May 28, 1935. S. O. C. KUHLEMANN 2,003,205

QUICK RELEASE FASTENER FOR PARACHUTE HARNESS

Filed Nov. 15, 1929 2 Sheets-Sheet 1

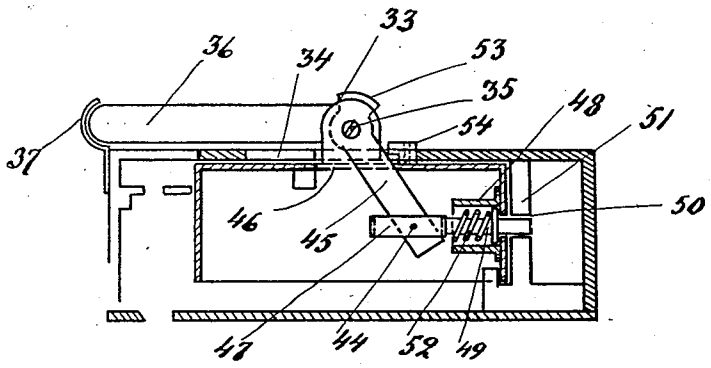


Fig: 4

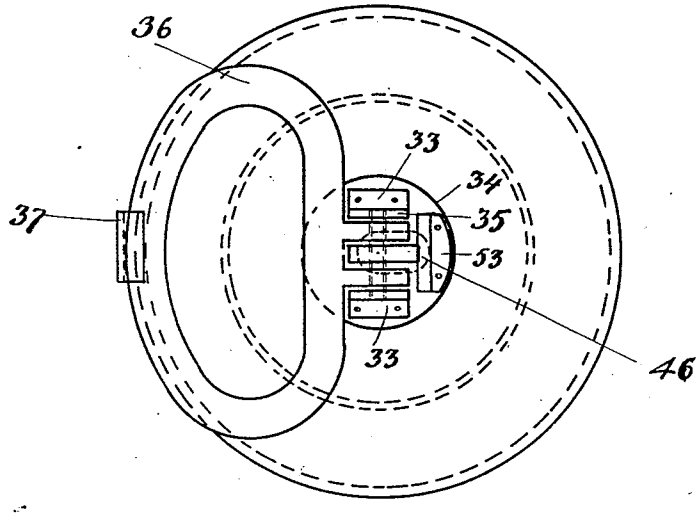


Fig: 1

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QUICK RELEASE FASTENER FOR PARACHUTE HARNESS

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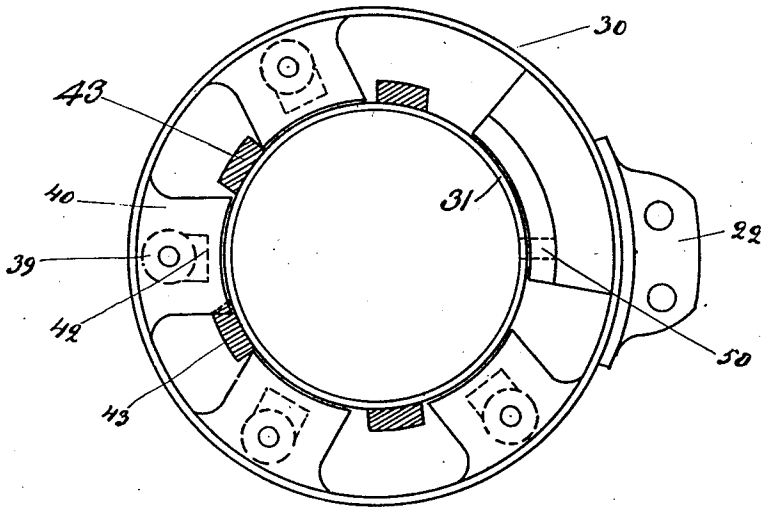


Fig: 2

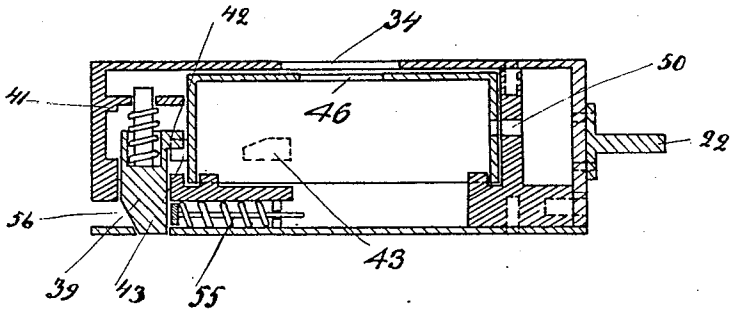


Fig: 3

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UNITED STATES PATENT OFFICE

2,003,205

QUICK RELEASE FASTENER FOR PARACHUTE HARNESS

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Application November 15, 1929, Serial No. 407,510
In Sweden August 19, 1929

13 Claims. (Cl. 244—21)

My present invention relates to an improved device for locking the different straps of a parachute harness.

An object of my invention is to provide a locking device for the different straps in harness for parachutes, which is easy to handle but on the other hand is so constructed that a premature release thereof is effectively prevented.

A further object of the invention is to provide a locking device of the type described in which a member for the release of said device is adapted to execute two or more turning movements, before the locking device is opened.

The invention will be more fully described with reference to the accompanying drawings showing an embodiment of a locking device according to the invention, other features characterizing the invention being set forth in said description.

In the drawings:—

Fig. 1 is a plan view of the new locking device.

Fig. 2 is likewise a plan view of the locking device, certain parts being broken away and other parts shown in section.

Fig. 3 is a cross section of Fig. 2.

Fig. 4 is a cross section of Fig. 1, certain parts being broken away.

The improved locking device of this invention is adapted to be used in connection with the so-called single point release harness, such as set forth in U. S. Patenst 1,842,611 and 1,899,656 wherein all of the strap ends are adapted to be controlled by a single quick releasing device which may be instantly manipulated to release the body encasing straps from about the wearer so that the wearer may free himself or herself from the parachute harness and other apparatus, as is sometimes necessary under circumstances well known to those skilled in the art.

The locking device shown in Figs. 1 to 4 inclusive comprises an outer box 30 and an inner cylinder 31 rotatably mounted in said box, for instance in guides. The box 30 is provided with a suitable fastening 22 for permanent attachment to the harness. Secured to the inner cylinder 31 are two small supports 33 (see Figs. 1 and 4) which extend upwardly through an opening 34 in the lid of the box 30. Secured to said supports 33 is a shaft 35 and rotatably mounted on said shaft is a releasing member in the form of a handle 36 locked in its normal position by means of a spring 37.

A locking piston 39 (see Figs. 2 and 3) is arranged for each coupling point in the locking device, said pistons 39 being guided in holders 40 in the box 30 and kept in depressed position by springs 41. The locking pistons 39 are each provided with a wedge-shaped projection 42 adapted to co-operate with a corresponding wedge-shaped shoulder 43 on the outer periphery of the inner cylinder 31.

In order to prevent premature release of the locking device a stopping device is provided which is released, when the handle 36 is opened. This stopping device comprises a lever 45 (see Fig. 4) rotatably mounted on the shaft 35 and extending through an opening 46 in the inner cylinder 31 downwardly into said cylinder where it is connected by means of a pivot 44 with a ring 47 or the like which in turn is pivotally connected with a pin 49 journalled in a support 48 and extending through a hole in the wall of the inner cylinder 31 into an opening 50 in a partition 51 or the like arranged in the box 30. A spring 52 tends to hold the pin 49 in engagement with the opening 50, thus preventing rotation of the inner cylinder 31. At its top the lever 45 is provided with an abutment 53 adapted to co-operate with the handle 36 in such manner that the latter must first be moved upwardly through a certain angle, before the lever 45 is swung for the release of the stopping device. An abutment 54 on the inner cylinder 31 serves together with the abutment 53 to hold the handle 36 in its raised position.

The operation of the locking device is as follows:

When the aviator puts on a parachute harness, he inserts the usual strap coupling into the opening 56 in the outer box 30 thereby pressing the locking pistons 39 upwardly against the action of the springs 41. The strap couplings are of ordinary construction, such as shown in the above mentioned U. S. Patents 1,842,611 and 1,899,656. The openings therein receive the locking member 39, and the latter compresses the ejecting springs 53 when in position. When the aviator desires to disengage himself from the parachute, he disconnects first the handle 36 from the spring 37 and swings the handle open. When the handle is nearly opened, the abutment 52 is actuated, whereby the lever 45 is swung, causing the pin 49, pivotally connected thereto, to be brought out of engagement with the opening in the partition 51, thus releasing the stopping means for the inner cylinder 31. The abutment 53 on said inner cylinder limits the opened position of the handle. The stopping means operates, consequently, in such manner that it is released, only when the operating handle is almost entirely

raised, then permitting further movement of the handle for the release of the locking devices.

When the aviator then turns the handle **36**, the wedge-shaped shoulders **43** on the inner cylinder **31** are brought into engagement with the wedge-shaped projections **42** of the locking pistons **39** causing the latter to be raised by means of wedge action against the actions of the springs **41**, thus releasing the strap ends which are pressed out of the box **30** by the action of the springs **55**. The harness will then as a whole fall off the aviator who, consequently, becomes entirely free from the parachute.

It will be noted that the invention provides a single manipulative means, the pivoted member **36** in the embodiment shown, which must first move through a substantial distance in one direction before it can release the means by which the inner cylinder is locked, and that it then moves in another direction to cause movement of the cylinder to unlock the bolts or detents which hold the strap-ends locked in position. The substantial distance through which the manipulative member first moves, such as the rotative arc of ninety degrees which is given handle **36** in the embodiment particularly described, is intended to make accidental release of the cylinder-locking means extremely unlikely, particularly since this movement must be effected deliberately, after releasing the handle from spring clip **37**. Reference in the claims to a substantial distance through which the manipulative member first moves, or the like, should be understood as contradistinguished from a comparatively slight distance, such as an arc of rotation of a few degrees only, which might much more easily be accomplished inadvertently.

What I claim is:—

1. In a common locking device for coupling together all free ends of the straps of a parachute harness, the combination of detent means, and, means for releasing said detent means including a handle adapted to be swung upwardly and then to be turned.

2. In a common locking device for coupling together all free ends of the straps of a parachute harness, detent means, stopping means for keeping said detent means in locked position, an operating handle for releasing the detent means adapted to be swung upwardly for releasing the stopping means and to be turned for entirely releasing the detent means.

3. A locking device for straps in harness for parachutes or the like, including means composed of releasable locking pistons for holding the ends of the straps, means for releasing said locking pistons including a common member provided with two different axes on which the member is turnable in order to open the holding means.

4. A locking device for straps in harness for parachutes, including means for holding the ends of the straps composed of releasable locking pistons, releasing means for said pistons in the form of a common member having two different axes on which the member performs at least two turning movements, and said locking device also including a stopping device which when the releasing member has been turned on one of said axes is released and allows an additional movement of the releasing member in order to open the locking device.

5. A locking device as claimed in claim 4, in which the releasing member is provided with a handle adapted to be swung upwardly for releasing the stopping device and to be turned for releasing the locking pistons.

6. A locking device as claimed in claim 4, in which the releasing member is provided with a handle adapted to be swung upwardly for releasing the stopping device and to be turned for releasing the locking pistons, and a stop in its resting position.

7. In a locking device for securing the various straps of a parachute harness together the combination of a slotted body, bolts extending across the slots in the body, means for releasing the bolts including a cylinder which is capable of being turned from the outside of the device, said cylinder being provided with projections having inclined surfaces which are adapted to cooperate with the bolts to move the bolts when the cylinder is rotated, means for normally locking the cylinder against rotation, and a liftable releasing handle for releasing the locking means on the cylinder which after being lifted permits the rotation of the cylinder to release the locking bolts.

8. In a parachute harness locking device, the combination of a body having strap-end receiving means, strap-holding means therein, means for removing said strap-holding means from operative position, means for normally locking said removing means against operation, and a single manipulative member, positioned to coact with said locking means and said removing means and for movement, first through a substantial predetermined angle of rotation to render said locking means inoperative, and then for angular movement in another direction for operating said removing means.

9. In a parachute harness locking device, the combination of a body having strap-end receiving means, strap-holding means therein, means for removing said strap-holding means from operative position, means for normally locking said removing means against operation, and a single manipulative member, comprising a lever, positioned to coact with said locking means and said removing means, and adapted to swing in one direction to render said locking means inoperative and then to move in another direction for operating said removing means.

10. In a parachute harness locking device the combination of a body having a strap-end receiving opening therein, a spring-pressed detent in said opening for holding a strap end positioned therein, means for withdrawing said detent to inoperative position, comprising a member movable relative to such detent, means for normally locking said withdrawing means against movement to withdraw said detent, and a single manipulative member mounted on said first named member positioned to coact with said locking means to release the same by a substantial movement of rotation relative to said first named member, and to then move with said first named member to remove said detent.

11. In a parachute harness locking device, the combination of a body having strap-end receiving means, strap-holding means therein, a rotatable member within said body constructed, upon its rotation, to cause the removal of said strap-holding means from operative position, means for locking said member against rotation, and a manipulative member pivotally mounted on said rotatable member and adapted by its pivotal movement, to unlock said locking means, and to then serve as a handle for the rotation of said rotatable member.

12. In a common locking device for the quick release fastening of the strap ends of a parachute harness the combination of a body having sockets therein for receiving the harness strap ends, movable detents operable across said sockets, springs normally urging said detents into strap end locking position, means for simultaneously withdrawing said detents against their normal spring action including a swingable manipulating handle, and releasable detent means for holding the handle in an inoperative position when the detents first mentioned are in locked position.

13. In a locking device for the strap ends of parachute harnesses the combination of a body, locking detents for holding the strap ends upon said body, and means for releasing said locking detents including a common manipulating member swingably mounted upon said body and movable upon its axis and also in another direction in order to release said locking detents.

STIG OVE CHRISTIAN KUHLEMANN.