June 27, 1939. G. WAITE ET AL 2,164,130

PARACHUTE APPARATUS

Filed Aug. 5, 1936

Fig. 1.

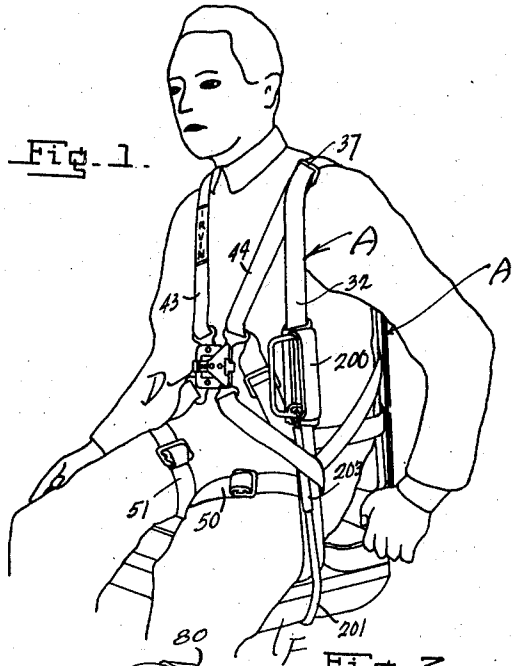


Fig. 2

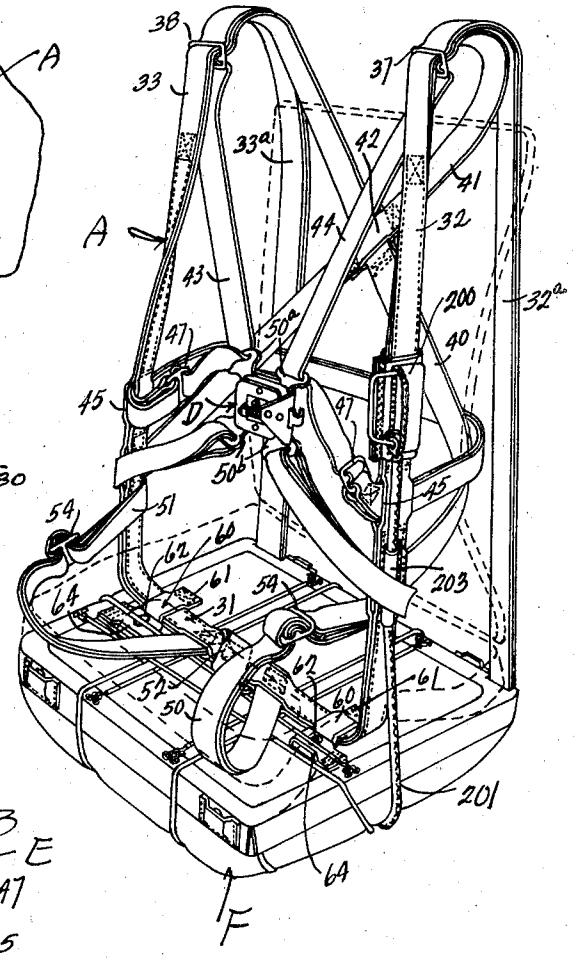
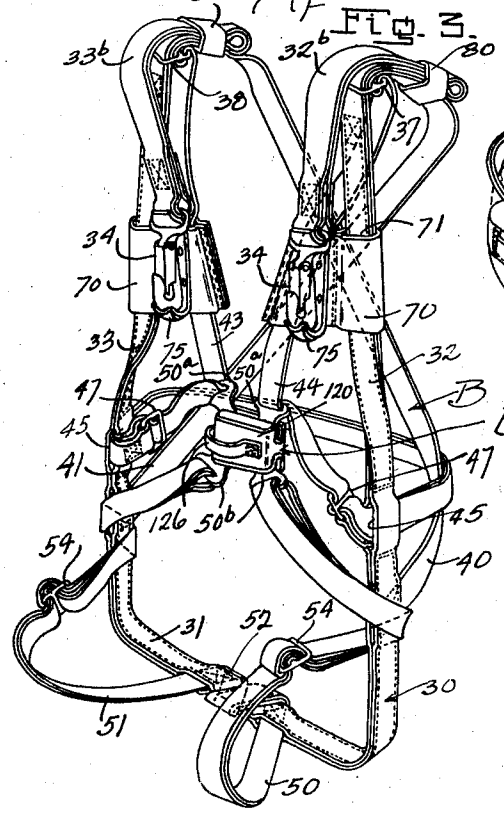


Fig. 3.



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PARACHUTE APPARATUS

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Application August 5, 1936, Serial No. 94,470

7 Claims. (Cl. 244—151)

This invention relates to improvements in parachute apparatus.

The primary object of this invention is the provision of improved parachute apparatus including a safety harness which may be so placed upon the body of a wearer that it is practically impossible for the wearer to become dislodged from the harness. It sometimes happens due to eccentric load shock occurring at the time of opening of the parachute that the harness partially or completely slips off of the wearer. To obviate this the present harness has the straps so arranged that it is impossible for the harness to slip off of the wearer's body.

A further object of this invention is the provision of an improved harness of the single point release type.

A further object of this invention is the provision of improved means for the attachment of an emergency pack to a parachute harness.

A further object of this invention is the provision of a harness which is adjustable to suit the stature of the wearer, and includes adjustable coupling means which may be arranged on the harness, according to the stature of the wearer, so that an emergency pack may be coupled in proper position upon the harness, with facility.

Other objects and advantages of this invention will be apparent during the course of the following detailed description.

In the accompanying drawing, forming a part of this specification, wherein for the purpose of illustration are shown preferred and modified forms of the invention,

Figure 1 is a perspective view showing the improved harness upon a wearer.

Figure 2 is a perspective view of the improved harness and pack of the type which is attached to the harness while the latter is worn by the aviator.

Figure 3 is a perspective view of the improved harness as adapted for use with a detachable emergency pack.

In the drawing, wherein similar reference characters designate corresponding parts throughout the several views, the letter A may designate a harness adapted for use with an attached pack F. B is a similar harness for use with a detachable pack of the type shown in application Serial No. 134,109, filed Mar. 3, 1937. D and E are different forms of quick release fasteners or fittings used with the single point release type of harnesses A and B.

In the main the harnesses A and B are of identical construction except that harness A is used with an attached pack and the harness B is used with a detachable emergency type of pack. The latter type of harness, as has been set forth in U. S. Patent #1,953,000, may be worn by the aviator independent of the pack, and the latter may be used when the emergency arises.

The harnesses A and B each includes a supporting sling 30 consisting of double webbing stitched together and providing a seat portion 31 and vertical riser webs 32 and 33. In the form of harness A the riser webs 32 and 33 are continued rearwardly of the wearer at 32^a and 33^a, in suspension lines which extend into the pack F, where they are connected to the shroud lines of the parachute in the well known manner. The container of the pack F is preferably connected to the seat portion 31 of the harness in an improved manner to be subsequently described. In the form of harness B the suspension lines 32^b and 33^b are extended forwardly upon the harness in a manner to be subsequently described, and at their extremities are provided with coupling parts 34 which may be of any approved type, but in the present instance are snap fasteners which are releasably held in position similar to the manner disclosed in U. S. Patent #2,016,236, but in a modified manner which will be hereinafter described.

At the shoulders of the harness the riser webs 32 and 33 are provided with adapters 37 and 38, by means of which the straps are held in position so that the harness may be adjusted to fit the stature of the wearer. These adapters 37 and 38 are of the double slot type, that is, a central bar is provided and the webbing or straps of the harness may be threaded through either or both of the slots around the cross bar. In the present form of harness the riser webs 32 and 33 are threaded through only the front or upper slot of the adapters so that the adapters may be readily slid therealong.

Each of the harnesses A and B includes a pair of crossed back straps 40 and 41 which are connected in a fixed stitched relation between the layers of the U-shaped supporting sling on the riser webs 32 and 33 respectively just above the seat portion 31. These straps 40 and 41 extend upwardly across the back of the wearer and are crossed in the middle of the back of the wearer in a slidable loop adjustment, as shown at 42 in Figure 2 of the drawing. They respectively continue over the shoulders of the wearer and are threaded through both slots of the aadpters 38 and 37 respectively, that is, they ex-

tend through both slots of each adapter, around the cross bar thereof, as shown in Figures 2 and 3 of the drawing, and thence they continue downwardly at the front of the wearer in a downwardly slightly convergent relation, as shown at 43 and 44 in Figures 2 and 3. These breast straps 43 and 44 are extended slidably through suitable tunnels or loops 45 in the riser webs 32 and 33 of the harness at a point above the lower end fixed connections of the straps 40 and 41. The end of each strap which thus passes through a loop 45 is extended horizontally across the back of the wearer and provided with an adapter 47 threaded adjustably upon the other horizontal strap. Thus these portions are adjustably doubled upon each other so that the harness may be adapted to the girth of the wearer.

The straps 43 and 44 thus form by means of their connection with the adapters 37 and 38 and their lower connection through the tunnels or loops 45 in the riser webs, breast loops upon which are threaded coupling or fastener parts 50a for release connection with the quick release fitting D or E of the harness, as the case may be.

Leg straps 50 and 51 are provided. They are formed by a strip of double webbing which is spirally wound about the strap 31 and extended between the layers of said seat strap and stitched thereto as shown at 52 in the drawing; the straps 50 and 51 loosely extending for a greater length than leg straps of quick release harnesses heretofore provided. The ends of the leg straps 50 and 51 are doubled upon each other in a loop arrangement which may be adjusted as to length by means of adapters 54. The ends of the said loop arrangement of the leg straps have coupling parts 50b for release connection with the quick release fitting D or E, as the case may be. It was above mentioned that the coupling parts 50a and 50b are releasably connected to the fitting or coupling D or E. In the preferred instance, however, one of these connector parts 50a or 50b is permanently connected to one of the detents or members of the quick release fitting. The latter is preferably connected to the connector part 50a on the left hand side of the harness, although this is purely optional. The leg straps 50 and 51, as shown in Figure 3, are first extended at the inside of the riser web and then looped externally at the outer side of the riser web and brought up into position for connection with the quick release fastening means. This arrangement enables the leg straps to be freely loosened from the body of the wearer upon release of the quick connector fastener.

In the form of pack attached harness A, the pack F as before mentioned is attached to the seat strap 31. Heretofore this atachment was fixed and permanent, but in the present invention I provide tabs 60 which are permanently stitched at 61 at one end of each and at the other end is provided with "lift the dot" fastener 62. This "lift the dot" fastener 62 has the male portion thereof upon the free end of the tab 60 and the female portion thereof upon the upper flap of a loop 64 in which the free end of the tab 60 is slipped. The dot of the "lift the dot" fastener is remote from the seat strap 31 so that it can only be released by pulling the "lift the dot" fastener towards the seat strap. In other words a pull upon the seat pack away from the seat strap will not open the "lift the dot" fastener.

In the emergency pack harness B stiffened web and coupling supports 70 are provided. They are provided with passageways therethrough, the axes of which are acute to each other. One of these passageways 71 receives the riser web 32 or 33, as the case may be, and the other passageway receives the upper portion of the breast strap 43 or 44, as the case may be. These supports 70 are slidable along the straps which they encompass and the webbing of the support 70 is suitably stiffened to hold the straps 32 and 44, or 33 and 43 in definite relation. Of course the supports 70 are provided with spring clips or members 75, as has been more adequately described in U. S. Patent #2,016,236 for releasably supporting the snap fasteners or coupling parts 34 in position, so that the complementary coupling parts upon the emergency pack may be attached thereto. The coupling parts 34 are always held in definitely spaced relation upon the harness and ready for emergency attachment at all times. On the harness B the loose ends of the suspension webs 32b and 33b are releasably held in suitable fabric keepers 80, at the shoulders of the wearer.

The single point release type of harness may be used with the type of quick release fitting shown in U. S. Patents #1,899,656 or #1,842,611, or it may be of the improved type D or E shown in the drawing, and specifically described in our co-pending divisional application Serial No. 192,872, filed February 26, 1938.

In the attached type of pack and harness, premature pulling of the rip cord has been occasioned due to the fixed connection of parts upon the harness. To prevent this a slidable pocket 200 is provided upon a riser web of the harness, which may slide longitudinally thereon. The rip cord is suitably housed in a hollow flexible cable 201, well known to the art. It has been customary to fix this cable upon some part of the harness. However, we provide a sleeve 203 which is stitched upon the harness and slidably receives the housing 201, so that the housing 201 may slide through the sleeve as the rip cord pocket 200 slips along the riser web. This arrangement increases the safety factor in the use of parachute apparatus, particularly where the latter is used by a number of persons of varying stature. It guards against premature release of the parachute.

Various changes in the shape, size, and arrangement of parts may be made to the form of invention herein shown and described, without departing from the spirit of the invention or the scope of the claims.

We claim:

1. In a parachute harness the combination of body harness including riser webs, and pack coupling parts slidably movable along the riser webs for releasable connection with a parachute pack.

2. In a parachute harness the combination of body attaching straps including side strap portions, a parachute pack having a coupling part thereon, and a complementary coupling for releasable connection with the coupling of the pack adjustably mounted upon a side strap of said parachute harness for sliding movement along said strap so that it may be located at a proper level to suit the stature of a wearer.

3. In parachute harness the combination of body attaching straps including side riser webs, and breast straps lying between said side riser webs, supporting means for maintaining the relative position of the side riser webs with respect to said breast straps and movable longitudinally

thereof, and parachute pack coupling means upon said supporting means.

4. In a parachute harness the combination of a U-shaped supporting sling including side riser portions to which a parachute canopy if adapted to be connected, breast straps connected with the side riser portions at the vicinity of the shoulders of a wearer and extending to the front of the wearer at a location between the side riser portions, independent leg strap means connected with the U-shaped sling to provide leg loop openings and extending to the front of the wearer, a quick release fitting for releasably connecting the ends of the breast straps and leg straps together at the front of the wearer, and parachute pack coupling supports adjustably mounted upon the side riser portions and breast straps at each side of a wearer for movement longitudinally of the wearer.

5. In parachute apparatus, a harness including straps and means for encasing them upon a wearer, a parachute pack attached to the harness having a rip cord and a rip cord housing, a rip cord handle attached to said rip cord, retaining means longitudinally slidable upon a strap of the harness for releasably supporting the rip cord handle, and means for slidably guiding the movement of the rip cord housing and rip cord upon said strap of said harness in complementary cooperative relation with respect to the movement of said handle retaining means.

6. In parachute harness the combination of a U-shaped supporting sling including a seat portion, side riser portions, and suspension webs connected at the upper ends of the latter terminating in parachute pack attaching coupling parts, back straps connected with the lower portions of each of the side riser webs and extending in crossed relation to the shoulder vicinity of the side riser webs and thence extending forwardly and downwardly to provide breast straps at the front of the wearer, adapters connected with the upper ends of the side riser webs and adjustably connecting the back straps with the side riser webs in a sliding adjustment and so that the back straps and breast straps may be relatively adjusted at said locations, leg straps, coupling means for connecting the breast straps and leg straps upon the wearer, slidable coupling supports connected with each of the side riser webs and the adjacent breast straps and slidable along the latter also to position the said supports at a desired level, and means on said supports for releasably supporting the aforementioned coupling parts at the ends of the suspension webs in a definite position for pack attachment.

7. In parachute harness the combination of a U-shaped supporting sling including a seat and side riser webs, back strap means connected with said riser webs, breast straps connected at the shoulder vicinity partions of said riser webs and thence extending downwardly and having releasable connection with the lower portions of the side riser webs, slidable supports upon each of the side riser webs slidably attached also to the adjacent respective breast straps and holding the latter in properly spaced relation with respect to the adjacent respective side riser webs, means on said support for attaching a pack thereto, leg straps, and coupling means for the leg and breast straps.

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