Feb. 15, 1938. S. O. C. KUHLEMANN 2,108,066

PARACHUTE HARNESS

Filed Aug. 15, 1936 2 Sheets-Sheet 1

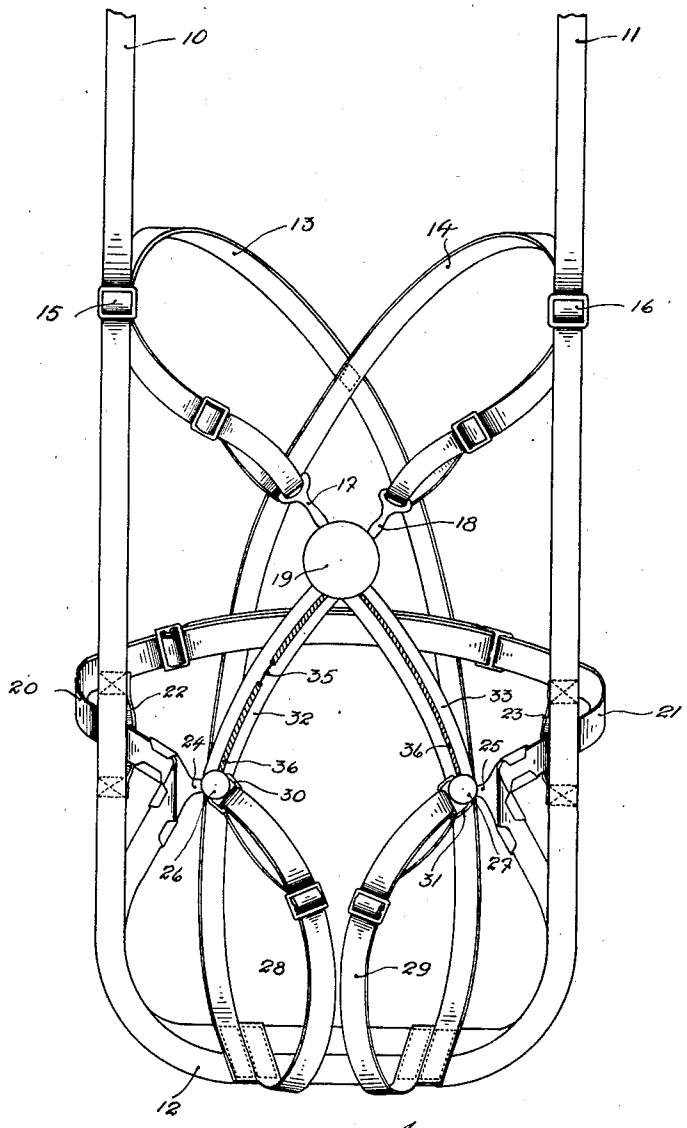


Fig. 1

S. O. C. Kuhlemann
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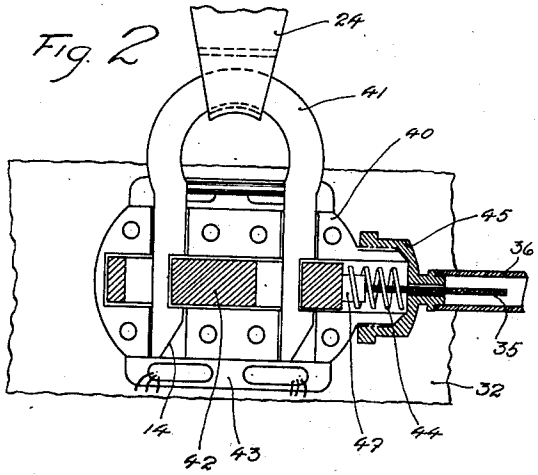
By: Glascock Downing & Seebold
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Fig. 2



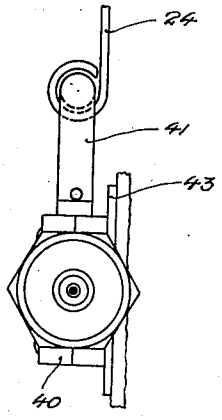


Fig. 3

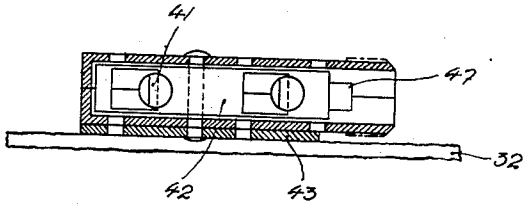


Fig. 4

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UNITED STATES PATENT OFFICE

2,108,066

PARACHUTE HARNESS

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In Sweden August 23, 1935

10 Claims. (Cl. 244—151)

The present invention relates to supporting devices for parachutes. A number of supporting devices for parachutes are already known. In air forces of certain countries so called life belts with a strap across the one shoulder are in use. In other countries again so called harnesses are employed. The harnesses may be provided with one or more straps running under the seat of the wearer and also with two straps extending over the shoulders and finally with two straps fastened to the seat strap and running upwards between the legs of the wearer, the so called leg straps. In an old type of harnesses the leg straps are fastened to straps running at the outside of the thighs by means of snap hooks, whereas the shoulder straps are held together with a waist strap by another snap hook.

In the last few years, however, harnesses have come into use in which both the shoulder straps and the leg straps are held together by a single locking and release device. Hereby a rapid release from the harness is possible which is of great importance especially when landing in strong wind or descent into water. In harnesses of this type the arrangement of the leg straps have proved to present the most difficult problem. According to one proposal the leg straps extend principally straightly from the seat strap between the legs of the wearer to the central release device, which arrangement is very uncomfortable and may even present grave risks to the wearer in jumping. In order to remove this drawback the leg straps are according to another proposal carried to the sides by additional straps, which arrangement, no doubt, has been the best solution of this problem so far. In order to enable the leg straps to slide smoothly through the said additional straps it is, however, necessary that the harness is under tension, which is mostly but not always the case during landing.

The object of the present invention is to remove all the above-said drawbacks especially those which refer to the arrangement of the leg straps and to provide a parachute supporting device or harness ensuring a rapid release of the wearer when landing or descending into water.

Another object of the invention is to provide a parachute supporting device or harness combining the property of a rapid release with the greatest possible comfort for the wearer while removing any risk of causing the wearer injury before and after the landing.

In order to effect a rapid release from the harness on landing, the same is provided with a centrally placed locking and release device and in addition thereto with additional releasable locking devices for holding the leg straps to the sides. The latter devices are actuated by special means from the central release device in such a manner that the same movement which causes release of the shoulder straps also causes release of the leg straps.

The invention can be applied to supporting devices of various kinds. Thus it can be used in combination with so called life belts provided with seat straps and leg straps, or with harnesses of the kind described above. The harnesses can either be fitted with shoulder straps which extend directly from the suspension straps supporting the parachute onto the central release device or with shoulder straps fitted with branches to the central release device. In the last-mentioned harnesses the shock arising at the opening of the parachute is partially directed away from the central release device, whereby the latter need not have so high strength and may also be of smaller weight. In addition thereto the latter harness construction has several other advantages, for instance greater comfort. Further the suspension straps during and after the jump are spaced from the head of the wearer thereby eliminating the risk of injury. For these reasons such harnesses are very suitable especially for military purposes.

The invention is illustrated by way of example on the accompanying drawings:—

Fig. 1 is an embodiment of the invention showing the central release fastening device as well as the two leg strap release devices in the following called "side release devices".

Fig. 2 is a plan sectional view of a side release device.

Fig. 3 is an end elevation and Fig. 4 a longitudinal sectional view of Fig. 2.

According to Fig. 1 reference numerals 10 and 11 designate supporting straps for the parachute extending downwardly to form a strap 12 running under the seat of the wearer. 13 and 14 are shoulder straps having their ends for placement at the front of the wearer and adapted to extend over the shoulders of the wearer to the back of the wearer and thence downwardly to be fastened to the seat strap 12. Each of the shoulder straps 13 and 14 has an adjustable connection 15 and 16, respectively, with the corresponding supporting straps 10 and 11. At the ends of the shoulder straps which are placed at the front of the wearer said straps carry each a snap hook 17, 18 for the connection with a central release fastening device 19. 20 and 21 are thigh straps which in the embodiment shown are carried under

the seat of the wearer and through loops 22 and 23 on the supporting straps 10, 11 behind the back of the wearer. At a suitable point intermediate the seat strap portion and the loops 22, 23 the thigh straps 20 and 21 carry each a fitting 24, 25, respectively, releasably connected to the side release device 26, 27, respectively. 28 and 29 are leg straps secured at their one end to the seat strap 12 and carrying at their other end a fitting 30, 31, respectively, to be permanently connected with the corresponding side release device 26 or 27. The side release devices 30 and 31 are each carried by a strap 32 and 33, respectively, which may be considered to be continuations of the leg straps and which at their free end may be permanently connected with the central release device 19. These straps 32 and 33 serve as support for a wire 35 connecting the side release device with the central release device 19, said wire 35 being preferably protected by a flexible tube 36.

The side release devices (see Figs. 2, 3 and 4) consist each of a casing 40 provided with two bores for the legs of a hook 41 to which the fitting 24 or 25 of corresponding thigh strap 20 or 21 is secured, as well as a bore for a bolt 42 having recesses corresponding to recesses in the legs of the hook 41. By means of a base plate 43 the casing 40 is secured to its support, in this case the strap 32. A spiral spring 44 inserted between the bolt 42 and a nut 45 screwed onto the casing serves to hold the bolt 42 into engagement with the hook 41. The above-mentioned wire 35 is carried through a bore in said nut 45 and secured to a stud 47 on the bolt.

The operation of the device is as follows:—

When the harness is to be put on, one puts the arms first through the slings formed by the shoulder straps 13, 14. The parachute pack on the back of which the seat strap 12 is arranged is placed under the seat. The leg straps 28, 29 are carried upwards between the legs together with straps 32, 33, central release device 19 and side release devices 26, 27. The fittings 17, 18 are introduced into the central release device and fastened therein. The hooks 41 are introduced into the holes in the casing 40 of the side release devices and locked therein in a manner which need not be explained. Through the various adjustable buckles the harness is then properly adjusted.

On landing, a securing device on the central release device 19 (not shown) is first released. By a turning movement of a handle of said device the wires 35 are pulled upwards thus releasing the hooks 41. Further, pawls in the central release device are carried to the side whereby the shoulder straps 13, 14 are released. The whole of the lower middle part of the harness is then released and falls forward allowing the wearer to be free. The wires 35 are so arranged in the central locking device as to cause release of the side release devices 26, 27 a fraction of a second before the shoulder straps 13, 14 are released. Thereby the advantage is obtained that the wires 35 are in tension, when the power is transmitted through them from the central release device 19 to side release devices 26, 27.

In harnesses having branches from the suspension straps to the central release device, the wearer must, after the central lower portion of the harness has been made free, shake off the upper part of the harness. In harnesses in which the straps entering the central release device are direct continuations of the supporting straps the wearer is made free at once from the harness. The latter type of harness, however, has the drawback that, when the parachutist hangs in the harness, the supporting straps come close to his head which under unfavorable circumstances can cause him injury, especially during the opening of the parachute.

In life belts arranged according to the invention the wearer is also free at once. Life belts, however, have the drawback that the greater part of the opening shock is taken up by the stomach and the breast of wearer, which may cause him injury, especially at drops at high speeds.

Several variations of the invention are possible. Thus the central release device can be operated by another movement than a turning one. Further the side release devices need not necessarily be of the construction described.

What I claim is:—

1. In a parachute supporting device, the combination of a body encircling strap having at least one of its ends for placement at the front of the wearer, a pair of leg straps, a separate device releasably connecting each of said leg straps to part of the supporting device so as to hold said leg straps in taut lateral position, and a fastening device releasably fastening the end of the body encircling strap which is placed at the front of the wearer and adapted to control the release of said leg strap holding devices, whereby upon release of said release fastening device the end of the body encircling strap is disconnected and the leg strap holding devices released so as to permit the wearer to free himself from the supporting device without releasing any other couplings.

2. In a parachute supporting device, the combination of a body encircling strap having at least one of its ends for placement at the front of the wearer, a pair of leg straps, a separate device releasably connecting each of said leg straps to other parts of the supporting device so as to hold said leg straps in taut lateral position, and a fastening device releasably fastening the end of the body encircling strap which is placed at the front of the wearer and adapted to control the release of said leg strap holding devices, whereby upon release of said release fastening device the end of the body encircling strap is disconnected and the leg straps are untightened so as to permit the wearer to free himself from the supporting device.

3. In a parachute harness, the combination of body encircling straps including shoulder straps having their ends for placement at the front of the wearer and a pair of leg straps, a separate device releasably connecting each of said leg straps to part of the harness so as to hold said leg straps in taut lateral position, and a fastening device releasably connecting together the ends of said shoulder straps which are placed at the front of the wearer and adapted to control the release of said leg strap holding devices, whereby upon release of the release fastening device the ends of the shoulder straps are disconnected and the leg straps are untightened so as to permit the wearer to free himself from the harness.

4. In a parachute supporting device, the combination of a body encircling strap having at least one of its ends for placement at the front of the wearer, a pair of leg straps, a separate device releasably connecting each of said leg straps to part of the supporting device so as to hold said leg straps in taut lateral position, and a fastening device releasably fastening the end of the

body encircling strap which is placed at the front of the wearer and controlling said leg strap holding devices, said release fastening device being adapted upon manipulation to disconnect the end of the body encircling strap and to untighten the leg straps so as to permit the wearer to free himself from the supporting device.

5. In a parachute harness, the combination of upper body embracing straps including shoulder straps having the ends thereof for placement at the front of the wearer and adapted to extend over the shoulders of the wearer to the back of the wearer and thence downwardly to the seat of the wearer, lower body encircling straps connected with said upper body embracing straps and including a pair of leg straps, a strap running under the seat of the wearer and connected with one of said upper and lower body straps, a separate device releasably connecting each of said leg straps to such a point of the lower encircling straps so as to hold said leg straps in taut lateral position, and a fastening device releasably connecting together the ends of the shoulder straps which are placed at the front of the wearer and adapted to control said leg strap holding devices, whereby upon release of said release fastening device the shoulder straps are disconnected and the leg straps are untightened so as to permit the wearer to free himself from the harness.

6. In a parachute harness, the combination of parachute load supporting straps, upper body embracing straps including shoulder straps having the ends thereof for placement at the front of the wearer and adapted to extend over the shoulders of the wearer to the back of the wearer and thence downwardly to the seat of the wearer, said load supporting straps having a connection with the portions of the shoulder straps which extend at the front of the wearer, lower body encircling straps connected with the portions of the upper body embracing straps which extend to the seat of the wearer including a pair of leg straps, a separate device releasably connecting each of said leg straps to part of the harness so as to hold said straps in taut lateral position, and a fastening device releasably connecting together the ends of the shoulder straps which are placed at the front of the wearer and adapted to control said leg strap holding devices, whereby upon release of said release fastening device the shoulder straps are disconnected and the leg straps are untightened so as to permit the wearer to free himself from the harness.

7. In a parachute supporting device, the combination of a body encircling strap having at least one of its ends for placement at the front of the wearer, a fastening device releasably connecting said end of the body encircling strap, a pair of leg straps connected in untightened position at their one end to said release fastening device and at their other end to other parts of the supporting device, a separate device releasably fastening each of said leg straps to other part of the supporting device so as to hold said leg straps in taut lateral position, said release fastening device being adapted to control the release of said leg strap holding devices, whereby upon release the ends of the body encircling strap are disconnected and the leg straps are untightened so as to permit the wearer to free himself from the supporting device.

8. In a parachute supporting device, the combination with a body encircling strap having at least one of its ends for placement at the front of the wearer, a fastening device releasably connecting said end of the body encircling strap, a pair of leg straps connected in untightened position at their one end to said release fastening device and at their other end to other parts of the supporting device, a separate device releasably fastening each of said leg straps to other part of the supporting device so as to hold said leg straps in taut lateral position, and pulling members adapted to control each of said leg strap holding devices and to be actuated upon release of said release fastening device, whereby upon release of the latter the end of the body encircling strap is disconnected and the leg straps are untightened so as to permit the wearer to free himself from the supporting device.

9. In a parachute harness, the combination of upper body embracing straps including shoulder straps having the ends thereof for placement at the front of the wearer and adapted to extend over the shoulders of the wearer to the back of the wearer and thence downwardly to the seat of the wearer, lower body encircling straps connected with said upper body embracing straps and including a pair of leg straps, a locking member on each of said leg straps, cooperating locking members on other parts of the lower encircling straps, each pair of said locking members forming a releasable locking device to hold said leg straps in taut lateral position, and a fastening device releasably connecting the ends of the shoulder straps which are placed at the front of the wearer and adapted to control said leg strap locking devices, whereby upon release of the fastening means the shoulder straps are disconnected and the leg straps are untightened so as to permit the wearer to free himself from the harness.

10. In a parachute harness, the combination of upper body embracing straps including shoulder straps having the ends thereof for placement at the front of the wearer, lower body encircling straps connected with said upper embracing straps and including a pair of thigh straps and a pair of leg straps, a separate device releasably connecting each of said leg straps to the corresponding thigh strap so as to hold said leg straps in taut lateral position, and a fastening device releasably connecting together the ends of the shoulder straps which are placed at the front of the wearer and adapted to control the release of said leg strap holding devices, whereby upon release of said release fastening device the shoulder straps are disconnected and the leg straps untightened so as to permit the wearer to free himself from the harness without releasing any other couplings.

STIG OVE CHRISTIAN KUHLEMANN.