

A BACKPACK SYSTEM

FIELD OF THE INVENTION

The present invention relates to a backpack system in particular to a backpack system incorporating an accessory pack releasably attached to a main backpack.

BACKGROUND ART KNOWN TO THE APPLICANT

Soldiers have always marched into battle carrying heavy loads on their backs. Many modern military (as well as civilian) backpacks incorporate the use of an accessory backpack to expand the load carrying capacity of the main pack. The Deuter Quantum 70 and the US Modular Lightweight Load-carrying Equipment (MOLLE) system are examples, and both utilize multiple side-release buckles to secure the accessory backpack to the main pack.

However, in order to release the accessory pack or packs, the user must either remove the backpack, and manually unclip the side-release buckles or have a 'buddy' to assist if the backpack remains on. This takes a significant amount of time and effort, and neither option will be a viable option during a surprise contact with an enemy.

Quick release systems for backpacks are known for example, the 'drop and run backpack' which forms the subject matter of US2009/0173763. In this system, a backpack and shoulder harness are operatively linked by a flexible rod of material which passes through loops fitted to the harness and backpack respectively. Removal of the flexible rod by the user by pulling it separates the backpack from the harness. Additional quick release systems enabling backpacks to be released from waist bands are also known, see WO98/20772 but each of these systems involve the release of the entire backpack.

Rapid and complete removal of the backpack may not be ideal in, for example, a contact situation with an enemy. This is because although a soldier may be able to move more rapidly to cover, having jettisoned their backpack, access to the backpack contents (which may be required) may no longer be possible until the threat has been removed. It is an object of the present invention to try and alleviate at least some of the aforementioned problems.

STATEMENTS OF THE INVENTION

Accordingly, the invention in its broadest aspect resides in a backpack system including:
a main backpack including a harness; and
an auxiliary backpack;
wherein the main backpack and auxiliary backpack each possess at least one of a first pair of complementary members adapted to enable the mating of the auxiliary backpack to the main backpack; and wherein the auxiliary backpack is further operatively linked to the main backpack via one or more quick-release means, the arrangement between the complementary members and the quick-release means being such that a wearer of the system will be able to self-jettison the auxiliary pack from the main backpack upon actuation of the or each quick-release means.

With such an arrangement, part of the total weight carried by a wearer of the system can be rapidly discarded whilst enabling the rest of the weight to still be carried by the wearer. This is likely to have particular advantages for military personnel, although it is envisioned that the present invention may also have applications for those fighting forest fires or those involved in mountaineering.

Although several forms of complementary mating members can be envisioned, preferably, the complementary members form a tongue and groove arrangement wherein the groove is in the form of a pocket which is flexible relative to the tongue. This has the greatest advantage for stability. In such form, the release of the auxiliary backpack will be substantially rotational about the base of the groove.

Preferably, the first pair of complementary members is adapted to limit lateral movement of the auxiliary backpack relative to the main back-pack when the backpacks are mated. Such an arrangement will tend to limit the wastage of energy by a wearer of the system compensating for any swaying movement as they move along.

Preferably, the main backpack and auxiliary backpack possess at least one of a second pair of complementary members adapted to limit vertical movement of the auxiliary backpack relative to the main back-pack when the backpacks are mated.

Such an arrangement will again, tend to limit the wastage of energy by a wearer of the system compensating for any sinusoidal type movement of the auxiliary backpack as they move along.

Preferably the quick release means includes a quick release buckle strap and cord.

Preferably, the auxiliary backpack in its normal attitude of operation includes a rigid frame, which serves as one of the co-operating members for both the first and second pair of cooperating members. Having one single piece of equipment which serves two functions in this manner is advantageous as it cuts down the amount of modification to an existing backpack that needs to be made for it to be applicable to the current system. In such form, the lower portion of the rigid frame, serves as one of the first pair of cooperating members in the form of the tongue. The rigid frame also assists the auxiliary pack to fall away in a rotational manner about the base of the groove and also aids in the provision of rigid support and load transfer of the auxiliary backpack to the main backpack.

Having the groove in the form of a pocket, with a snugly fitting tongue has the advantage that it imposes both a horizontal and a vertical restraint on the rigid frame once the tongue of the rigid frame has been mated with the groove/pocket as both vertical and horizontal movement of the auxiliary backpack once fitted to the main backpack will be limited.

Although the mounting point of the groove on the main backpack can be almost anywhere on the vertical centerline of the main backpack, preferably, the groove is mounted to the main backpack substantially $\frac{2}{3}$ s from the base of the main backpack. Such a position is particularly advantageous as it raises the centre-of-gravity of the entire system (leading to better posture) while maintaining load stability. Depending on the size of the auxiliary backpack, other configurations of the groove are envisaged.

Although the auxiliary backpack could be larger or the same size as the main backpack, preferably, the auxiliary backpack is smaller than the main backpack.

Preferably, there are two quick release means and the rigid frame of the auxiliary backpack is secured to a rigid frame of the main backpack by each of these quick release means.

In such form, the quick release means are fitted to opposed sides of the same face of the respective frames.

Preferably, the or each frame is in the form of an 'O' frame. Such an arrangement devoid of braces reduces the weight of the frame. The ledge thickness of the 'O' frame of the auxiliary backpack serves as one of the second pair of cooperating members, the main backpack, in its normal attitude of operation, being provided with a protrusion above the groove which serves as the other cooperating member of the second pair of cooperating members and which is adapted to come in overlying contact with the internal ledge thickness of the 'O' frame to assist in limiting any vertical movement of the auxiliary backpack when the backpacks are mated.

In some embodiments, opposing ends of the protrusion will also extend and come into to overlying contact with adjacent internal side ledge thickness of the 'O' frame to assist in further limiting any lateral movement of the auxiliary backpack when the backpacks are mated.

Preferably, the groove/pocket is demountable from the main backpack. Such an arrangement allows for its relocation on the main backpack.

Another aspect of the present invention resides in a main backpack including a harness, at least one of a first pair of complementary members adapted to enable the mating of an auxiliary backpack to the main backpack; and means to connect such an auxiliary backpack to the main backpack in a quick release manner, such that an individual wearing both the main backpack and mated auxiliary backpack will be able to rapidly self-jettison the auxiliary pack from the main backpack if required.

In a further aspect, the present invention resides in an auxiliary backpack including at least one of a first pair of complementary members adapted to enable the mating of the auxiliary backpack to a main backpack; and means to connect the auxiliary backpack to such a main backpack in a quick release manner, such that an individual wearing both the main backpack and mated auxiliary backpack will be able to rapidly self-jettison the auxiliary pack from the main backpack if required.

BRIEF DESCRIPTION OF THE DRAWINGS

In order that the invention may be more readily understood and put into practical effect, reference will now be made to the accompanying drawings wherein:

Fig 1 is a pictorial view of a backpack system of the present invention showing how one portion of the auxiliary backpack is intended to be connected to the main backpack;

Fig 2 is a pictorial view of the backpack system of Fig 1 showing how the remaining portion of the auxiliary backpack is connected to the main backpack.

Fig 3 is a pictorial representation showing operation of the release of the auxiliary backpack from the main backpack.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Fig 1 shows part of a backpack system of the present invention generally referenced 10. It comprises a main backpack 11 and a smaller auxiliary backpack 12, the main backpack 11 includes a rigid frame 13 on its rear face and a harness 14 fitted to the rigid frame 13. Fitted to the vertical centre line of the front face of the main backpack 11 and 2/3s up from its base, is an elongate horizontal pocket 15 formed from sewn layers of fabric and hard plastics board to make it relatively flexible. The pocket 15 is adapted to receive a lower portion (or tongue) of a rigid frame 16 fitted to the rear face of the auxiliary backpack 12 in a mating fashion. The opposing sides of the tongue itself are so sized and shaped to minimize lateral movement of the tongue when it is in the pocket 15.

Both frames 13, 16 are 'O' frames (ie they do not possess any supporting braces spanning their length or breadth and each is made from high strength fibre-reinforced engineering plastics material.

Centrally located above the pocket 15 is an elongate horizontal protrusion 17 which is so positioned and adapted that when the tongue of the rigid frame 16 is in the pocket, the lower face of the protrusion 17 comes into overlying contacting relationship with the bottom 'ledge' created by the thickness of the 'O' frame 16 of the auxiliary backpack 12. In addition,

respective opposed end faces of the protrusion 17 are also adapted to come into overlying contacting relationship with opposed side ‘ledges’ of the ‘O’ frame of the auxiliary backpack 12.

Turning to Fig 2, which shows both backpacks 11,12 connected together to form the backpack system 10, the upper portion of the auxiliary backpack frame 16 has a pair of downwardly depending quick release straps 18 fitted to it which, once the lower portion of the auxiliary backpack frame 16 has been mated with the pocket 15, are connected to an upper portion of the frame 13 of the main backpack 11 via a pair of shorter upwardly extending straps 20 fitted to the frame 13, which each terminate in a quick release buckle 19.

Each quick release buckle 19 is fastenable to one end of a quick release strap 18. Operatively connected to each of the quick release buckles 19 is a cord (or a strap) 21 which when each are pulled, unfastens each of the quick release buckles 19 from the quick release straps 18 to release each of the straps 18. The cords 21, buckles 19 and straps 18, 20 together form a quick release means for the auxiliary backpack 12.

In operation, a wearer of the backpack system first mates the auxiliary backpack 12 with the main backpack 11 via the lower portion of the frame 16 and the pocket 15. The wearer then ensures that the base of the protrusion 17 overlies the bottom ‘ledge’ created by the thickness of the ‘O’ frame of the auxiliary backpack 12 and also ensures that respective ends of the protrusion 17 overlie portions of adjacent respective side ‘ledges’ created by the thickness of the ‘O’ frame of the auxiliary backpack 12. The wearer then fastens each of the quick release buckles 19 to the ends of their respective straps 18 and then tightens the quick release straps 18 so that the quick release means are taut.

This completes the attachment process and helps to retain:

- a) the lower portion of the frame 13 in the pocket 15; and
- b) the protrusion 17 in the cavity created by the thickness of the walls of the rigid frame 16 and the rear wall of the auxiliary backpack 12.

The backpack system 10 is then placed on the wearer via the harness 14. From Fig 3 it is

shown that a wearer can actuate the pair of quick release buckles 19 by pulling on the cords 21. This unbuckles the quick release buckles 19 causing the auxiliary backpack 12 to fall away from the main backpack 11 by pivoting about the flexible pocket 15 and rotating away from the wearer.

For the avoidance of doubt, the term ‘backpack’ is only intended to include a harness when the term is used in conjunction with a ‘main’ backpack, an ‘auxiliary’ back pack does not contain a harness.

CLAIMS

1. A backpack system including:

a main backpack including a harness; and

an auxiliary backpack;

wherein the main backpack and auxiliary backpack each possess at least one of a first pair of complementary members adapted to enable the mating of the auxiliary backpack to the main backpack; and wherein the auxiliary backpack is further operatively linked to the main backpack via one or more quick-release means, the arrangement between the complementary members and the quick-release means being such that a wearer of the system will be able to self-jettison the auxiliary pack from the main backpack upon actuation of the or each quick-release means.

2. The system according to claim 1, wherein the complementary members form a tongue and groove arrangement wherein the groove is in the form of a pocket which is flexible relative to the tongue.

3. The system according to claim 1 or claim 2, wherein the complementary members are adapted to limit lateral movement of the auxiliary backpack relative to the main back-pack when the backpacks are mated.

4. The system according to any one of the preceding claims, wherein the main backpack and auxiliary backpack possess at least one of a second pair of complementary members adapted to limit vertical movement of the auxiliary backpack relative to the main back-pack when the backpacks are mated.

5. The system according to any one of claims 2-4, wherein the release of the auxiliary backpack will be substantially rotational about the base of the groove.

6. The system according to any one of the preceding claims, wherein the quick release means includes a quick release buckle, cord and straps.

7. The system according to any one of claims 2-6, wherein the auxiliary backpack in its normal attitude of operation includes a rigid frame, which serves as one of the co-

operating members for both the first and second pair of cooperating members.

8. The system according to claim 7, wherein the lower portion of the rigid frame, serves as one of the first pair of cooperating members in the form of the tongue.

9. The system according to claim 7 or claim 8, wherein the rigid frame is in the form of an 'O' frame.

10. The system according to claim 9, wherein the ledge thickness of the 'O' frame serves as one of the second pair of cooperating members, the main backpack, in its normal attitude of operation, being provided with a protrusion above the groove which serves as the other cooperating member of the second pair of cooperating members and which is adapted to overlies the internal ledge thickness of the 'O' frame to assist in limiting any vertical movement of the auxiliary backpack when the backpacks are mated.

11. The system of claim 10, wherein the protrusion is formed of the same material as the groove.

12. The system according to any one of claims 2-11, wherein the groove is mounted to the main backpack substantially 2/3s from the base of the main backpack.

13. The system according to any one of the preceding claims, wherein the auxiliary backpack is smaller than the main backpack.

14. The system according to any one of claims 7-15, wherein there are two quick release means and the rigid frame of the auxiliary backpack is secured to a rigid frame of the main backpack by each of these quick release means.

15. The system according to claim 14, wherein the quick release means are fitted to opposed sides of the same face of the respective frames.

16. The system according to claim 14 or claim 15, wherein each rigid frame is in the form of an 'O' frame.

17. The system of any one of the preceding claims, wherein the groove/pocket is demountable from the main backpack.

18. A main backpack including a harness, at least one of a first pair of complementary members adapted to enable the mating of an auxiliary backpack to the main backpack; and means to connect such an auxiliary backpack to the main backpack in a quick release manner, such that an individual wearing both the main backpack and mated auxiliary backpack will be able to rapidly self-jettison the auxiliary pack from the main backpack if required.

19. An auxiliary backpack including at least one of a first pair of complementary members adapted to enable the mating of the auxiliary backpack to a main backpack; and means to connect the auxiliary backpack to such a main backpack in a quick release manner, such that an individual wearing both the main backpack and mated auxiliary backpack will be able to rapidly self-jettison the auxiliary pack from the main backpack if required.