July 14, 1942. F. G. MANSON ET AL 2,289,372

ADJUSTABLE PARACHUTE HARNESS

Filed Aug. 6, 1941 2 Sheets-Sheet 1

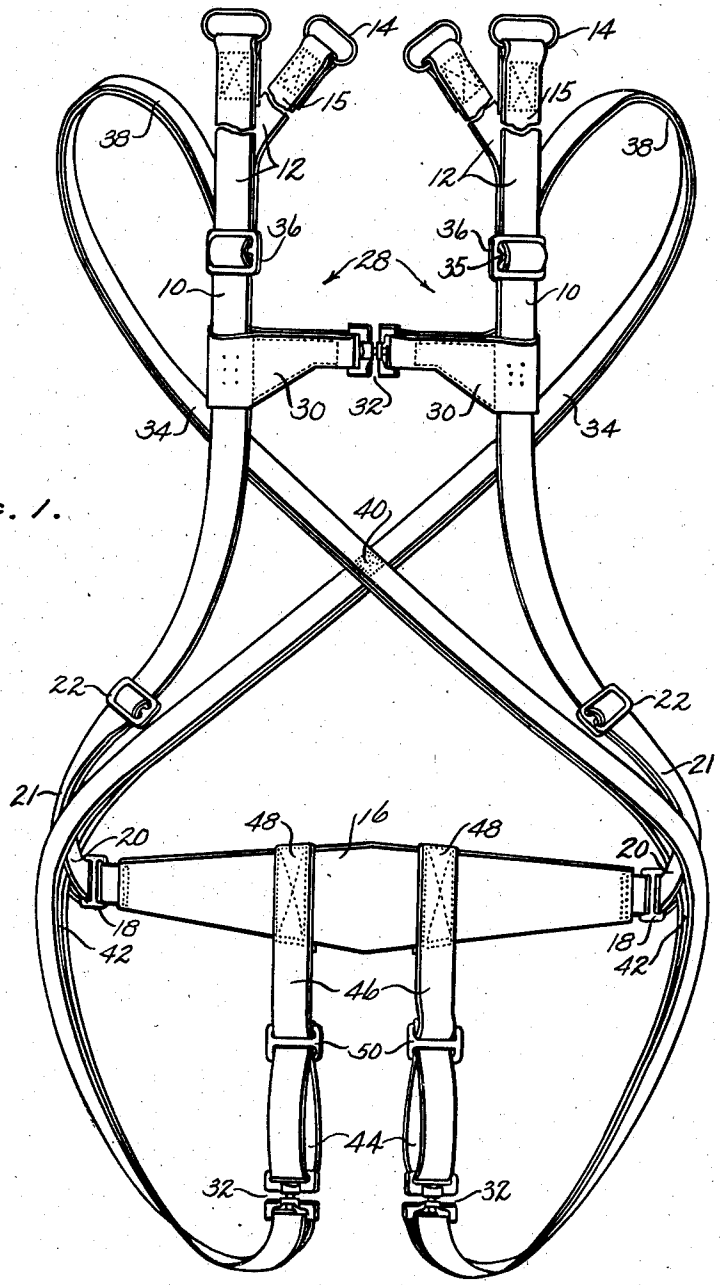


FIG. 1.

INVENTORS
FRANK G. MANSON
JAMES J. MASKEY
BY Upton H. Sandgren and Charles Krouty
ATTORNEYS

July 14, 1942. F. G. MANSON ET AL 2,289,372

ADJUSTABLE PARACHUTE HARNESS

Filed Aug. 6, 1941 2 Sheets-Sheet 2

FIG. 3.

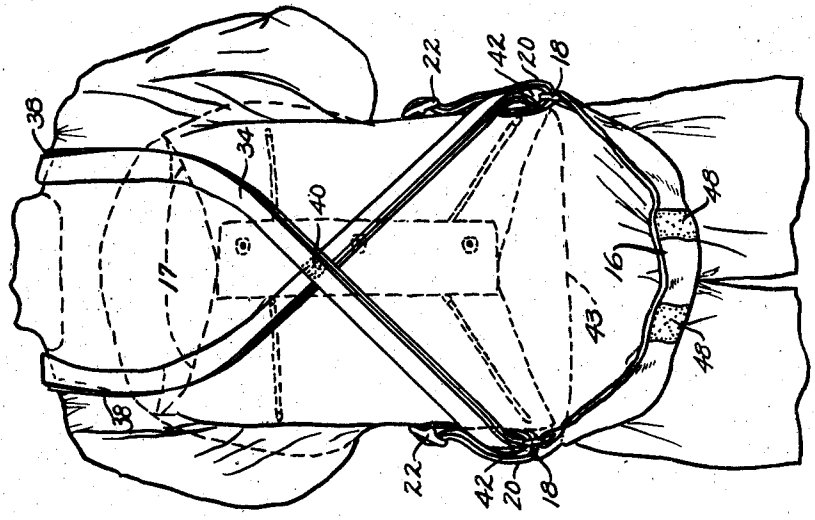
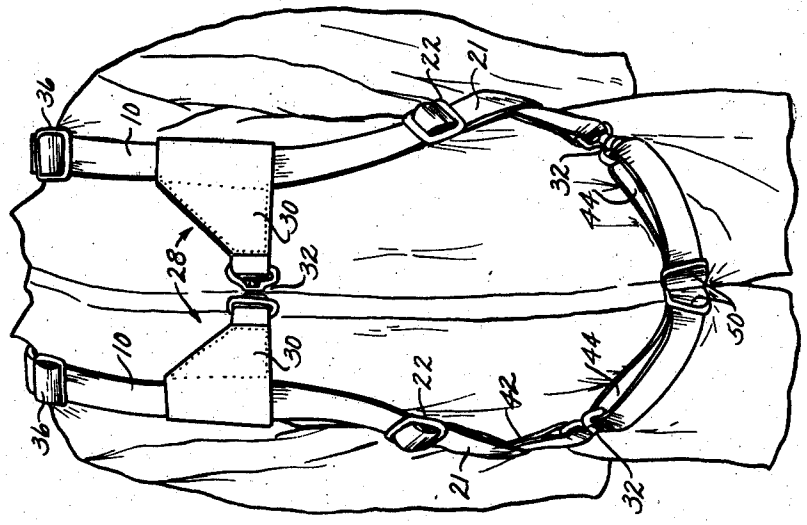


FIG. 2.



INVENTORS
FRANK G. MANSON
JAMES J. MASKEY
BY Elgin H. Snodgrass
Wade Brooks and
ATTORNEYS

Patented July 14, 1942 2,289,372

UNITED STATES PATENT OFFICE

2,289,372

ADJUSTABLE PARACHUTE HARNESS

Frank G. Manson and James J. Maskey,
Dayton, Ohio

Application August 6, 1941, Serial No. 405,672

8 Claims. (Cl. 244—151)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

The invention described herein may be manufactured and used by or for Government for governmental purposes, without the payment to us of any royalty thereon.

This invention relates to parachute harness and more particularly to a simplified set of adjusting means for fitting the harness to bodies of varying sizes.

An object of the invention is to provide a harness of this type which is capable of a wider range of adjustments than those heretofore used, whereby a harness of a given size will accommodate a wider range of personnel.

Another object of the invention is to so construct and arrange the several parts of the harness that it may easily be adjusted by the wearer to fit his body after he has donned the harness and pack, and particularly when such adjusting must be done in cramped quarters as, for instance, in the cockpit of an airplane.

Another object is to provide a harness which, once adjusted, may be put on and taken off with minimum effort and in minimum time, by employing as few and as quick operating fasteners as is consistent with safety.

A more specific object is to provide an adjusting means for determining the height at which the pack will be positioned on the wearer's back, and separate adjusting means for bringing the lower half of the harness upwardly to fit the wearer's body, the second means being adjustable without affecting the adjustment of the first means.

Other objects and advantages will appear from the following detailed description and from the drawings, wherein:

Fig. 1 shows the harness in coupled up condition as it would appear from the front when removed from the person,

Fig. 2 shows a front view of the harness when it is adjusted to the body,

Fig. 3 shows a rear view of the harness when it is adjusted to the wearer's body.

The risers or load lines 10 separate at the upper end into two branches 12, each of which carries a closed link 14 into which one-fourth of the canopy suspension lines of the parachute (not shown) are tied. The links 14 and small portions 15 of the risers 10 extend back over the shoulders and downward and are entered between flaps and into the parachute pack as at 17, Fig. 3 when it is made up as in common practice.

The seat piece 16 is made of a number of stitched-together layers and carries a closed link 18 at each end, and the risers 10 extend downward to and thru these links, doubling back upon themselves as at 20 to form adjusting loops 21 and ending at the center bar of the slip buckles 22. Raising or lowering the slip buckles changes the length of the adjusting loops 21 and thereby raises or lowers the seat piece 16 with respect to the risers 10.

The breast strap 28 is composed of two parts 30, each stitched lightly to one of the risers 10, the free ends of the parts being provided with the separable members of a quick opening fastener 32. The pocket for the rip cord grip is stitched in the usual manner to the left side of the breast strap over its position on the riser, but since the parachute pack and its opening mechanism form no part of this invention, this pocket is not shown.

The back straps 34, at their upper ends, are secured to the center bars 35 of the slip buckles 36, these buckles being slidable vertically on the risers 10, whereby the distance above the breast strap 28 at which the back straps are attached to the risers may be varied by slipping the buckles up or down.

From the slip buckles 36 the back straps pass backward and over the shoulders and diagonally down over the back, forming the shoulder loops 38 and crossing each other at 40 where they are stitched together, then continuing downward and around the sides to the front of the body, the layers of webbing being divided as at 42 and passing part under and part between the adjusting loops 21 of the risers 10. The parachute pack 43, shown only in dotted outline in Fig. 3, is supported on the back strap, the flaps at the upper end of the pack being lightly stitched to the straps in the region of the shoulder loops 38, while the lower end of the pack has slip straps through which the back straps slide. The slip straps on the pack are located below the point of crossing 40 of the back straps, and hold the pack to the harness whether it is on or off of the body, while a belt on the pack encircles the body to additionally hold the pack up close to the body when the rig is being worn.

The extreme lower ends of the back straps 34 are each provided with one of the parts of a quick opening fastener 32, the other parts of the fasteners being held in the adjusting loops 44 of the leg straps 46. The leg straps 46 are securely stitched in adjacent spaced apart positions 48 near the middle of the seat piece 16. The loops 44 may be lengthened or shortened for adjustment by means of the slip buckles 50.

In assembling a rigging of the type herein shown and described, the following procedure may be observed: The breast strap **28** may preferably be so positioned on the risers **10** that when it is placed a predetermined distance, which may preferably be about 10'' below the chin of an average person, the risers will hang downward over the back a distance sufficient to extend at least halfway thru the pack when the pack is made up and properly positioned on the person's back. This distance may be determined for the average person, after which the breast straps may be attached to the risers at that distance from the ends in all outfits.

With the breast strap **28** properly located on the person, the buckles **36**, which determine the position of the upper ends of the back straps, may now preferably be adjusted about to the position shown in Fig. 2, which will bring the crossover point **40** of the back straps to a comfortable position on the average person. With the back strap crossing **40** so located, the pack may be nested in the small of the back and the flaps at the upper end of the pack lightly stitched to the back straps.

If the foregoing procedure is followed, the adjustment for the upper part of the harness may be made the same in a number of the outfits, so that if they are issued to a group, no one of the group need make any adjustment except the lower ones which may be made quickly in an emergency.

However, if the outfits are issued into the custody of individual users, some additional adjustment of the upper slip buckles **36** may be advantageous. Thus a shorter person may slip the buckles downward toward the breast strap thereby to raise the pack and better nest it on his back and a taller person may adjust the buckles oppositely. But if the slip buckles **36** are considerably lowered, the pack may need to be remade in order that the upper ends of the risers will not have too much slack above the shoulders.

With the upper part of the harness preadjusted as above indicated, the donning of the outfit by an individual to whom it has not been specially fitted, comprises merely the snapping together of the three quick action fasteners **32**, and the raising or lowering of the slip buckles **22** and **50**, the buckles **22** being effective to adjust the seat piece closely up to the bottom of the body and the buckles **50** being effective to hold the body from sliding forward off of the seat piece.

It should be noted particularly that the adjustment of the slip buckles **22** and **50** does not in any way disturb the preadjusted position of the breast strap **28** or the pack positioning buckles **36**. This is considered one of the important features of this invention.

Having described our invention, we claim:

1. In a parachute harness, a seat piece positioned in back of the wearer and fashioned to extend across the bottom of the wearer's body, a pair of risers, one attached to each end of the seat piece, said risers extending from the seat ends around the sides of the wearer's body then upward, one on each side over the front, to and beyond the shoulders, a pair of back straps attached to the underside of the risers near the shoulders, extending downward over the back converging to a midway point then diverging toward the lower ends, and extending around the sides of the body to the front, leg straps extending from the seat piece forward between and around and across the fronts of the legs and joined to the lower ends of the back straps, adjusting means for drawing up the leg straps closely around the legs without changing the position of attachment of the back strap at the shoulder, and adjusting means to draw the outer ends of the seat piece upwardly without changing the position of the risers on the shoulders.

2. In a parachute harness, a seat piece positioned in back of the wearer and fashioned to extend across the bottom of the wearer's body, a pair of risers attached to the ends of said seat piece, said risers extending from the seat ends around to the front of the wearer's body then upwardly to and beyond the shoulders, a pair of back straps attached to the underside of the risers near the shoulders extending diagonally downward and joined together near the middle of the wearer's back then diverging and extending around the sides of the body to the front, leg straps extending from the seat piece forwardly between and around the fronts of the legs and joined to the lower ends of the back straps, means to adjust the length of the leg straps and means to adjust the length of the risers at the lower ends without changing their positions on the shoulders.

3. In a parachute harness, a seat piece in back of the wearer and extending across the bottom of the wearer's body, links at the ends of the seat piece, a pair of risers extending from beyond the shoulders downward over the front of the body in substantially parallel direction then around the sides and thru said links, doubling back upon themselves to form adjusting loops, a pair of back straps attached to the underside of the risers near the shoulders extending diagonally downward, crossing each other near the middle of the back and extending around the sides of the body to the front, leg straps extending from the seat piece forwardly between and around the fronts of the legs and outwardly to join with the lower ends of the back straps, means to adjust the length of the leg straps, and means to adjust the length of the loop at the lower ends of the risers.

4. In a parachute harness, a seat piece, links at the ends of the seat piece, risers having their lower ends extending thru said links then lapping back upon themselves to form loops, an adjusting buckle at each of the riser ends for changing the length of said loops, said risers extending from the seat piece links around the sides of the body then upward on the front of the body, one riser on each side, to and beyond the shoulders, a pair of back straps attached to the underside of the risers near the shoulders extending downward and fastened together at the middle of the back then diverging and extending around the sides of the body to the front, leg straps extending from near the middle of the seat piece forwardly between the legs and around the fronts thereof and outwardly to the lower ends of the back straps, quick acting snap fasteners joining the leg straps and back straps, and means to adjust the length of the leg straps.

5. In a parachute harness, a seat piece positioned in back of the wearer and adapted to fit up to the bottom end of the wearer's body, links at the ends of the seat piece, risers extending thru said links and lapping back upon themselves to form adjusting loops, slip buckles on the outer layers of said loops, the free ends of the inner layers being joined to the center bars of said buckles, said risers extending from the links of the seat piece around the sides of the body then up over the front of the body, one riser on each

side, to and beyond the shoulders, a pair of back straps attached to the underside of the risers in the region of the shoulders converging to the middle of the back then diverging and passing around the sides and to the front of the body, a pair of leg straps each having one end attached to the seat piece and the other end to the back strap, and means to vary the length of the leg straps.

6. In a parachute harness, a seat in back of the wearer adapted to be drawn up to the bottom end of the wearer's body, links on the ends of the seat, risers extending thru said links and lapping back upon themselves to form adjusting loops, slip buckles slidable on the outer layers of said loops, the inner layers of the loops having their ends joined to the center bars of said buckles, said risers extending from said links around the sides of the body then up over the front of the body, one riser on each side, to and beyond the shoulders, slip buckles slidable on the risers in the region of the shoulders, back straps secured to the center bars of said buckles, said straps converging to the middle of the back then diverging and passing around the sides of the body and to the front, a pair of leg straps each having one end secured to said seat and the other end to the lower ends of the back straps, and means to adjust the lengths of the leg straps.

7. In a parachute harness, a seat in back of the wearer adapted to be adjusted up to the bottom end of the wearer's body, risers extending from beyond the shoulders downward one on each side over the front of the body then around the sides and to the ends of the seat, adjusting means at the bottom of said risers for raising said seat, a breast strap in two parts, one part secured to each riser in the region of the breast, back straps attached to the upper ends of the risers in the region of the shoulders, converging downward to the middle of the back then diverging and extending around the sides, leg straps having their one end secured to the seat and extending forwardly between then around the fronts of the legs and to the back straps, a quick acting snap fastener connecting each leg strap to its back strap, and a quick acting snap fastener connecting the two parts of the breast strap.

8. In a parachute harness, a seat in back of the wearer adapted to be adjusted up to the bottom of the wearer's body, links at the ends of the seat, a pair of risers extending from beyond the shoulders parallelly downward over the front of the body then around the sides and thru the links lapping back upon themselves to form adjusting loops, a pair of slip buckles near the lower ends of the risers, the extreme ends of the risers being joined to the center bars of the slip buckles, a breast strap in two parts, one part on each riser in the region of the breast, a second pair of slip buckles on the risers above the breast strap, a pair of back straps attached to the center bars of the second pair of buckles converging downward to the middle of the back then diverging to the sides and around the front, leg straps having their one end secured to the seat near the middle thereof extending forwardly between and around the legs to the back straps, means to adjust the length of the leg straps, a quick opening fastener connecting each leg strap to its back strap and a quick opening fastener connecting the two parts of the breast strap.

FRANK G. MANSON.
JAMES J. MASKEY.