Feb. 15, 1938. S. O. C. KUHLEMANN 2,108,716

DEVICE OF SUPPORT FOR PARACHUTES

Filed Feb. 20, 1937 3 Sheets-Sheet 1

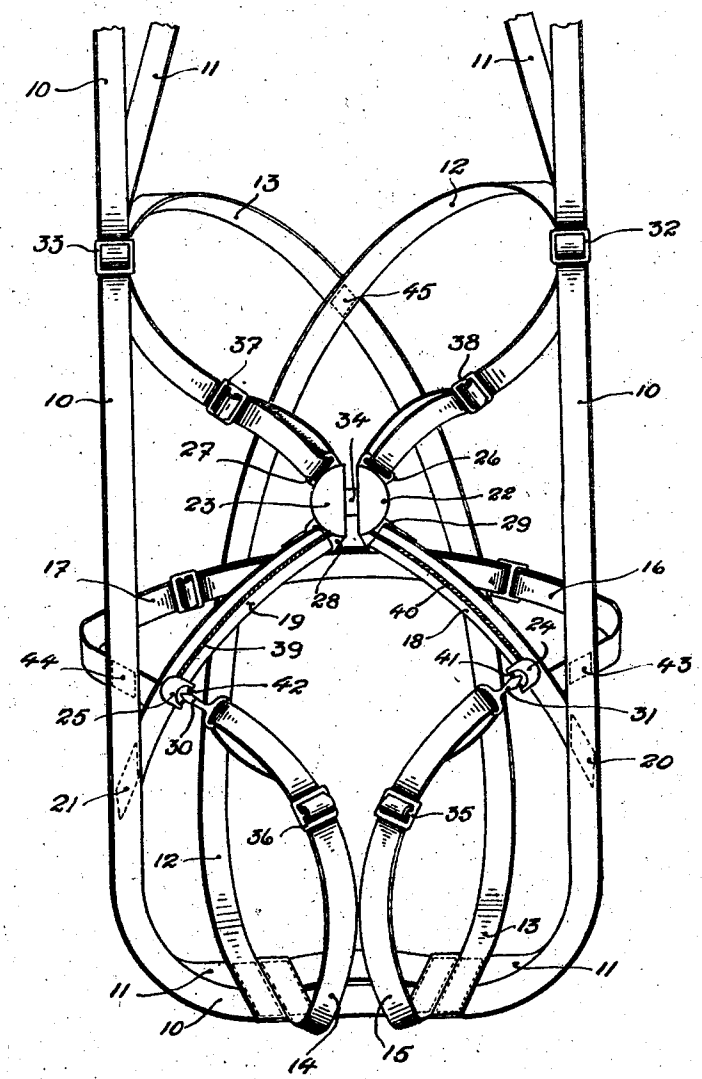

Fig. 1.

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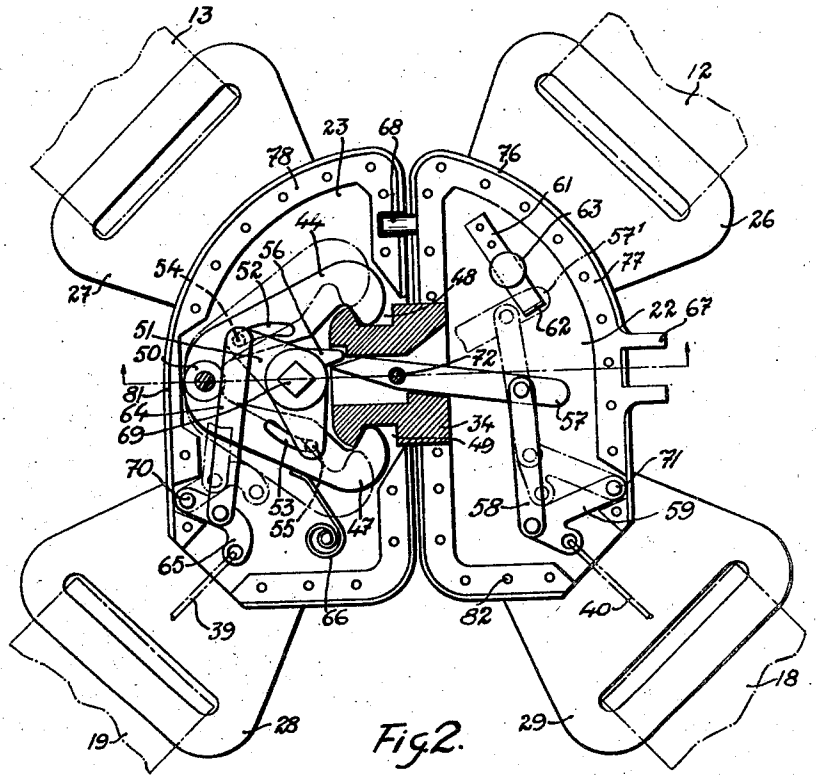

Fig. 2.

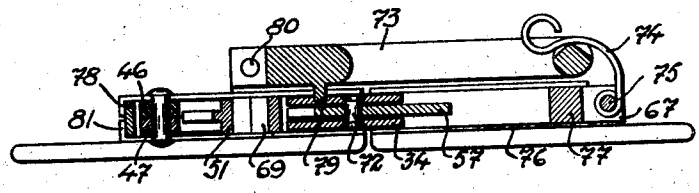

Fig. 3.

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Filed Feb. 20, 1937 3 Sheets-Sheet 3

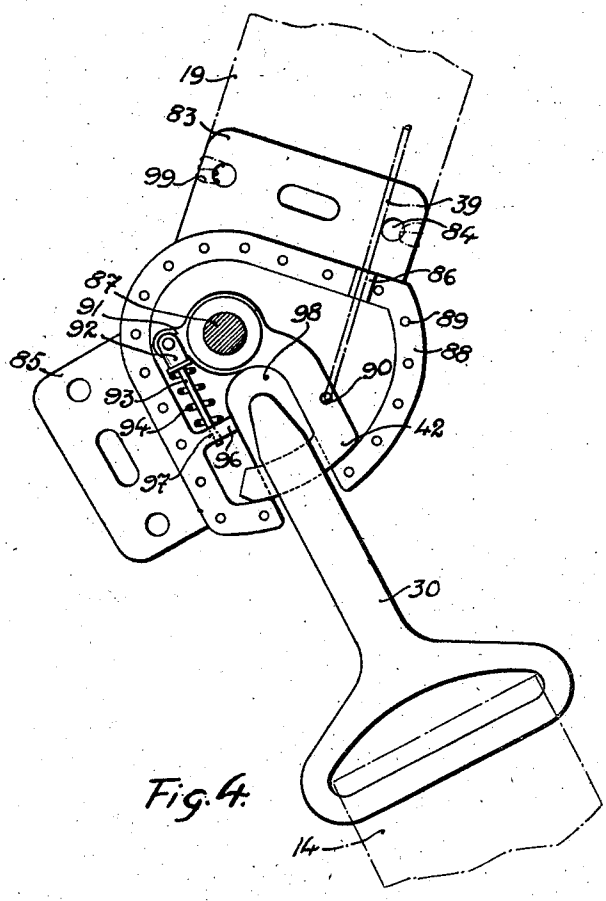

Fig. 4.

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UNITED STATES PATENT OFFICE

2,108,716

DEVICE OF SUPPORT FOR PARACHUTES

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In Sweden April 1, 1936

7 Claims. (Cl. 244—151)

The present invention relates to a device of support for parachutes, preferably of the harness type and fitted with a central locking device as well as two other locking devices called "side locking devices", which latter are controlled by the former.

In the United States patent applications Serial Nos. 96,282 and 99,802, a device of support of this type is disclosed in which the central locking device consists of one main portion, which is indivisible when being releasably actuated. Upon the release of the said locking device, the body encircling strap and/or shoulder straps comprised in the device of support are altogether freed from their engagement in the said locking device. Further the so-called leg straps are permanently connected with the central locking device either directly or through other straps.

The principal object of the present invention is to provide a device of support for parachutes of the type described, but with a central locking device of novel design reducing or eliminating the risk of the said locking device being damaged by striking against the ground, after it has been released.

Another object of my invention is to provide a device of support of the type described in which the upper ends of the leg straps, upon the release of the central locking device, are freed from any connection with any other part of the device of support.

Still another object of the invention is to provide a parachute harness equally comfortable as the standard parachute harness adopted by the United States Air Corps in 1924, but with the additional facility of release by a single manoeuvre by the parachutist.

These and other objects will be apparent according as the following description proceeds, reference being had to the accompanying drawings showing by way of example an embodiment of the new device of support.

In the drawings

Fig. 1 is a total view of the device of support.

Fig. 2 is a general view of the central locking device the inner members thereof being laid bare, and the movable members being shown both in a locked and a released position.

Fig. 3 is a cross sectional view of the central locking device.

Fig. 4 is a view of a locking device for the leg straps "a side locking device" with the inner members thereof being laid bare.

According to Fig. 1 reference numerals 10, 11 designate suspension straps leading to the parachute. 12 is a strap passing across the left shoulder of the wearer and 13 a corresponding strap passing across his right shoulder. 14 and 15 are leg straps which, with their lower ends, are permanently fixed to the seat portion of the device of support and, with their upper ends detachably secured to the side locking devices. 16 and 17 are left and right portions of the so-called waist strap. 18 and 19 are straps permanently secured to the central locking device with their upper ends for the mounting of transmission wires from the central locking device to the side locking devices, said wires being preferably enclosed in tubes or the like. The fastening points of the lower ends of the straps 18 and 19 to the lower portion of the suspension straps 10 and 11 are designated by 20 and 21. 22 and 23 are the left hand and right hand main portions of the central locking device. 24 and 25 designate the left and right side locking devices. 26 and 27 are fittings in the central locking device for the fastening of the shoulder straps. 28 and 29 are similar fittings in the central locking device for the fastening of the straps 18 and 19. 30 and 31 are fastening devices (snap hooks) on the leg straps for engagement in the side locking devices 24 and 25. 32 and 33 are adjustable buckles for regulating the harness. 34 is the main fastening member for joining the two main portions of the central locking device. 35 and 36 designate adjustable buckles on the leg straps. 37 and 38 are similar buckles on the shoulder straps. 39 and 40 are wires transmitting the power from the central locking device to the side locking devices. 41 and 42 are pawls in the side locking devices 24 and 25 serving to engage the fastening devices 30 and 31. 43 and 44 designate the points where the waist strap ends 16 and 17 are fastened to the suspension straps 10 and 11. 45 is the point of junction between the shoulder straps 12 and 13.

In the central locking device shown in Figs. 2 and 3, 46 and 47 designate claws releasably holding the member 34 in a locked position of the device. 48 and 49 are recesses on the member 34 for engagement of the claws 46 and 47. 50 is a bolt connecting the claws 46 and 47. 51 is a peg of triangular shape which, upon being turned, brings the claws 46 and 47 wider apart from each other thereby freeing the member 34 from its engagement with the said claws. 52 and 53 are tracks in the claws 46 and 47 for pivots 54 and 55 in the peg 51. 56 is an extension on the peg 51 for actuating the lever 57. 58 designates a link for transmitting the power from the lever 57 (in a lifted position 57^1) to a lifting member

59, which constitutes the fastening point for the transmitting wire 40. 61 is a spring for holding the lever 57 in lifted (released) position. 62 is a hook on spring 61 for engaging lever 57 when lifted. 63 is a button, which, when pressed down, releases the lever 57 from its engagement with the hook 62. 64 is a link connecting the claw 46 with the lifting member 65, to which the transmission wire 39 is fixed. 66 is a spring for holding the claw 47 in locked position (the claw 46 is held in locked position by the spring 94 in the side locking device 24). 67 is a peg for fixing the spring 74, which serves to secure the handle 73 in position. 68 is an additional peg for securing the connection between the two main portions. 69 is a square bolt for the fastening of the handle 73. 70 and 71 are bolts to secure the lifting members 65 and 59 in position. 72 is a bolt to secure the lever 57 in position. 75 is a bolt to secure the spring 74 in position. 76 is the outer cover for the left main portion 22 (edges bent over to increase the strength). 77 is an inner segment of the left main portion 22. 78 is an inner segment of the right main portion 23. 79 is a peg in the handle 73 to secure same in locked position. 80 is a peg for the handle 73 in the bolt 69. 81 is an outer cover for the right main portion (edges bent over). 82 are rivet holes in the segment 77 for fastening the cover 76.

In Fig. 4, 83 shows a plate on which the side locking device is mounted for fastening the strap 19. 84 are sewing holes. 85 is a plate for fastening the suspension strap 10. 86 is an opening in the segment 95 for the insertion of the transmission wire 39. 87 is a bolt to secure the pawl 42 in position. 88 is an inner segment. 89 are rivet holes for fastening the outer cover. 90 is a hole in the pawl 42 for the fixing of the transmission wire 39. 91 is an ear on the pawl 42 for the spring 94. 92 is a support for the steering peg 93. 96 is a jack for the steering peg 93 and the spring 94. 97 is a hole in the jack 96 for the steering peg 93. 98 is an opening for inserting the snap hook 30. 99 are sewing threads on fitting 83.

The function of the new device of support is as follows:

When the harness is to be put on, the wearer first puts his arms through the loops formed by the shoulder straps in about the same manner as a waist coat is put on. The main portions 22 and 23 of the central locking device are then joined by inserting the protruding member 34 into the middle of the space between the two outer covers of the main portion 23. On account of the tapering shape of the member 34, the claws 46 and 47 are thereby moved further apart, and after the member 34 has been inserted as far as possible, the claws 46 and 47, through the influence of the spring 66 as well as the spring 94 in the side locking device 24 are brought into engagement with the recesses of the said claws. The handle 73 is then laid down and secured in position by the spring 74 and the peg 79. The two main portions are further secured to each other by the peg 68. The seat portion of the harness is then placed in position, the leg straps 14 and 15 are carried upwards from between the legs of the wearer and connected with the side locking devices 24 and 25. If necessary, the harness may be adjusted through the buckles 16, 17, 32, 33, 35, 39.

If the wearer wishes to get free from the harness, he first pulls the handle 73 upwards, after it has been released from the engagement of the spring 74. The handle 73 is then turned downwards, causing the claws 46 and 47 to be moved further apart through the action of the triangular peg 51. The members 59 and 65 are then carried upwards through the lever devices described above, the upward movement being transmitted through the transmission wires 39 and 40 to the side locking devices 24 and 25. The pawls 41 and 42 in the said devices are carried aside, thereby releasing the snap hooks 30 and 31, whereby the leg straps 14 and 15 are freed at their upper ends. Immediately afterwards, the claws 46 and 47 are carried so far apart as to cause the connecting member 34 to be altogether free from its engagement with the main portion 23. The intermediate connection between the shoulder straps 12 and 13 and the straps 18 and 19 via the central locking device then ceases, and the wearer can free himself from the device of support in the usual manner.

As described above, it is necessary that the side locking devices are released shortly before the two main portions are separated, because after the said separation has been effected, it is impossible to actuate the side release devices through the central locking device.

A number of variations within the scope of the invention are possible. Thus the device of support, instead of being of the harness type comprising shoulder straps connected with suspension straps as well as seat straps, can be of the so called life belt type, which consists of a broad waist strap and generally one strap across the one shoulder, the suspension strap being fixed at the back of the waist strap. Further the invention can be applied to such harness, in which the suspension straps extend directly into the central locking device, thus without the branches, 12, 13 shown on Fig. 1.

Further the constructional design of the central locking device may vary. The connection between the two main parts can thus be effected by locking pistons engaging into openings of hollow devices.

Having now described the invention and the manner in which it is performed, 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 locking 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, a fastening device releasably fastening the end of the body encircling strap which is placed at the front of the wearer, said fastening device comprising two interconnectable main parts, and means to unlock said main parts comprising flexible means extending from said main parts to said leg strap locking devices whereby first the leg strap locking devices are released and then the main parts of the device are separated so as to release the end of the body encircling strap and thereby to permit the wearer to free himself from the supporting device.

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 locking 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, a fastening device releasably fastening the end of the body encircling strap which is placed at the

front of the wearer, said fastening device comprising two interconnectable main parts, two additional straps each connecting one of said leg strap locking devices to one of said main parts, means independent of said additional straps to control the release of said leg strap locking devices, and means to unlock said main parts whereby the leg strap holding devices are released and the main parts of the device are separated so as to permit the wearer to free himself from the supporting device.

3. 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 locking device releasably connecting the upper end of each of said leg straps in taut lateral position, a fastening device releasably fastening the end of the body encircling strap which is placed at the front of the wearer, said fastening device comprising two interconnectable main parts including means connected to said leg strap locking devices, and a member permanently secured to one of said parts and adapted to engage the other part and adapted to control the release of said leg strap locking devices independently of said body strap, and means to disengage said member whereby first the upper ends of the leg straps are released, and then the main parts of the fastening device are separated, so as to release the end of the body encircling strap and thereby to permit the wearer to free himself from the supporting device.

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 locking 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, a fastening device releasably fastening the end of the body encircling strap which is placed at the front of the wearer, said fastening device comprising two interconnectable main parts including means connected to said leg strap locking devices adapted to control the release of said leg strap locking devices, one of said parts having a claw adapted to engage a recess in the other part, and means to release said claw from engagement with said recess whereby the leg strap locking devices are released and the main parts of the fastening device are separated so as to permit the wearer to free himself from the supporting device.

5. 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 locking 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, a member to release each of said leg strap locking devices, a fastening device releasably fastening the end of the body encircling strap which is placed at the front of the wearer and comprising two interconnectable main parts, two additional straps each connecting one of said main parts to part of the supporting device, a wire mounted on each of said additional straps and connecting the appurtenant main part to one of said releasing members of the leg strap locking devices, and means to unlock said main parts whereby first the wires are actuated to release the leg strap locking devices and then the main parts of the fastening device are separated so as to permit the wearer to free himself from the supporting device.

6. 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 locking 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, a fastening device releasably fastening the end of the body encircling strap which is placed at the front of the wearer and comprising two interconnectable main parts and each of said leg strap locking devices comprising a movable spring actuated pawl, two wires each adapted to connect one of said pawls to the fastening device to control the release of the leg strap locking devices, and means to unlock the main parts of the fastening device whereby first the wires are actuated to displace the pawls to release the leg strap locking devices, and then the main parts of the device are separated so as to permit the wearer to free himself from the supporting device.

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 pair of leg straps, a separate locking 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, 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 locking devices, said fastening device comprising two interconnectable main parts and a leverage, two wires each adapted to connect said fastening device to one of said leg strap locking devices to control the release of the latter, and turnable means to unlock said fastening device whereby first a pull is exerted by said leverage on the wires so as to cause release of the leg strap locking devices and the main parts of the device are separated so as to permit the wearer to free himself from the supporting device.

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