Feb. 28, 1950 D. MILLER 2,499,107

PARACHUTE RELEASE DEVICE

Filed Jan. 10, 1948

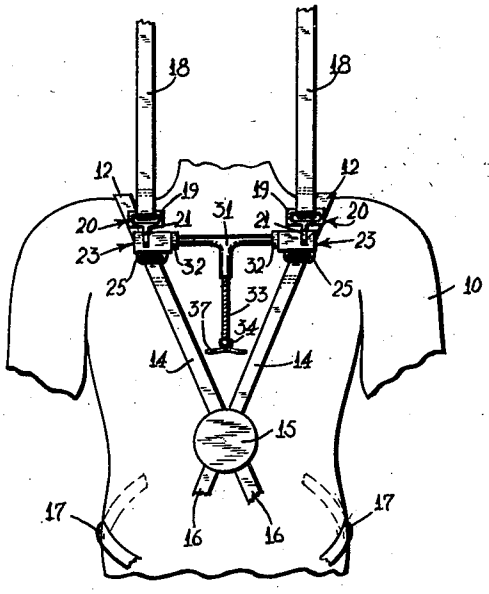


Fig. 1.

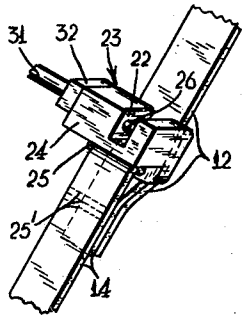


Fig. 2.

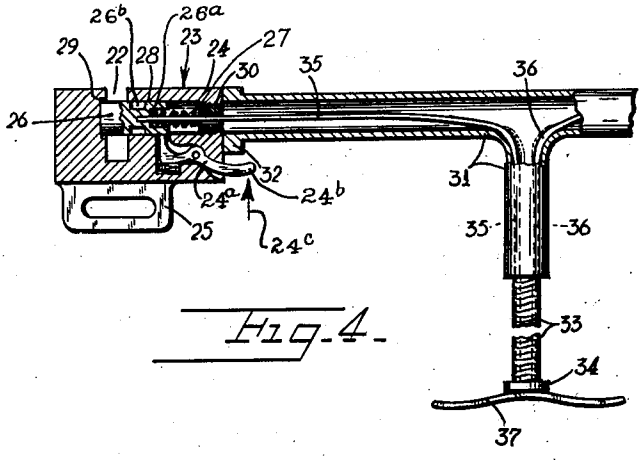


Fig. 4.

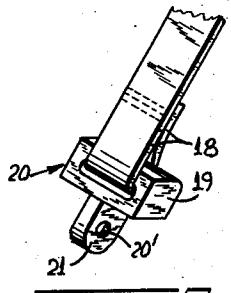


Fig. 3.

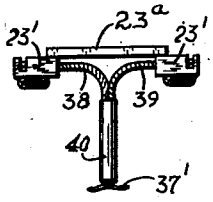


Fig. 5.

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Patented Feb. 28, 1950 2,499,107

UNITED STATES PATENT OFFICE

2,499,107

PARACHUTE RELEASE DEVICE

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Application January 10, 1948, Serial No. 1,620

5 Claims. (Cl. 244—151)

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This invention relates to new and useful improvements in parachute appliances, and aims, more particularly, to provide a simple, rugged, safe yet quickly releasable connector means between the body harness of a parachutist and the suspending straps from the lower ends of the shrouds leading down from the parachute canopy.

As soon as a parachutist has completed his descent, to alight on land or water, the imperative thing to be done is instantly to free himself from said suspending straps. Thereafter, and relatively speaking, more at leisure, he may divest himself of the body harness.

There have been many proposals for quick breaking of the couplings of the harness parts, and some of them have been excellent; but the present invention is not concerned with that aspect of development of the parachute art.

What the present invention provides is a simple appliance, to be worn across the breast of the parachutist, from the first donning of the body harness and during all of his descent with the parachute; which appliance, rugged although of light weight, and comfortable on the body, will with absolutely dependable certainty maintain the body harness securely connected to said suspending straps, yet is adapted by a single movement of a single manually operable actuator, such movement not accidentally capable of being performed, instantly to become effective to disconnect both suspending straps and so release the parachute from the body harness, thereby to free the parachutist from all parts of the parachute.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawing, and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawing forming a material part of this disclosure:

Fig. 1 is a front elevational view, showing part of the body of a person suspended from a descending parachute, and a now favored embodiment of the invention in coupling condition relative to said suspending straps from the parachute and to such person's body harness.

Fig. 2 is an enlarged detail view in perspective, showing one of two members of two pairs of cooperant members which are permanently secured to the body harness.

Fig. 3 is a similar view, showing one of the two complementary members of each of said pairs which are permanently secured to said suspending straps.

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Fig. 4 is a further enlarged view, although a fragmentary one, showing partially in front elevation and partially in section certain of the parts seen in Fig. 1.

Fig. 5 is a front elevational view, showing a modification of the appliance of Fig. 4.

Referring to the drawing more in detail, the parachutist 10 is indicated as in a conventional type of body harness incorporating shoulder straps 12, said straps downwardly converged at the front as breast straps 14 for connection, as by a fitment or device 15, to the upper ends of stomach straps 16 divergingly downwardly extending for connection to other straps (not shown), these last connected to the waist strap 17, which waist strap at its back is connected to the rear downward continuations of the shoulder straps 12.

The device 15 may represent any known, or any desirable, form of quick-detachable coupling, operable in various ways known in the art to break down enough harness-part connections to permit the parachutist speedily to divest himself of all parts of the harness. As already stated, the present invention is not concerned with a coupling of the kind just mentioned, but, instead, provides a quick-detachable coupling between the harness and the suspending straps 18 which depend from the lower ends of the shrouds leading down from the parachute canopy.

To the lower end of each strap 18 is attached, as shown best in Fig. 3, the upper buckle portion 19 of a coupling member 20 including a blade-like transverse bottom portion 21 having an aperture 20'.

Such blade 21 fits in a transverse slot 22 across a complementary coupling member 23, the upper main portion of which is a casing 24 carrying elements to be described in a moment. Below the casing 24, the member 23 has a lower buckle portion 25, to which is attached the upper end of a breast strap 14, and also the front lower end of a shoulder strap 12; these two straps 12 and 14 being shown in the present instance as stitched together as at 25'.

Both the members 20 are identical, as are also, except for a reversal of the location of the slot 22 and the buckle portion 25, both members 23, as will be noted from Fig. 1.

While the member 23 at the right in Fig. 1 is shown exteriorly in Fig. 2, reference is now to be made to Fig. 4, where such a member 23 is illustrated as having inside the same an endwisely movable cylindrical bolt 26. Normally, by end thrust from a strong expansile spring 27

in a bore 28 for accommodating the bolt, the latter is positively maintained not only so that a portion thereof traverses the slot 22, and consequently for traversing the aperture corresponding to the aperture 20' of the complementary member 20, but also so that the end of the bolt remote from the spring 27 is seated in a keeper 29 also carried by the member 23.

Said spring 27 is backed by a threaded sleeve-plug 30, which after being screwed in all the way is peened or otherwise made secure against accidental retrograde turning.

Rigidly attached at opposite ends to each member 23, in line with the central opening through the plug 30 of that member, is the top-stretch of a T-shaped tubular unit 31; to facilitate which attachment each end of said stretch is shown as flanged at 32.

To the lower end of the T-staff of said unit is secured the upper end of a metal flexible tube 33 of the familiar spirally wound type. The lower end of said tube is closed by a plate 34, suitably apertured for the passing therethrough of a pair of flexible elements, such as fine piano wires, 35 and 36. These elements 35 and 36 travel as shown through the unit 31 and thence down inside the tube 33, and both said elements are secured at their lower ends to a bar-type pull-handle 37.

The wire 35 passes loosely through the sleeve-plug 30, and has its upper end secured to the bolt 26; and the wire 36 similarly passes through the corresponding sleeve-plug of the member 23 at the right in Fig. 1 and is secured at its upper end to the corresponding bolt of that member.

The bolt is formed with a cylindrical extension 26^a projected in bore 28 of the member 23. An annular groove 26^b is cut in the outside periphery of the bolt 26, adapted to be engaged by a spring pressed locking pawl 24^a when the bolt is in its open or releasing position. The locking pawl 24^a has a projecting finger 24^b extending outwardly from the member 23 so that when it is desired to reset the bolt 26 into locking position, the projecting finger 24^b may be pushed in the direction of the arrow 24^c.

As soon as the parachutist alights, a single one-directional pull on the handle 37 acts through the wires 35 and 36 to retract fully both the bolts in the two members 23, whereupon, instantly, the parachutist's body harness will be completely disconnected from the parachute-borne suspending straps 18.

During the parachutist's descent, he is comfortably suspended from the straps 18, while the rigidity of the T-unit 31 maintains the points of coupling of said straps with the body harness properly spaced laterally of the parachutist's body, and thus positively prevents any undesirable creeping of the shoulder straps 12 toward each other and toward the neck and throat of the parachutist.

Referring to Fig. 5, a modification is illustrated in which the members 23', corresponding to the members 23, and all the other parts described in connection with Figs. 1–4, are present, with the exception that, for the T-unit 31 and the tube 33, there are substituted a straight stay-bar element 23^a secured near its opposite ends to the two members 23' to maintain them rigidly in predetermined spacing, for housing and guiding the wires corresponding to the wires 35 and 36, a flexible tube 38 extends from one of the members 23'; another such tube 39 extends from the other member 23', and the lower converged ends of these tubes are connected with the upper end of a rigid tube 40, below which is the pull-handle 37', corresponding to the handle 37, to simultaneously pull the cables in tubes 38 and 39 and open both bolts at the same time.

It is to be understood that the parachute appliance may be positioned on the wearer's back, chest, or at other positions in any suitable manner. When the device is placed on a person's back, the flexible tube 33 should be extended to the front of the wearer so that the handle 37 be at a convenient location.

The bolt locking device may also be located at any position between the handle 37 and the bolt 26.

While I have illustrated and described the preferred embodiments of my invention, it is to be understood that I do not limit myself to the precise constructions herein disclosed and the right is reserved to all changes and modifications coming within the scope of the invention as defined in the appended claims.

Having thus described my invention, what I claim as new, and desire to secure by United States Letters Patent is:

1. In a parachute having a body harness including spaced breast straps and a canopy having depending shroud straps, means releasably connecting the bottom ends of the shroud straps to the breast straps, comprising a casing fixedly secured to each of the breast straps and formed with a slot which opens to the top face thereof, a coupling member mounted on the bottom end of each of the shroud straps, said coupling members being formed with depending blade-like bottom portions received in the slots of said casing, said bottom portions being formed with apertures, said casings being formed with inwardly extended bores aligned with the holes of said bottom portions when inserted into said slots, spring pressed plungers slidably disposed within said bores and having their outer ends projecting through said apertures retaining said coupling members connected with said casings, and manually controllable means for withdrawing said plungers from said apertures freeing said coupling members for separation from said casings.

2. In a parachute having a body harness including spaced breast straps and a canopy having depending shroud straps, means releasably connecting the bottom ends of the shroud straps to the breast straps, comprising a casing fixedly secured to each of the breast straps and formed with a slot which opens to the top face thereof, a coupling member mounted on the bottom end of each of the shroud straps, said coupling members being formed with depending blade-like bottom portions received in the slots of said casing, said bottom portions being formed with apertures, said casings being formed with inwardly extended bores aligned with the holes of said bottom portions when inserted into said slots, spring pressed plungers slidably disposed within said bores and having their outer ends projecting through said apertures retaining said coupling members connected with said casings, and manually controllable means for withdrawing said plungers from said apertures freeing said coupling members for separation from said casings, a tube extended between said casings in end alignment with said plungers and having a branch tube depending therefrom between the breast straps, said withdrawing means comprising flexible wires each having one of their ends connected

to the inner ends of said plungers, said wires having their free ends extended through said first tube to said branch tube and then through said branch tube and projected from the bottom end thereof, and a handle mounted on the extended ends of said flexible wires.

3. In a parachute having a body harness including spaced breast straps and a canopy having depending shroud straps, means releasably connecting the bottom ends of the shroud straps to the breast straps, comprising a casing fixedly secured to each of the breast straps and formed with a slot which opens to the top face thereof, a coupling member mounted on the bottom end of each of the shroud straps, said coupling members being formed with depending blade-like bottom portions received in the slots of said casing, said bottom portions being formed with apertures, said casings being formed with inwardly extended bores aligned with the holes of said bottom portions when inserted into said slots, spring pressed plungers slidably disposed within said bores and having their outer ends projecting through said apertures retaining said coupling members connected with said casings, and manually controllable means for withdrawing said plungers from said apertures freeing said coupling members for separation from said casings, a tube extended between said casings in end alignment with said plungers and having a branch tube depending therefrom between the breast straps, said withdrawing means comprising flexible wires each having one of their ends connected to the inner ends of said plungers, said wires having their free ends extended through said first tube to said branch tube and then through said branch tube and projected from the bottom end thereof, and a handle mounted on the extended ends of said flexible wires, said first tube having its ends connected to said casings and serving to hold said breast straps properly spaced.

4. In a parachute having a body harness including spaced breast straps and a canopy having depending shroud straps, means releasably connecting the bottom ends of the shroud straps to the breast straps, comprising a casing fixedly secured to each of the breast straps and formed with a slot which opens to the top face thereof, a coupling member mounted on the bottom end of each of the shroud straps, said coupling members being formed with depending blade-like bottom portions received in the slots of said casing, said bottom portions being formed with apertures, said casings being formed with inwardly extended bores aligned with the holes of said bottom portions when inserted into said slots, spring pressed plungers slidably disposed within said bores and having their outer ends projecting through said apertures retaining said coupling members connected with said casings, and manually controllable means for withdrawing said plungers from said apertures freeing said coupling members for separation from said casings, and means for releasably holding said plungers in a position withdrawn from the apertures of said coupling members.

5. In a parachute having a body harness including spaced breast straps and a canopy having depending shroud straps, means releasably connecting the bottom ends of the shroud straps to the breast straps, comprising a casing fixedly secured to each of the breast straps and formed with a slot which opens to the top face thereof, a coupling member mounted on the bottom end of each of the shroud straps, said coupling members being formed with depending blade-like bottom portions received in the slots of said casing, said bottom portions being formed with apertures, said casings being formed with inwardly extended bores aligned with the holes of said bottom portions when inserted into said slots, spring pressed plungers slidably disposed within said bores and having their outer ends projecting through said apertures retaining said coupling members connected with said casings, and manually controllable means for withdrawing said plungers from said apertures freeing said coupling members for separation from said casings, and spring pressed locking pawls pivotally mounted on each of said casings and having its inner ends bearing against the respective plunger, said plungers being formed with grooves to be engaged by said locking pawls when said plungers are withdrawn from said apertures for holding said plungers in their withdrawn positions.

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