of various components of the back pack.

Figures 1 and 2 show a backpack 21 in accordance with an embodiment of the invention. The backpack is constructed of stitched canvas, nylon or the like and comprises two bags, a back bag 23 with shoulder straps 35 and 36; and attached thereto a front or outer bag 24. The shoulder straps 35 and 36 are stitched to the back bag 23 at upper points 35A and 36A and lower points 35B and 36B.

As shown in Figure 2, the backpack has a panel 25 releasably attached to the front bag 24. This is what an observer normally sees when looking at the wearer from behind the wearer. The panel 25 is interchangeable with like panels to change the outward appearance of the backpack.

Into each bag can be inserted armour e.g. in the form of panels or a shield. When the user puts his arms through the shoulder straps 35 and 36, the back bag 23 rests against his back and stays there, with the armour inside it providing protection to the user's back throughout. The front or outer bag 24 is attached to the back bag behind the user so that when it is in this stored position, the user's arms are completely free, as shown in Figure 5.

When danger is anticipated, the user can rapidly separate the front or outer bag 24 from the back bag and swing it round one side of his body into a deployed position over his chest, so that the armour inside it provides protection to the chest and upper torso, as shown in Figures 3, 4 and 6. This operation can be done using just one hand, so that the other remains completely free - for instance to hold a weapon.

When the front or outer bag 24 is swung from the stored position into the deployed position, it flips over, so the surface that was originally in a concealed position

adjacent to the back bag 23 now faces outwards in front of the user's chest, and any equipment clipped onto that surface e.g. a weapon will now be accessible to the user.

Each bag has a large compartment 26, 27 (Figure 4) to accommodate the armour, and each compartment has a Velcro closing flap and an internal Velcro harness to secure the armour ('Velcro' is a Registered Trade Mark). The armour inserted into the bags may comprise panels or a shield to provide ballistic protection. Different degrees of protection are provided by panels made of different thickness, materials, weight and cost, each grade of armour being suited to provide ballistic protection of a specified degree. The armour in the back pack may be curved so as to follow the shape of the wearer's back; and the armour in the front pack may be curved in the opposite direction, so that when it is flipped over into the deployed position, it then follows the shape of the wearer's chest.

The backpack has a complex arrangement of webbing straps, buckles, hooks and D-rings to enable the system to work as described above. This will now be described.

The front and back bags are connected together when the front bag is in the stored position by two top straps 34A and 34B located at the top of the backpack as shown in Figure 1. At one end the top straps 34A and 34B are stitched to the rim 31 of the front or outer bag 24 and at their other ends they are connected to the shoulder straps 35 and 36 by side-release buckles 37. The two bags are also connected together when the front bag is in the stored position by Velcro patches secured to the upper surfaces of the shoulder straps 35 and 36 which engage similar patches secured to the lower surfaces of the top straps 34A and 34B. Figure 3 shows the situation when the front bag has been moved to the deployed position, which reveals the Velcro patches 22 secured to the upper surfaces of the shoulder straps 35 and 36.

The two bags are also connected together by a first side strap 30 comprising a length of webbing stitched to the front bag, another length of webbing stitched to the back bag and a side release buckle 45 connecting the two lengths of webbing together (see Figure 2, and also see Figure 12 for a close up of buckle 45).

On the other side of backpack to the first side strap 30 is a second side strap 42 (Figure 1). Strap 42 differs from strap 30 in that it is just stitched at one end to the back bag 23 with a snap hook 44 at its free end. When the front bag is moved into the deployed position, this hook will be clipped by the user onto a D-ring 43 (Figure 3) stitched to what will then be the outer face of the front bag.

D-rings 39 are also stitched to the shoulder straps 35 and 36 under buckles 37; and snap hooks 38 and 41 are stitched to the top straps 34A and 34B. When the user releases buckles 37 so that the front bag can be swung into the deployed position, the hooks 38 and 41 will be clipped onto the D-rings 39 by the user to secure the front bag in the deployed position, as described below and shown in Figure 3. Figure 14 shows a close up of D-rings 39 and 43. Figure 15 shows a close up of snap-hooks 38, 41 and 44.

A loop of webbing 50 has a hook 38 connected to it and also a length of webbing 52 which extends from the hook 38 to the top strap 34A (see Figure 7). This end of the webbing 52 is stitched to the top strap 34A, while the other end of the webbing 52 passes through buckle 40 and terminates in a second loop 51 (see Figure 11).

The buckle 40 is stitched to what is the inside face of the front bag when in the stored position and the outer face of the front bag when in the deployed position. The buckle 40 is shown in Figures 10 and 11on the outer face of the front bag and in close up in Figure 13. The second loop 51 is used to pull the webbing 52 through the buckle 40 to raise the front bag into a final position which suits the height of the wearer. This is the fully operational position

The armour in the front bag 24 is deployed as follows:

(1) the wearer uses his left hand to release the buckle 37 which connects the top strap 34B to the shoulder strap 35

(2) the wearer grips the loop 50 again with the left hand and at the same time releases the other buckle 37 (which is nearby) using the same hand (see Figure 7).

These actions separate the top straps 34A and 34B from the shoulder straps 35 and 36, and release the front bag so that it is now attached to the back bag by just the Velcro patches 22 (although the bags are still connected by the side strap 30).

(3) the wearer pulls loop 50 upwards (Figure 8) to release the Velcro patches and then continues in a generally curved motion, as indicated by the arrows in Figure 9, thereby moving the front bag 23 from the back of the user around his or her left-hand side to the deployed position in which the armour in the bag 23 protects the chest and abdomen.

(4) At the end of this movement, the user clips the hook 38, which is attached to the loop 50 and to the top strap 34A (by way of the webbing 52), to the D-ring 39 attached to the shoulder strap 36, again using the left hand. The armour in the front bag is now secured in its deployed position.

Further adjustment and attachment steps can then be made as described in steps (5) and (6).

(5) The second loop 51 is gripped by the left hand (see Figure 10) to pull the web 52 through the buckle 40 and raise the front bag into the desired position which suits the wearer's height.

The armour in the front bag is now in its fully operational position (it is also held in place by the side strap 30) and the right hand has remained completely free throughout to hold a weapon.

(6) When the opportunity arises, the front bag can be secured in this position by clipping the hook 41which is attached to the top strap 34B to the D-ring 39 attached to the shoulder strap 35 (Figure 11). At this stage the right hand is needed for the first time. The side strap 42 is then gripped, again by the right hand, and the snap hook 44 attached to its end is clipped onto the D-ring 43 stitched to the outer face of the front bag.

So, in short: the front bag is in the deployed position at the end of step (3); secured in the deployed position in step (4); moved to the fully operational position in step (5); and secured in the fully operational position in step (6). It is not until step (6) that the right hand is required.

The above is only a preferred embodiment. It is arranged for use by a person who wants to keep the right hand free to hold a weapon; clearly it can be constructed to suit a person who wishes the left hand to stay free.

Instead of incorporating the armour in a backpack, it could be incorporated in some other device to be worn on the upper body, for instance a vest or life jacket. Instead of using the loops 50 and 51, alternative forms of handle could be used. Other alternatives will occur to the skilled man

A preferred version of the hooks used in the backpack is shown in Figure 15. Again, alternatives will occur to the skilled man.

Storing equipment

The backpack can accommodate, for instance, weapons, weapons support equipment, medical equipment and a lightweight stretcher. The backpack also has an equipment pocket 28 (see Figure 2 and Figure 6) having a removable pouch 29 which can be deployed using just one hand.

All attachments are made via stitched webbings known as Molle.

Quick release ('cutaway')

To remove the front bag quickly e.g. if the wearer is wounded, the hooks 41 and 44 used in step (6) are unclipped, the side strap 30 is released by means of its side release buckle 45 and finally the hook 38 is unclipped. This completely separates the front bag from the backpack.

Claims

1. A device for wearing on the upper body and incorporating armour which, when the device is worn, is normally stored on the wearer's back, but can be rapidly moved into a deployed position over the front of the wearer's chest, the arrangement being such that the wearer can move the armour from the stored position into the deployed position using just one hand, leaving the other completely free, for instance to hold a weapon.

2. A device according to claim 1, wherein when the armour is moved from the stored position into the deployed position, it flips over, so that the surface that was facing inwards towards the wearer's back in the storage position faces outwards in front of the user's chest in the deployed position.

3. A device according to claim 1 or claim 2, further comprising back armour which remains in a position to protect the wearer's back when the front armour is moved from the stored position into the deployed position.

4. A device according to any preceding claim comprising two bags, a back bag which when worn lies over the wearer's back and a front (or outer) bag, which when in a stored position is releasably attached to the front bag behind the wearer and when moved into a deployed position lies over the wearer's chest, the back bag being arranged to receive armour to protect the wearer's back (back armour) and the front bag being arranged to receive armour which, when deployed, protects the wearer's front (front armour).

5. A device according to claim 4 comprising first releasable fastening means (37) for attaching the two bags together with the front bag in the stored position, and being releasable by the wearer using one of his or her hands; the device further comprising

a handle (50) connected to the front bag to be grasped by the wearer using the same said hand;

whereby when the wearer has released the first releasable fastening means, he or she can grasp the handle to lift the front bag and pull it along a generally curved path around the side of the wearer to move the front bag from the stored position behind the wearer into the deployed position over the front of the wearer's chest

6. A device according to claim 5 further comprising second releasable fastening means (38, 39) operable by the wearer using the same said hand to attach the two bags together when the front bag is in the deployed position.

7. A device according to claim 4, 5 or 6 wherein the front bag can be rapidly completely separated from the backpack when in its deployed position ('cutaway').

8. A device according to any of claims 4 to 7 wherein the handle is a loop formed in webbing

9. A device according to any preceding claim incorporated into a backpack, vest or lifejacket.

10. A device for wearing on the upper body substantially as hereinbefore described with reference to the accompanying drawings.

11. A backpack comprising two bags, a back bag with shoulder straps which when worn lies over the wearer's back and a front (or outer) bag, which when in a stored position is releasably attached to the front bag behind the wearer and when moved into a deployed position lies over the wearer's chest, the back bag being arranged to receive armour to protect the wearer's back (back armour) and the front bag being arranged to receive armour which, when deployed, protects the wearer's front (front armour), the backpack further comprising:

first releasable fastening means (37) for attaching the two bags together with the front bag in the stored position, and being releasable by the wearer using one of his or her hands;

a handle (50) connected to the front bag to be grasped by the wearer using the same said hand;

whereby when the wearer has released the first releasable fastening means, he or she can grasp the handle and move the front bag from the stored position behind the wearer into the deployed position over the front of the wearer's chest;

and second releasable fastening means (38, 39) operable by the wearer using the same said hand to attach the two bags together when the front bag is in the deployed position;

the arrangement being such that the wearer can release the first releasable fastening means, move the front bag from the stored position into the deployed position and then operate the second releasable fastening means to attach the front bag to the back bag in the deployed position, all using just one hand, leaving the other completely free, for instance to hold a weapon.

12. A backpack according to claim 11, wherein when the front bag is moved from the stored position into the deployed position, it flips over, so that the surface that was facing inwards towards the wearer's back in the stored position faces outwards in front of the user's chest in the deployed position.

13. A backpack according to claim 11 or 12 whereby when the wearer has released the first releasable fastening means, he or she can grasp the handle to lift the front bag and pull it along a generally curved path around the side of the wearer to move the front bag from the stored position behind the wearer into the deployed position over the front of the wearer's chest.

14. A backpack according to claim 11, 12 or 13 wherein two top straps (34A, 34B) are joined to the front bag, the first releasable fastening means (37) being arranged to releasably connect the free ends of the top straps to the shoulder straps when the front bag is in the stored position.

15. A backpack according to claim 14 wherein the second releasable fastening means is arranged to releasably connect one of the top straps (34A) to the adjacent shoulder strap when the front bag is in the deployed position.

16. A backpack according to claim 15 wherein the second releasable fastening means comprises a first snap hook (38) attached at one end to the handle (50) and connectable to a first D-ring (39) attached to said adjacent shoulder strap (36) when the front bag is in the deployed position.

17. A backpack according to any of claims 11 to 16 wherein when the second releasable fastening means (38, 39) has been operated by the wearer to attach the two bags together with the front bag in the deployed position, a second handle (51) is arranged to be pulled by the wearer, again using the same said hand, to adjust the position of the front bag into its fully operational position.

18. A backpack according to claim 17 when appendant to any of claims 14, 15 or 16 including a second snap hook (41) attached at one end to the other of said top straps (34B) and connectable by the wearer to a second D-ring (39) attached to the other shoulder strap (35) when the position of the front bag has been adjusted into its fully operational position.

19. A backpack according to any of claims 11 to 18 including a first side strap (30) releasably connecting the two bags together at their lower ends.

20. A backpack according to claim 19 wherein the first side strap (30) releasably connects the two bags together at their lower ends by means of a side release buckle (45).

21. A backpack according to claim 19 or 20 when appendant to claim 17 or 18 including a second side strap (42) attached at one end to the lower end of the back bag on the opposite side to the first side strap and being releasably connectable by the wearer to the front bag when the position of the front bag has been adjusted into its fully operational position.

22. A backpack according to claim 21 wherein the second side strap (42) has a third snap hook (44) connected to what is its free end when the front bag is in its stored position, and connectable by the wearer to a D-ring (43) attached to lower end of the front bag when the position of the front bag has been adjusted into its fully operational position.

23. A backpack according to any of claims 11 to 22 wherein the front bag can be rapidly separated completely from the backpack when in its deployed position (‘cutaway’).

24. A backpack according to claim 23 when appendant to claims 16, 18, 20 and 22 wherein said separation is achieved by releasing the three snap hooks (38, 41 and 44) and the side release buckle (45) of the first side strap (30).

25. A backpack according to any of claims 11 to 24 arranged to accommodate equipment such as weapons, weapons support equipment, medical equipment and a lightweight stretcher; and including an equipment pocket (28) having a removable pouch (29) which can be deployed using the same said hand.

26. A backpack according to any of claims 11 to 25 wherein the or each handle is a loop of webbing.

27. A backpack according to any of claims 11 to 26 wherein the first releasable fastening means comprises two buckles (37).

28. A backpack according to any of claims 11 to 27 wherein the two bags are also attached together by Velcro (Registered Trade Mark) patches (22) which separate when the wearer uses the first –mentioned handle (50) to move the front bag from the stored position into the deployed position.

29. A backpack according to any of claims 11 to 28 further comprising a panel (25) releasably attached to what is the outer surface of the front bag when it is in the stored position, the panel (25) being interchangeable with like panels to vary the outward appearance of the backpack.

30. A backpack substantially as hereinbefore described with reference to the accompanying drawings.

Intellectual Property Office

Application No:	GB1720399.3	**Examiner:**	Mr Chris Morris
Claims searched:	1-9, 11-29	**Date of search:**	1 June 2018

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X	1, 3-9, 11, 13-29	US2017/318941 A1 (VAUGHAN) Whole document, esp. figures 1, 5, 8-9
X	1-6, 8-9, 11-13, 17, 19-20, 26	CN106037232 A (ZHU) Figures, Abstract
X	1-6, 8-9, 11-13, 17, 19-20, 26	CN206182618 U (GENG) Figures, Abstract
X	1-4, 7, 9	US9820558 B1 (DE GEUS) Figures 1-5
X	1, 3-4, 8-9	WO2012/001112 A1 (LATOUCHE) Figures 1-4, 12-14
X	1, 3-4, 8-9	WO2016/062745 A1 (FRAILE) Figures 1-5, 14
X	1, 3-4, 8-9	US6419132 B1 (REED) Figures 1-3

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^{X} :

Worldwide search of patent documents classified in the following areas of the IPC

A41D; A45F; F41H

The following online and other databases have been used in the preparation of this search report

Intellectual Property Office

WPI, EPODOC

International Classification:

Subclass	Subgroup	Valid From
A41D	0013/015	01/01/2006
A45F	0003/04	01/01/2006
A45F	0003/06	01/01/2006
F41H	0001/02	01/01/2006