

Feb. 28, 1933.

F. S. WIGLEY ET AL

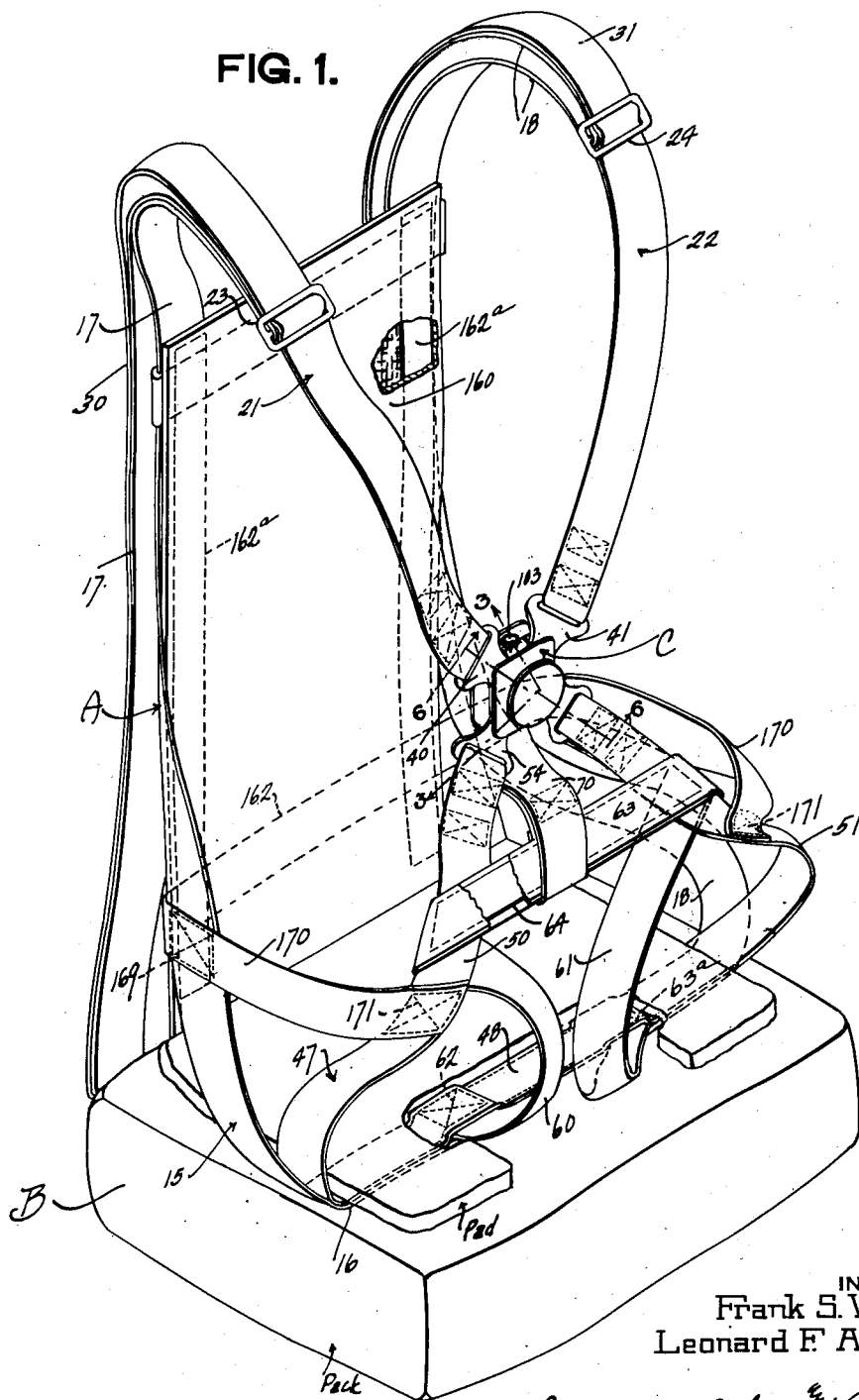
1,899,656

PARACHUTE HARNESS

Filed Sept. 11, 1930

3 Sheets-Sheet 1

FIG. 1.



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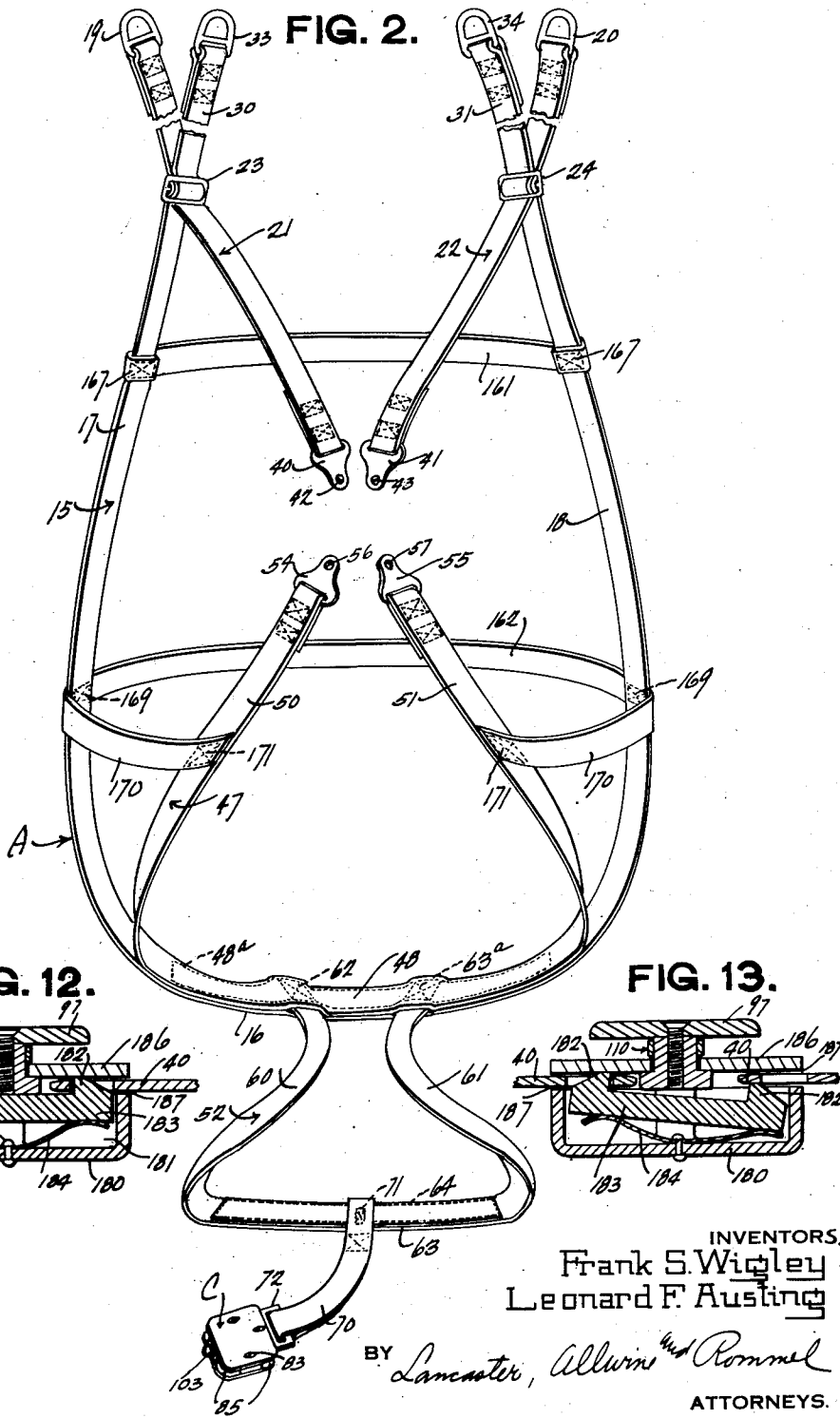
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FIG. 3.

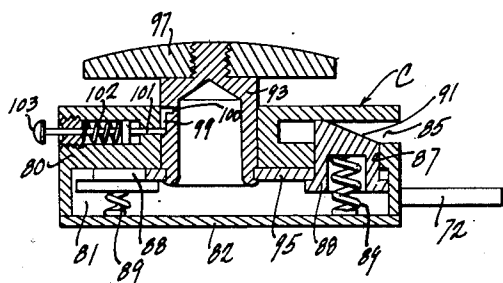


FIG. 4. FIG. 5.

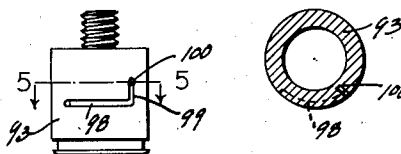


FIG. 6.

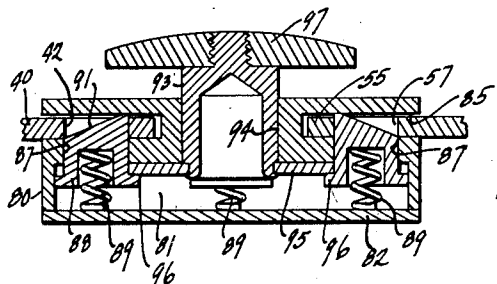


FIG. 7.

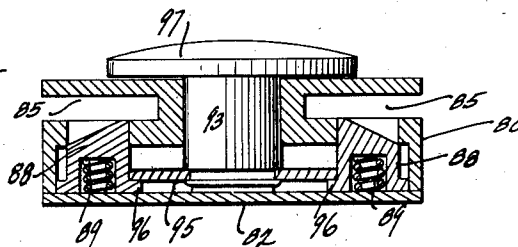


FIG. 8.

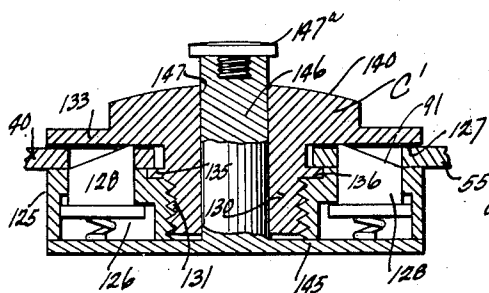


FIG. 9.

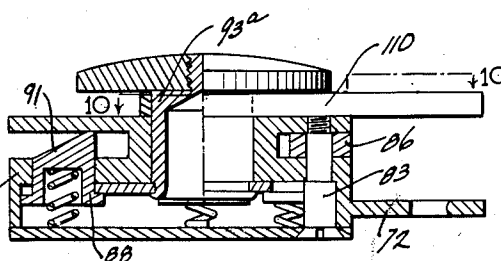
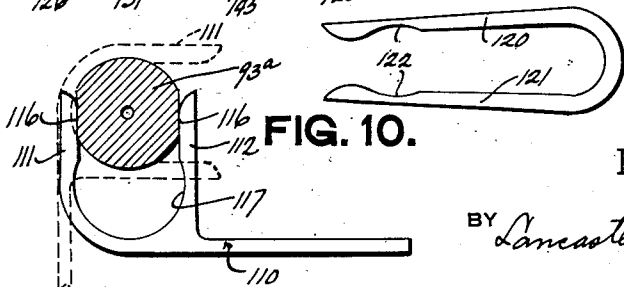


FIG. 11.



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PARACHUTE HARNESS

Application filed September 11, 1930, Serial No. 481,317, and in Great Britain September 24, 1929.

This invention relates to improvements in parachute harness or rigging for supporting a body or wearer during a parachute descent.

The primary object of the invention is the provision of a parachute harness which will safely and efficiently suspend a wearer during a parachute descent without liability of dropping therefrom, and which includes a single connecting device under the facile control of the wearer for instantly releasing the wearer from the parachute harness upon the exertion of a single manual effort.

A further object of this invention is the provision of an improved parachute harness of the U-swing supporting type having improved arrangements of leg encircling and shoulder straps which may be releasably connected by means of a single fastener, in an expeditious relation, and in such manner as to enable the harness to be entirely released from the wearer, so that the wearer is free to escape from the harness instantly upon alighting from a drop, without the liability of being dragged over the ground prior to the time that the parachute canopy is deflated.

A further object of this invention is the provision of an improved connector for parachute harness.

A further object of this invention is the provision of an improved parachute harness having leg attaching means of a self adjusting nature.

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

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

Figure 1 is a perspective view showing the harness as it appears in attaching position; showing the connection of a "seat type" pack thereto.

Figure 2 is a somewhat diagrammatic and fragmentary view, of the improved harness with the parts extended to better illustrate the cooperative details.

Figure 3 is a sectional view through the connector, detached from the harness, the

view being taken substantially on planes intersecting the connector substantially on the line 3—3 of Figure 1.

Figure 4 is a side view of the plunger stem of the connector.

Figure 5 is a sectional view taken substantially on the line 5—5 of Figure 4.

Figure 6 is a sectional view taken through the connector and showing its attachment to the free ends of harness straps; the view being taken substantially in a plane designated by the line 6—6 of Figure 1.

Figure 7 is a sectional view similar to Figure 6, but with the release plunger or button depressed for releasing the detents from the harness straps.

Figure 8 is a sectional view through a modified form of connector.

Figure 9 is a sectional view through a connector, showing a modified form of locking means.

Figure 10 is a sectional view taken substantially on the line 10—10 of Figure 9, and showing the locking means.

Figure 11 is a modified form of locking pin.

Figure 12 is a sectional view through a modified form of connector, detached from the harness, the view being taken substantially on planes intersecting the connector substantially on the line 3—3 of Figure 1.

Figure 13 is a sectional view showing spider tilted by insertion of strap fastener part.

In the drawings, wherein similar reference characters designate corresponding parts throughout the several views, the letter A may generally designate the improved parachute harness, which may be used with parachute packs or apparatus of any approved type. In the drawings, the seat type of pack B is shown attached with the sling of the harness, although the harness is capable of use with any type of parachute pack, such as the "lap" type, "chest" type, "back" pack, or the illustrated "seat" type.

The harness is preferably constructed of woven textile flexible linen or other webbing, of high tensile strength, preferably in excess of 2800 pounds. The harness may be of other material if desired, and should be sufficient-

ly flexible to readily conform with comfort upon the wearer, and it should be sufficiently flat to lie compactly against the body in sufficiently snug form-fitting engagement.

5 The improved harness possesses some characteristics of the harnesses now in use, that is, to the extent that it is of the U-sling supporting type, and the lift webs or the suspension lines are arranged in and upon the
10 pack similar to conventional parachute apparatus. Among such conventional parachute harnesses as are in use throughout the world are those set forth in U. S. Patents
15 Nos. 1,440,151; 1,560,366; 1,367,723, and 1,403,984; the second above mentioned patent representing the type of harness in universal use throughout the world. That type, however, requires not only the use of a front connector to release the harness from the upper
20 body of the wearer, but necessitates the use of independent fasteners for the leg encircling and holding straps. In the present invention only one connector is used to serve the purpose of expeditious donning and doffing of the harness.

25 The harness A of the present invention preferably consists of the main U-shaped sling 15 consisting of the seat portion 16 and the riser webs or straps 17 and 18, the free
30 ends of which are provided with D-rings 19 and 20 respectively, or other types of fasteners for securing the shroud lines of the parachute canopy therewith.

Shoulder webs or straps 21 and 22 are provided, adjustably connected intermediate the
35 ends thereof respectively upon the upper portions of the riser straps or webs 17 and 18, by means of suitable adjusting buckles or fasteners 23 and 24 respectively, as plainly
40 shown in Figure 2 of the drawings. The upper or outermost suspension strap ends 30 and 31 of the shoulder straps 21 and 22 respectively are provided with D-rings 33 and 34, or other types of fasteners, which receive
45 certain bunches of shroud lines of the parachute canopy in attachment therewith, in respective complementary relation with the fasteners 19 and 20. The front or lower free
50 ends of the straps 21 and 22, at the opposite sides of the buckles 23 and 24, with respect to the suspension ends 30 and 31, are provided with preferably permanently secured
55 flat connector parts 40 and 41, in the nature of forged metal or stampings, having eyes 42 and 43 for receiving certain detents of the single connector device designated at C in the drawings. These fastener parts 40 and 41 may take the form of ordinary eyelets, but in the present instance they are provided
60 with elongated slots for threading there-through of the free ends of the shoulder straps 21 and 22, and therefrom are tapered in reduced relation and at their free reduced ends have the eyes 42 and 43 therethru as
65 above mentioned.

The harness A furthermore is provided with a second U-shaped sling, generally designated at 47 in the drawings, which includes the portion 48 overlying upon the inner side and permanently stitched at 48* with the
70 seat portion 16 of the main sling 15. The minor or inner sling 47 is provided with short riser straps or webs 50 and 51 extending free from the riser portions 17 and 18 respectively of the major sling 15, and adapted to encircle along the outer sides of the legs
75 of the wearer, in a cooperating leg clamping relation with an improved leg attaching strap loop 52, to be subsequently mentioned; the free ends of the riser straps 50 and 51 being adapted to be releasably positioned along the front of the wearer at or above the waist, in
80 relative convergence towards their free ends, where they are provided with eye types of fastener parts 54 and 55, of the same nature as the fastener parts 40 and 41 above described, and respectively provided with eye
85 openings 56 and 57.

The leg attaching loop 52 preferably comprises a closed loop, which includes the web
90 or leg straps 60 and 61 permanently connected at 62 and 63* respectively upon the seat portion of the slings 15 and 47, between the seat portions 16 and 48 thereof, or in any other
95 approved relation, the leg straps 60 and 61 cooperating with the riser straps or webs 50 and 51 respectively, and the leg straps or webs 60 and 61 being connected by means of a cross portion 63, which may be stiffened by means
100 of a metal insert 64 stitched or pocketed therein as shown in Figures 1 and 2. This metal insert is preferably of aluminum or some other light weight metal which will hold the illustrated rather horizontal or rectilinear
105 shape of the portion 63, enabling its facile swinging between the legs of the wearer and upwardly in position in threaded relation with the riser portions 50 and 51, as will be subsequently mentioned.

The riser portions 17 and 18 of the main
110 sling 15 of the harness A are connected by means of a back cross strap 161, at a location which places this cross strap upon the wearer across the back at or below the shoulder
115 blades. The strap 161 is preferably fixedly stitched at 167 to the straps 17 and 18, although adjustable buckles may be here located to enable the vertical adjustment of the horizontal cross strap 161. A lower back
120 strap 162 is provided, which fits across the small of the back of the wearer; being permanently stitched at 169 upon the riser portions 17 and 18, above the seat portions of the sling; the strap 162 continuing about the
125 sides of the harness in position to engage about the sides of the wearer at or above the hips; these side portions being designated at 170, and at their free ends being stitched at 171 to the straps 50 and 51 of the inner sling 47, intermediate the ends of the straps 50 and
130

51. While we prefer to permanently connect the body embracing strap 162 at the points 169 and 171, we may provide adjustable connections at these locations if desired.

5 The single connector device C is preferably permanently attached at some place to the harness. The position is a matter of choice, since it may be permanently connected to the free ends of either of the webs or straps 20, 21, 10 50 or 51, or it may be connected in some manner to the leg strap loop 52, as shown in the drawings, such as by means of an attaching strap 70 permanently secured as at 71 to the portion 63 of the loop 52 between the ends 15 of said portion 63. The attaching strap or web 70 lies normal to the length of the portion 63, and it is of course flexible, and has the connector C attached to a slotted shank portion 72 of the latter.

20 The construction and formation of the connector is somewhat a matter of choice, although essential characteristics of the same are first, a compact, shallow, and relatively light weight construction which may fit 25 closely in comfortable relation at the front of the wearer where it is accessible; second, that it permits quick attachment of the free ends of the harness straps 21, 22, 50 and 51 therewith, and third, that it permits of an 30 instant release of its complementary fastener parts upon the harness by a single manual effort, such as a push or pull, to permit of an instant and entire release of the wearer from the harness, without the necessity of disengaging other complementary fastener parts. 35 To this end, the preferred form of connector C is shown in Figures 3 to 7 of the drawings. It consists of a hollow body 80, which is preferably of four-sided rectangular appearance, 40 with well defined corners that will enable the facile attachment of the eyelet or fastener parts of the straps thereto. This body 80 is provided with a chamber 81, wherein the spring urged detents are mounted, as will be 45 subsequently described, and retained in place by means of a cover plate 82, which is detachably held to enclose the chamber 81 as by means of detachable screws or like elements 83, similar to that shown in Figure 9. The 50 body 80 is provided with an annular groove 85 surrounding the same, and across this annular groove 85 may be positioned filler pieces 86, as shown in Figure 9, and located where the screws 83 intersect, in order to 55 provide well defined slots at the corners of the body 80 for releasable insertion of the fastener parts 40, 41, 54 and 55, as can readily be understood. As is best shown in Figures 6 and 7 of the drawings, the body 80 is provided with passageways 87 leading from the 60 chamber 81 into the slots or groove 85; the passageways 87 being polygonal in plan and receiving therein spring urged detents 88, which are preferably hollow, and have compressed springs 89 therein engaging the cover

plate 82. The springs, of course, urge the detents 88 outwardly and across the slots or groove 85 into abutment with the under surface of the body which faces the slot or groove 85, as is shown in Figure 6. These detents 88 are polygonal in section, and slide in their respective passageways 87 against rotation. They are provided with sloping cam faces 91, which face toward the outer periphery of the connector C to enable the facile riding of the 70 ends of the eyelets or fastener parts of the straps to engage thereover as said fastener parts are pressed into the slots 85, causing depression of the detents 88 until they align with the eye openings thru said fastener 75 parts, and at which time the springs urge the detents into the eyes, locking the fastener parts and the harness straps in place upon the connector C, as shown in Figure 6. 80

Means is provided for simultaneously releasing all of the harness strap fastener parts 85 from the connector, by simultaneous depression of the detents 88. This means is in the nature of a depressible button device, and includes a reciprocating hub or hollow stem 93 slidable through an axial opening 94 in the body 80. Within the chamber 81 it is 90 provided with a spider 95, the arms of which are engaged upon the flanges 96 at the inner ends of the detents 88. The outer end of the hub or stem 93 is reduced, and externally screw threaded, and detachably receives 95 thereon a disc-like press button 97, which may be held fixedly in place by peening over the reduced end of the stem. It is at once 100 apparent, since the disc-like button 97 lies spaced from the outer surface of the body 80, that upon depression of the button, all of the plungers or detents 88 will be retracted against the action of their springs, simultaneously, for releasing the connector straps 105 in a manner which is apparent from the foregoing.

In order to prevent accidental depression of the button-like releasing device of the connector, various expedients have been devised 110 which may or may not be provided as desired. A preferred safetying device is that shown in Figures 3, 4 and 5. It consists in providing a spring operated plunger pin acting radially 115 in the body 80, which extends into a suitable bayonet slot type of groove in the stem 93. Thus, as shown in Figures 4 and 5, a shallow slot 98 is circumferentially provided inwardly of the external periphery of the stem 93, thru 120 an arc of substantially 90°. At one end it is provided with a normal extension 99 arranged in a line parallel with the axis of the stem 93, which at its free end terminates in a socket 100 projected farther radially into the stem 125 93 than the other depths of the slot. The plunger 101, shown in Figure 3, is spring urged at 102, so that its inner end projects into the slot 98. The plunger 101 has a small button-like head 103 at the outer surface of 130

the body 80 which may be grasped between the fingers or finger nails of the operator. The operation of the lock device will be apparent. The stem 93, so long as the harness is fixed upon the body of the wearer, is positioned so that the inner end of the plunger 101 lies in the slotted portion 98 remote from the slot extension 99. Upon desire of the operator to set the connector for release from the harness strap fastener parts it is only necessary to rotate the stem 93 thru an arc of 90°. Thereafter, upon depression of the stem 93 for release, the plunger 101 will ride along the extension 99, and when the plunger 101 reaches the socket 100 the spring 102 will urge it into the socket 100, automatically locking the press button device in the position shown in Figure 7, for holding all of the detents depressed and inoperative. To release it is necessary for the operator to pull the plunger 101 outwardly, and the press button device may be reset.

A modified form of locking device is shown in Figures 9 and 10. It consists of a locking lever or fork 110, having a pair of spring-like metal arms 111 and 112, spaced to permit of their application upon the stem or hub 93^a; the same gripping the stem to prevent their easy removal. These arms 111 and 112 are of sufficient height to prevent depression of the button-like releasing device. An added locking feature as shown in Figure 10, is that of flattening the stem 93^a at diametrically opposed points, as shown at 116 in Figure 10; slipping the locking device 110 upon the stem 93^a by sliding the fingers 111 and 112 along the faces 116; an enlarged socket 117 being provided at the base of the fingers 111 and 112, of the same diameter as the external diameter of the stem 93^a. Upon reception within the socket 117 the member 110 is given a turn of 90°, more or less, to obviously lock the member 110 upon the stem to prevent depression of the button device, until the member 110 is swung to a releasing position.

A modified form of locking device is shown in Figure 11, consisting of a U-shaped locking member having arms 120 and 121 resiliently urged towards each other and at their free ends being rounded to permit their being sprung into position upon the hub of the releasing device of the connector. If desired the fingers 120 and 121 may be recessed at 122, in facing relation, to set the position of locking of the spring arms upon the hub.

A modified form of connector is shown in Figures 12 and 13, possessing many of the characteristics of the form of connector C. It includes a body 180, having a chamber 181 therein, but the detents 182 are secured to or made integral with the spider 183, which is supported by a leaf spring or springs 184. Bosses 185 project from the chamber 181 to carry a cover plate 186, which forms one wall of an annular groove 187, corresponding to

groove 85 of the form C, the body forming the other wall. The cover plate is secured to the body by detachable screws 188 or the like elements.

When a harness strap fastener part is inserted into the annular groove so as to depress a detent 182, the spider is tilted about its opposite corner and enables the fastener part to ride over the detent, which on return locks the fastener part to the connector.

On operating the button-like releasing device 97 of the connector, the detents are depressed from engagement with the fastener parts and a spring operated plunger pin 189 in body 180 engages the hole 190 in the spider, which is then locked in a depressed position until the plunger pin 189 is withdrawn by means of the button-like head 191.

The locking device for preventing accidental depression of the button-like releasing device is similar to that shown in Figures 9 and 10.

A modified form of connector C' is shown in Figure 8, possessing many of the characteristics of the form of connector C. It includes a body 125 having a chamber 126 therein and being provided with spring urged detents 128 of the same nature as the detents 88 above described.

The releasing device for effecting attachment of the fastener parts of the harness straps upon the connector C' is operated thru a rotary motion in lieu of a rectilinear motion as shown for the form of connector C. To this end, an externally screw threaded hollow stem 130 is provided, having an inner externally screw threaded end detachably threaded in a screw threaded passageway 131 provided axially in the body 125. This stem 130 is provided with an enlarged locking flange 133, surrounding the same, which lies over the detent supporting surface of the body 125 to define slots or a groove 127 corresponding to the groove 85 of the form C. The stem 130 is provided with a narrow annular flange 135 which is spaced from the slot forming surface of the flange 133, and is adapted to seat in a socket 136 provided axially in the body 125, so that its outer surface lies flush with the surface of the body 125 from which detents 128 project. This enables the fastener parts of the harness to be slipped into position so that their inner ends lie in the groove between the facing surfaces of the flanges 133 and 135, when the fastener parts are locked by the detents. Upon rotation of the stem 130 by means of the fingers of the operator, it is quite obvious that the eyelet or strap fastener parts will be lifted off the locking ends of the detents 128 to enable release of the harness fastener parts from the connector C'. The connector C' is provided with a cover plate 145 attachable over the chamber 126. It is provided with a central reduced post 146 extending

through the axial passageway 147 through the hollow stem 130, and upon which the latter is rotatable and longitudinally slidable in a guided relation. The post 146 at the outer end thereof is provided with a stop flange 147^a, which may be detachable if desired, and which limits the extent of rotation of the stem 130.

As to the application of the harness upon the wearer, it is merely necessary for the pack B to be placed at the seat of the wearer, so that the wearer when in sitting posture will sit upon the seat portions 16 and 48 of the strap slings 15 and 47. The shoulder straps 21 and 22 are brought over the shoulders of the wearer, converging downwardly to the front of the wearer. The free ends of the straps 50 and 51 are extended through the opening defined by the loop 52 which is brought upwardly between the legs of the wearer, and the free ends of the straps 50 and 51 are then positioned convergently at the front of the wearer adjacent the location of the fastener parts of the straps 21 and 22. The connector C then receives the fastener parts 40, 41, 54 and 55 in the manner that has just been described. In this relation of parts it is obvious that the harness is applied to the upper portion of the body of the wearer in a secure manner by reason of the shoulder straps; the back straps extend across the shoulders and at the small of the back of the wearer, and the legs of the wearer are adjustably encircled between the straps 50—60 and 51—61. The stiffener 64 holds the loop member 52 in proper position. Adjustment of the harness according to the size of the wearer is secured through the adjustable buckles 23 and 24. Adjustment here enables the straps 50 and 51 to be rendered sufficiently taut at the lower front and outer sides of the legs of the wearer, so that the leg straps of the loop 52, that is, 60 and 61, are inclined outwardly by the pull on the straps 50 and 51, and adjust themselves according to the movement of the wearer, to insure comfort, and preventing injury to the user.

As shown in Figure 1 of the drawings, the harness is provided with a flexible canvas or other type of back pad 160, which may be suitably secured to the riser portions 17 and 18 of the harness and to the upper and lower back straps 161 and 162; the same extending from the pack B to above the back cross strap 161. This adds to the comfort in sitting for long periods in the harness, and if desired the back pad 160 may be provided with aluminum or other type of stiffener strip 162^a longitudinally at the side edges thereof to hold the harness in position to facilitate donning and doffing. The stiffener strip 162^a may be placed directly in the riser portions 17 and 18 of the harness if desired, or they may be entirely eliminated, as may also the back pad 160. Furthermore,

a seat and float pad may be used on the pack, if desired.

In the arrangement of the harness upon the wearer it is to be noted that the suspension straps extend from the buckles 23 and 24 over the shoulders and downwardly along the back at the sides of the wearer and into the container of the pack B where they are connected with shroud lines and the canopy packed in the container in the manner particularly set forth in U. S. Patent No. 1,554,192, or in any other approved manner. It is to be noted that the suspension points designated by the buckles 23 and 24 lie at the upper front of the wearer.

The rip cord for releasing the pack container and permitting ejection of the parachute may be of a conventional nature, and has not been shown. It may be of the nature set forth in the last above mentioned U. S. patent, and the rip cord handle may be supported upon the strap 22 in accessible relation to the hands of the wearer.

If desired, the leg straps 60 and 61 may be formed otherwise than as shown in the drawings, and directly connected permanently to the connector, as by a number of slotted shanks similar to the shanks 72 shown in the drawings. The connector itself does not necessarily have to be connected to the harness, although to prevent loss of the same it is thought best to attach it to some part of the harness. It is within our invention to permanently attach the connector to one or more of the straps of the sling 47, or to straps 21 or 22.

It is a notable feature of the invention that the entire harness may be adjusted upon wearers of different size at the two points 23 and 24, thus not only simplifying application upon the wearer but enabling an instant release by means of the connector above described. The strain is equally divided in front and back of the wearer, so that the harness places no eccentric forces upon the body of the wearer.

Various changes in the shape, size, and arrangement of parts may be made to the forms 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 a sling in which the wearer sits and including a seat portion with side riser portions at the ends of the seat portion and terminating in suspension straps, shoulder straps connected with said suspension straps for placement over the shoulders of a wearer so that the ends thereof lie to the front of the wearer, releasable leg engaging means connected with the sling and extending to the front of the wearer, and quick connector means releasably connecting together the shoulder straps and leg engaging means at

the same location at the front of the wearer.

2. In a parachute harness the combination of a sling in which the wearer sits and including a seat portion which extends entirely across the seat of the wearer and side riser portions terminating in suspension straps, shoulder straps connected with said suspension straps for placement over the shoulders of a wearer so that the ends thereof lie to the front of the wearer, releasable leg engaging straps connected with the sling and extending to the front of the wearer, and a single connector device for releasably clamping together the free ends of the shoulder straps and leg engaging straps.

3. Parachute harness comprising a sling device having a seat portion in which the wearer sits and which extends transversely and entirely across the seat of the wearer and also having portions extending upwardly along the sides and over both shoulders of a wearer and terminating in free ends at the front of the wearer, means for connecting a parachute to said harness, releasable leg engaging means including straps terminating in free ends at the front of the wearer, and a single connector device for releasably connecting all of said free ends at the front of the wearer.

4. In a parachute harness the combination of a sling support in which the wearer sits bodily during descent as in a swing and having back crossing straps connected therewith, means for connecting a parachute with said sling, releasable leg encircling strap means connected with the sling, shoulder straps connected with the sling, and a single connector for releasably connecting the shoulder straps and leg encircling strap means upon the wearer in body encasing relation.

5. In parachute harness the combination of a lower body engaging harness including side straps extending upwardly along the sides of a wearer and terminating in parachute connecting suspension lines, another strap adjustably connected with each of said side straps intermediate its ends and providing a second suspension strap at one side of its connection, and at the opposite side of said connection having a front strap, and means for releasably connecting said front straps together at the front of the operator with the lower body harness.

6. As an article of manufacture a parachute harness of strap-like formation including a sling seat, leg engaging and shoulder engaging straps, a two-point adjustment for adjusting the size of the harness to the length of the trunk of a wearer's body, and a single connector for releasably connecting the shoulder straps and leg straps at the front of a wearer.

7. In a parachute harness the combination of a U-shaped sling terminating at its ends in

parachute shroud line connecting straps, and a strap connected intermediate its ends upon each of the parachute shroud line connecting straps with an adjustable connection and sub-dividing each of the same into a parachute shroud line connecting strap and a front strap.

8. In a parachute harness the combination of a U-shaped sling terminating at its ends in parachute shroud line connecting straps, a strap connected intermediate its ends upon each of the parachute shroud line connecting straps with an adjustable connection and sub-dividing each of the same into a parachute shroud line connecting means and a front strap, back crossing straps connected with said sling, leg connecting straps releasably terminating in ends at the front, and means for releasably connecting together said last mentioned ends and the free ends of said front straps to encase a wearer in the harness.

9. In parachute harness the combination of a sling support having a seat portion and upstanding side portions, a closed loop of flexible strap material connected upon the seat portion and adapted to be swung upwardly between the legs of the wearer to the front of the wearer, and flexible straps connected on the sling support so as to be positioned laterally beyond the closed loop and terminating in free ends for adjustable threading through the loop of the said loop portion to provide adjustable leg receiving openings, and connector means for releasably connecting the ends of said last mentioned straps together upon the harness.

10. In parachute harness the combination of a sling support having a seat portion and upstanding side portions, a closed loop of flexible strap material connected upon the seat portion and adapted to be swung upwardly between the legs of the wearer to the front of the wearer, flexible straps connected on the sling support so as to be positioned laterally beyond the closed loop portion terminating in free ends for adjustable threading through the opening of the said loop portion to provide adjustable leg receiving openings, connector means for releasably connecting the ends of said last mentioned straps together, suspension line means connected at the free ends of said sling support and including shoulder straps for extension over the shoulders and to the front of the wearer, and means for releasably connecting said last mentioned straps together at the front of the wearer.

11. In parachute harness the combination of a sling support having a seat portion and upstanding side portions, a closed loop of flexible strap material connected upon the seat portion and adapted to be swung upwardly between the legs of the wearer to the front of the wearer, flexible straps connected on the sling support so as to be positioned laterally beyond the closed loop portion ter-

minating in free ends for adjustable threading through the opening of the said loop portion to provide adjustable leg receiving openings, connector means for releasably connecting the ends of said last mentioned straps together, suspension line means connected at the free ends of said sling support and including shoulder straps for extension over the shoulders and to the front of the wearer, means for releasably connecting said last mentioned straps together at the front of the wearer, and means for simultaneously releasing all of the harness connections at the front of the wearer for permitting an instant release of the wearer from the harness.

12. A parachute harness comprising a U-shaped sling of flexible webbing including a seat portion and side portions, a second U-shaped sling of flexible webbing including a seat portion connected with the seat portion of the first mentioned sling, said second mentioned sling including flexible side portions materially shorter than the side portions of the first mentioned sling and adapted to extend about the outer sides of the legs of the wearer in relative convergence as to position their free ends at the front of the wearer at approximately the chest, front straps adjustably connected with the side portions of the first mentioned sling and extending from the shoulders convergently to free ends at approximately the chest of the wearer, strap means connected with the seat portions of said sling and releasably with the free ends of the second mentioned sling to provide leg receiving openings, back crossing straps connected with the side portions of said slings first mentioned, and connector means connecting the free ends of the second mentioned sling and said front straps which terminate at approximately the chest of the wearer.

13. In parachute harness a U-shaped sling support including a seat portion in which a wearer sits and which extends transversely entirely across the seat of a wearer and also including parachute suspension lines thereupon, means fixed upon said sling support for releasable connection with the lower body of a wearer, means connected upon said sling support for releasable connection with the upper part of the body of a wearer, and a single connector device for releasably connecting together said last two mentioned means for encasing a wearer within the harness.

14. In parachute harness the combination of a flexible strap-like U-shaped major supporting sling including a seat portion and side straps, a minor U-shaped sling including a seat portion connected in overlying relation upon the seat portion of the major sling and including a pair of short side straps adapted to extend from the outer sides of the legs diagonally upward in front of the wearer and terminating at approximately the chest

of the wearer, shoulder straps connected with the side portions of said major sling and adapted to extend therefrom convergently to the front of the wearer terminating in free ends at about the chest of the wearer, and means for releasably connecting the free ends of the shoulder straps and the free ends of the side portions of the minor sling together for releasably encasing a wearer in the harness.

15. In parachute harness the combination of a flexible strap-like U-shaped major supporting sling including a seat portion and side straps, a minor U-shaped sling including a seat portion connected in overlying relation upon the seat portion of the major sling and including a pair of short side straps adapted to extend from the outer sides of the legs diagonally upward in front of the wearer and terminating at approximately the chest of the wearer, shoulder straps connected with the side portions of said major sling and adapted to extend therefrom convergently to the front of the wearer terminating in free ends at about the chest of the wearer, means for releasably connecting the free ends of the shoulder straps and the free ends of the side portions of the minor sling together for releasably encasing a wearer in the harness, the means connecting the shoulder straps upon the side portions of the major sling being adjustable to permit the sliding of the shoulder straps along said side portions of said major sling to adjust the harness to the size of an individual wearer, and means releasably engageable with the side portions of the minor sling and connected with the seat portions of said sling and engageable with the inner sides of the legs of a wearer.

16. In a parachute harness the combination of a U-shaped sling including a seat portion, upstanding side portions, the latter terminating in suspension straps connectable with shroud lines of the parachute, a pair of lower front straps connected with the sling at opposite sides of the seat portion of the sling and extending convergently upward at the front of a wearer, shoulder straps connected upwardly with the side portions of the sling and extending downwardly convergent at the front of a wearer, connector means for releasably connecting the ends of the said straps at the location of their convergence, back crossing straps connected with the side portions of said sling, and means connected with said sling at the seat portion thereof and engageable about the inner sides of the legs of the wearer in a releasable relation.

17. In parachute harness the combination of a sling support having a seat portion in which a wearer sits as in a swing and upstanding side portions, leg encircling straps connected with the sling in the vicinity of the seat portion and adapted to be swung upwardly between the legs of a wearer and at

the outer sides of the leg of the wearer to the front of the wearer, said side portions having strap means for extension over the shoulders of the wearer and to the front of the

- 5 18. In parachute harness the combination of a sling support having a seat portion in which a wearer sits as in a swing and up-
standing side portions, leg encircling straps
15 connected with the sling in the vicinity of the seat portion and adapted to be swung upwardly between the legs of a wearer and at the outer sides of the legs of the wearer to the front of the wearer, said side portions
20 having strap means for extension over the shoulders of the wearer and to the front of the wearer, and a single quick connector means for releasably connecting together the ends of the last mentioned strap means and the ends of the leg encircling straps at the
25 front of the wearer, including means for simultaneously releasing all of the strap connections at the front of the wearer for permitting an instant release of the wearer from the harness.
- 30 19. In an aviator's harness the combination of a sling of strap-like material including a seat portion in which the wearer sits as in a swing and side riser portions extending
35 upwardly along the sides and at the back of the wearer and terminating in strap portions extending to the front of the wearer, and leg encircling strap means connected with the sling in the vicinity of the seat portion
40 including straps for swinging upwardly between the legs of the wearer to the front of the wearer and straps laterally at the outer sides of the legs of the wearer for extension upwardly to the front of the wearer, and quick
45 connector means for releasably connecting together all of the said straps of the leg encircling means at the front of the wearer and the front strap portions of the side riser portions of the sling.
- 50 20. In an aviator's harness the combination of a sling of strap-like material including a seat portion in which the wearer sits as in a swing and side riser portions extending upwardly along the sides and at the back of the
55 wearer and terminating in strap portions extending to the front of the wearer, leg encircling strap means connected with the sling in the vicinity of the seat portion including straps for swinging upwardly between the legs of the wearer to the front of the wearer
60 and straps laterally at the outer sides of the legs of the wearer for extension upwardly to the front of the wearer, quick connector means for releasably connecting together all of the said straps of the leg encircling means
65 at the front of the wearer and the front

strap portions of the side riser portions of the sling, said quick connector means including a supporting body, relatively independently movable spring operated detents on the body for each of the strap parts which are
70 at the front of the wearer, and means for simultaneously releasing all of said detents.

21. In parachute harness the combination of a sling support having a seat portion and
75 upstanding side portions adapted to extend along the sides and at the back of a wearer, leg encircling means connected with the sling support including strap portions connected with the sling support in the vicinity of the
80 seat portion and extensible upwardly between the legs of the wearer and also including strap portions connected with the sling support and extensible upwardly to the front of the wearer at the outer sides of the legs
85 of the wearer, strap means connected with the side portions of the sling support extensible over the shoulders and to the front of the wearer, quick connector means releasably connecting together the said strap means last
90 mentioned at the front of the wearer and the strap portions of the leg encircling means, and a back pad secured to the riser portions of the sling support.

22. In a parachute harness the combination of a sling support including a seat portion
95 and side riser strap portions, the latter at the upper ends thereof terminating in parachute attachment suspension ends and shoulder straps extensible over the shoulders of the
100 wearer, and interconnected leg encircling strap loops connected with the sling support including strap portions extensible upwardly between the legs of the wearer and strap
105 portions connected with the sling and extensible at the outer sides of the legs of the wearer and having interfitting connection with the strap means which is extensible upwardly between the legs of the wearer.

23. In parachute harness the combination of a supporting sling in which a wearer sits
110 as in a swing, and leg encircling strap means connected with the sling including strap portions connected with the sling and extensible upwardly between the legs of the wearer and strap portions connected with the sling and
115 extensible at the outer sides of the legs of the wearer and having a sliding interfitting connection with the strap portions which are extensible upwardly between the legs of the wearer, and means for releasably holding the
120 strap portions in releasable leg encircling position upon the wearer.

24. In parachute harness the combination of a sling support having a seat portion and
125 upstanding side portions, a closed loop of flexible strap material connected upon the seat portion for swinging upwardly between the legs of the wearer to the front of the wearer, flexible straps connected on the sling support so as to be positioned laterally beyond
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the closed loop and terminating in free ends for slidable threading through the loop of the said loop portion to provide leg receiving openings, which are interrelated as to size, and a single quick releasable connector means releasably connecting the ends of the last mentioned straps together upon the harness.

25. In parachute harness the combination of a sling support having a seat portion and upstanding side portions, a closed loop of flexible strap material connected upon the seat portion for swinging upwardly between the legs of the wearer to the front of the wearer, flexible straps connected on the sling support so as to be positioned laterally beyond the closed loop and terminating in free ends for slidable threading through the loop of the said loop portion to provide leg receiving openings of interrelated sizes, a single quick releasable connector means releasably connecting the ends of the last mentioned straps together upon the harness, said connector means including a body, relatively independently movable spring operated detents upon the body for each of the straps to be connected with the connector means, and means for simultaneously releasing all of said detents.

26. In a connector for parachute harness the combination of a body having an opening therein for receiving a part to be connected with the body, a detent operable across said opening, a depressible and rotatable operating member for controlling the operative and inoperative positions of the detent with respect to said openings, means to releasably lock said operating member in position which will prevent its accidental depression, and means to hold said member depressed for positioning the detent inoperative with respect to said opening.

27. In a harness the combination of a seat portion, a back portion, straps connected at the top of the back portion for extending over the shoulders and at the front of the wearer, fastener parts independently connected at the ends of said straps, straps connected at the sides of the seat portion and adapted to be wrapped around the outer sides of the legs of a wearer, a loop connected with the seat portion of flexible material adapted to be brought upwardly between the legs of the wearer and to receive in threaded relation therethrough the straps at the sides of the seat portion to encircle the legs between the loop and the respective side straps, independent fasteners at the ends of the side straps, and a single quick release connection for detachably connecting all of said fastener parts together at the front of the wearer.

28. In a parachute harness coupling the combination of a supporting body having a fastener part inserting opening therein, a spring urged detent normally positioned across said opening having a cam face to permit the insertion of a fastener part therein

for engagement by the detent in a retaining relation, a rotatable depressible operating member for depressing said detent against spring action to release a fastener part which may be engaged thereby, and means cooperatively associated with said depressible member for permitting the depressible member to be depressed only when turned thru a predetermined arc.

29. In a parachute harness the combination of a sling in which the wearer sits during descent including a seat portion and upright flexible riser portions at the ends of the seat portion, strap means connected with the upright portions for releasably encasing the upper part of the body of the wearer in the harness and including straps extending to the front of the wearer, releasable leg engaging means connected with the sling and extending to the front of the wearer, and quick connector means releasably connecting together the said straps which extend to the front of the wearer at substantially the same location.

30. In a parachute harness the combination of a sling in which the wearer sits during descent including a seat portion which is of a nature to extend entirely across the seat of the wearer and flexible upright riser portions at the sides of the wearer including parachute canopy attaching suspension lines, back strap means connected with said upright riser portions, straps connected with the upright riser portions in the vicinity of the shoulders of a wearer of the harness and extending to the front of the wearer, releasable leg engaging strap means connected with the sling and extending to the front of the wearer, and quick connector means for releasably connecting together at substantially the same location at the front of the wearer all of the said straps which extend at the front of the wearer.

31. In parachute harness the combination of a sling support having a seat portion and upstanding side portions, loop means of flexible strap material connected upon the lower part of the sling support, flexible leg straps also connected on the lower part of the sling support and terminating in free ends for adjustable threading through the loop means to provide leg receiving openings, and connector means for releasably connecting together the ends of the leg straps to hold said leg receiving openings closed.

32. In parachute harness the combination of a sling support having a seat portion and upstanding side riser portions, flexible loop means connected upon the lower part of the sling support, flexible leg straps connected also on the lower part of the sling support and terminating in ends for adjustable threading through the loop means to provide a pair of size adjustable leg receiving openings, strap means connected with the side

riser portions of the sling support above the seat portion for encasing the upper part of the body of a wearer and including a pair of straps extending from the opposite up-
 5 right portions to the front of the wearer, and quick connector means for releasably connecting together the ends of said pair of straps and the ends of the leg straps at substantially the same location at the front of the wearer.

10 33. In parachute harness the combination of a sling support having a seat portion in which a wearer sits as in a swing and upstanding side portions, leg encircling strap means connected with the sling in the vicinity of
 15 the seat portion including releasably inter-slidable portions extensible upwardly between the legs of the wearer and at the outer side of the legs of the wearer terminating in ends at the front of the wearer, said upstanding
 20 side portions having strap means connected therewith for releasably encasing the upper part of the body of a wearer including releasable straps extending from adjacent the shoulders of a wearer to the front of the
 25 wearer, and quick connector means for releasably connecting together the last mentioned straps at the front of the wearer and the said ends of the leg encircling straps which lie at the front of the wearer.

30 34. In a parachute harness the combination of a sling support including a seat portion and side riser strap portions, the latter at the upper ends thereof terminating in parachute attachment suspension ends, leg encircling strap loops connected with the sling
 35 support including releasable strap portions extensible upwardly to the front of the wearer, other strap means connected with the side riser strap portions for encasing the upper
 40 part of the wearer including a pair of release straps extending to the front of the wearer, and quick connector means for releasably connecting together at substantially the same location at the front of the wearer the said re-
 45 lease straps last mentioned and the release straps of the leg encircling strap loops.

35. In an aviator's harness the combination of a flexible harness sling having a flexible loop as a part thereof for extension up-
 50 wardly between the legs of a wearer to the front of the wearer, flexible leg portions connected as a part of the sling for fitting about the outer sides of the legs of the wearer in releasably threaded relation through the said
 55 loop to provide therewith leg receiving openings, and means to releasably connect the free ends of the leg portions in body attachment with the wearer.

36. In an aviator's harness, the combination of a flexible seat portion upon which the
 60 aviator sits in sling fashion during flight having flexible leg portions to fit about the sides of the legs of the wearer and extend at their free ends to the front of the wearer,
 65 and a flexible loop arrangement connected

to the seat portion to extend upwardly between the legs of the wearer to the front of the wearer and slidably receive the ends of the said leg portions in threaded relation therethrough to provide size adjustable leg receiving loops.

37. In an aviator's harness, the combination of a flexible harness sling including a seat construction having a flexible loop to extend upwardly between the legs of a wear-
 8 er to the front of the wearer, flexible leg portions connected to the seat construction and adapted to fit about the outer sides of the legs of the wearer and extend at their free ends to the front of the wearer in releasably
 8 threaded relation through the said loop to provide therewith leg receiving openings, other harness portions for the upper part of the body of the wearer, and means to re-
 8 leasably connect the free ends of the said leg portions and the last mentioned harness portions in body attachment with the wearer.

38. In an aviator's harness for parachutists and the like, the combination of a flexible harness sling including a seat construction
 9 having a flexible loop to extend upwardly between the legs of a wearer to the front of the wearer, flexible leg portions connected as
 9 a part of the sling and adapted to fit about the outer sides of the legs of the wearer and extend at their free ends to the front of the
 9 wearer in releasably threaded relation through the said loop to provide therewith leg receiving openings, shoulder straps for
 10 said harness having releasable ends extensible over the shoulders to the front of the
 10 wearer, and a connector means for releasably connecting together the free ends of the leg portions and shoulder straps at substantially
 10 the same location upon the wearer.

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 LEONARD FREDERICK AUSTING.

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