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RELEASABLE ATTACHMENTS FOR PARACHUTE HARNESS

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FIG. 1

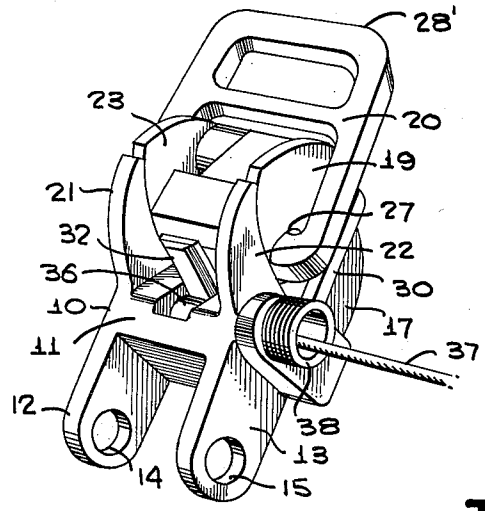


FIG. 2

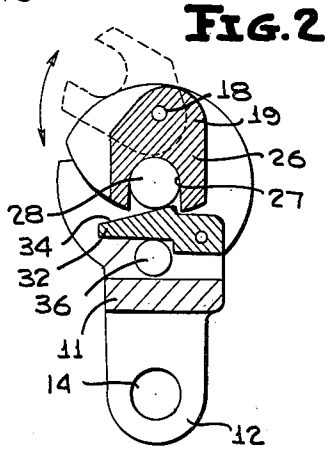


FIG. 3

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RELEASABLE ATTACHMENTS FOR PARACHUTE HARNESS

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This invention relates to releasable attachments for a parachute harness, more particularly for use in pairs as shoulder attachments to connect the harness with stabilizing means employed to prevent a parachutist from spinning during free fall until a time when the main parachute comes into operation, for example, as determined by a barometric unit.

According to the present invention, the attachment comprises a main body for connection to the harness, a catch pivotally mounted on the main body, this catch being adapted to engage with a release link connected to the stabilizing means, and a trigger also pivotally mounted on the main body, this trigger being adapted to lock the release link in engagement with the catch and also to lock the catch in relation to the main body, the trigger being normally held in its locking position by a member controlled by a barometric unit or timing device. The pivotal mounting of the catch upon the main body of the attachment is preferably offset in relation to the pull normally exerted upon the catch by the stabilizing means, the offset being such that the pull tends to swing the catch around its pivot and allow the release link to escape, any swing in this direction being however normally prevented by the locking action of the trigger.

One embodiment of the invention, as applied to a pair of shoulder attachments to the main lift webs of the harness for releasable connection to two straps secured to the rigging lines of a stabilizer parachute or drogue, will now be described with reference to the accompanying drawings in which:

FIGURE 1 is a perspective view of one attachment in the locked position;

FIGURE 2 is a side-sectional view of the attachment of FIGURE 1; and

FIGURE 3 is a perspective view similar to FIGURE 1 showing the attachment in the open position.

Each attachment comprises a main body 10 of approximately H-shape, the cross-bar 11 of the main body having two dependent lugs 12 and 13 respectively for connection by a through-bolt or the like passing through holes 14 and 15 respectively in the lugs 12 and 13, to a fitting upon the respective lift web of the harness, and two upstanding lugs 16 and 17 respectively carrying a through pin 18 on which a catch 19 for a release link 20 is pivoted, these lugs being curved backwardly from the cross-bar 11. The main body is also provided with two outer lugs or wings 21 and 22 respectively, extending forwardly from the body, and spaced to either side of the lugs 16 and 17, these wings being of cusp shape, with outer curved surfaces concentric with the rearward curved portion of the lugs 16 and 17 respectively.

The catch 19 pivotally mounted upon the through-pin 18, is shaped with recesses into which the upstanding lugs 16 and 17 respectively fit, (as shown more clearly in FIGURE 3) the recesses dividing the catch into end portions 23 and 24 respectively, which are in line with the wings 21 and 22 respectively, and a central portion 26 which is locked by a trigger as hereinafter described. The surface of the catch 19 which faces the cross-bar 11 when the attachment is in the locked position as in FIGURE 1, is provided with a longitudinal groove 27 adapted to accommodate the transverse bail 28 of the release link 20, this surface of the catch being curved to follow the

inner concave curve of the wings 21 and 22. The bail of the release link is held within the groove 27 as long as the portion of the groove formed in the end portions 23 and 24 is faced by the wings 21 and 22 but is released therefrom when the catch swings out sufficiently to bring the groove 27 beyond the end of the wings.

The outer surfaces of the end portions 23 and 24 of the catch 19 are curved concentrically with the external surfaces of the wings 21 and 22 and the rear surfaces of the lugs 16 and 17, so as to complete the general cylindrical form of the attachment when in the locked position.

The release link 20 is of generally rectangular shape, with a strengthening cross-bar, its transverse bail or end portion 28 being preferably bevelled or rounded to facilitate its engagement with the groove 27, the other end portion 28 of the release link being connected to a strop (not shown) secured to the rigging lines of one half of the stabilizing parachute. When engaged with the catch 19, the release link 20 has its bail 28 extending along the groove of the catch and its side portions resting against two shoulders 29 and 30 respectively formed on the end portions 23 and 24 respectively of the catch; the pull exerted by the stabilizer is therefore exerted upon the catch in a definite direction from which the pivotal mounting of the catch, that is to say the through pin 18, is slightly offset, for example by 0.05 ins., which will be sufficient to ensure the swing of the catch when released.

A trigger 32 is pivotally mounted at one end upon the main body 10 by a through-pin 33 passing through the inner ends of the upstanding lugs 16 and 17. As shown in FIGURE 2 the trigger extends transversely of the attachment and has its upper face 34 inclined from the free end for a length sufficient to cross below the groove 27 in the catch 19 when the latter is in the locked position, at which point the inclined face of the trigger falls to leave an upstanding shoulder 35 upstanding for engagement in the groove 27 so as to lock the catch 19 in relation to the main body 10 of the attachment. The trigger 32 is normally held up in this locking position by a control member in the form of a peg 36 formed by the swaged end of a cable 37 connected to the barometric unit or timing device 40. The peg 36 and cable 37 are passed into the locking position through a cylindrical projection 38 formed integral with the main body 10, the bore of the cylindrical projection continuing through the upstanding lug 17. The cylindrical projection 38 is externally threaded to engage the internally threaded end of a flexible tube (not shown) within which the cable 37 runs and which serves to protect the cable. The peg 36 is held against movement through vibration or handling of the attachment by the pressure of a spring loaded plunger (not shown) housed within the body 10 and having a pip which registers behind the peg at the entry point of the cable. The peg 36 is tapered at this point as indicated at 39 (FIGURE 3), so that a predetermined pull on the cable when the barometric unit or timing device 40 operates will override the hold of the spring loaded plunger.

The other shoulder attachment connected to the other shoulder of the parachute harness is of identical construction.

When the barometric unit or timing device 40 operates, both cables are pulled so as to withdraw the control pegs from the main body. The triggers of both attachments fall owing to the opening urge of catch 19 acting at a point offset from pin 33, thereby freeing the two catches to swing together with the release links about their offset pivotal mountings; as soon as the catches have carried the bails of the release links beyond the tips of the cusp-shaped wings the release links can escape from the longitudinal grooves, thus disconnecting the stabilizer parachute from both shoulder attachments. At or about

the same time, the main parachute will be brought into action for controlling the further descent of the parachutist.

For connecting the stabilizer parachute to the harness, the release links will be engaged with the grooves on the catches when the latter are turned to expose the grooves as shown in FIGURE 3; the catches will then be turned to carry the bails of the links inwardly over the cusp-shaped wings until the triggers can engage with the grooves and the triggers will be locked in this position by inserting the control pegs beneath the triggers, the pip-fitted spring loaded plungers holding them in place.

I claim:

1. A load carrying and release device comprising a body, said body including a pair of spaced lugs projecting from one side thereof, a catch having a link abutment surface formed on one of its sides, pivot means pivotally connecting the other side of said catch to said lugs whereby said catch may be pivoted from a closed position whereby said body and abutment surface form a chamber for a link to an open position whereby said abutment surface faces away from said body, a trigger member pivotally connected to said body and having a shoulder engageable with said catch to hold it in said closed position, a peg adjacent said trigger slidable within a recess in said body, said peg normally engaging said trigger so as to maintain said shoulder in engagement with said catch, securing means on the other side of said body adapted to secure a strap thereto, said abutment surface when said catch is in closed position being offset from a line connecting said securing means and said pivot means whereby tension applied by a load to said link and securing means will tend to rotate said catch to said open position.

2. A device as defined in claim 1, including automatic means connected to said peg for moving said peg out of engagement with said trigger to release said shoulder from said catch.

3. A device as defined in claim 2, wherein said automatic means comprises a barometric device operated by atmospheric pressure.

4. A device as defined in claim 2, wherein said body includes a pair of cusp-shaped wings extending in the direction of rotation of said catch when released from said shoulder and cooperating with said catch to retain said link when said catch is in closed position.

5. A device as defined in claim 4, wherein said abutment surface defines a groove in said catch adapted to receive a portion of said link, said groove being closed by said cusp-shaped wings when said catch is in closed position, and said groove being opened only after said catch has pivoted sufficiently to move said groove beyond the ends of said cusp-shaped wings.

6. A device as defined in claim 5, wherein each of said lugs, each of said wings, and said catch have outer aligned edges of substantially circular configuration when said catch is in closed position.

7. A device as defined in claim 6, wherein said catch includes a plurality of legs defining said groove and one of said legs being engageable with said shoulder to hold said catch in said closed position.

8. A device as defined in claim 7, wherein said body is substantially H-shaped.

9. A device as defined in claim 7, wherein said peg has a tapered end, a flexible operating cable connected to said tapered end, said peg being parallel to said groove and located directly between said securing means and said groove.

10. A device as defined in claim 9 including said link in combination therewith, said link having an end portion extending through said groove, a shoulder formed on one end of said catch and limiting pivotal movement of said link in one direction where said link is normally maintained in a position to extend away from said body along a line substantially parallel to a line extending between said groove and securing means.

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