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PARACHUTE GARMENT LIFESAVING DEVICE

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5 Claims. (Cl. 244-143)

This invention relates to parachute garment lifesaving devices and has for its principal object to improve generally upon devices of this character and more particularly to simplify the structure and provide for the wearing of the garment prior to the occasion of its use in the lifesaving emergency without undue discomfort to the wearer or detracting from its efficiency and durability as a safety device.

The invention consists in the novel general structure and in the particular parts and combinations and arrangements of parts thereof, as hereinafter described and set forth in the appended claims, reference being had to the accompanying drawings illustrating a practical adaptation of the invention, and in which:

Figure 1 is a view illustrating the device as normally worn with a portion of the outer garment removed to expose the underlying portion of the folded parachute body;

Figure 2 is a view showing the parachute opened as in descent;

Figure 3 is an inverted plan view of the parachute opened, the illustration being more or less diagrammatic to show the relative arrangement of the seaming between the respective sectors, the various reinforcements, and the flexible stay cord or strap arrangements;

Figure 4 is a fragmentary section, on an enlarged scale, through cooperating portions of the inner and outer garments with the parachute body in folded relation between said garment portions;

Figure 5 is a fragmentary view taken at right angles to that shown in Figure 4, with the outer garment removed except the upper portion thereof in the immediate region where it is attached to the inner garment;

Figure 6 is a fragmentary inner face view of one of the sectors of the parachute body and portions of two adjoining sectors showing the radial seam reinforcements, annular marginal and inner reinforcements, and the stay cord arrangements;

Figure 7 is a fragmentary section, on a reduced scale, taken on or about the line 7-7 of Figure 6; and,

Figure 8 is a fragmentary section illustrating the adjustable attachment of the main stay straps to the ankle bands of the device.

Referring now to the drawings, the device of the present invention, as therein illustrated, comprises a sleeveless garment as an entirety, said garment including an inner body 1 and an outer body 2 having coinciding neck openings 3 and arm holes 4, said inner and outer bodies being fastened securely together in the region of their shoulder

and adjacent chest portions by stitching or other suitable fastening means. As indicated more or less conventionally in Figures 1, 2 and 4, the attachment between the two garment bodies is effected by rows of stitching 5 across the shoulder portions from the neck opening 3 to the arm holes 4 and also around the neck portion, as at 7, and around the arm holes, as at 8. The two bodies 1 and 2 are also stitched securely together annularly about the chest portions thereof just beneath the arm holes 4, as at 9. In this connection, it is noted that the two garment bodies are slitted coincidentally from the neck opening 3 to the annular stitching 9, as at 10, to facilitate slipping the garment over the head of the wearer, said slitted opening being closed by a conventional slide fastener, not shown in detail, or by any suitable fastening means which will securely close said slitted opening and hold with safety while the wearer is descending with the parachute opened as will later more fully appear but which is operable to quickly release the wearer from the garment after landing.

The skirt portion 11 of the inner body 1 of the garment is substantially of hip length and extends continuously around the body of the wearer but the skirt portion of the outer garment body 2, while of substantially the same length as the skirt 11 of the inner body 1, is divided vertically, at intervals throughout its annular extent, whereby to provide a plurality of separate segmental flaps or apron members 12 which flare downwardly and outwardly from the annular stitching 9 which fastens the two garment bodies 1 and 2 together just below the arm holes 4, as hereinbefore described. The flaps or apron members 12 are normally fastened together only at their overlapped meeting lower corner portions by quickly releasable fasteners 13 of the character of the conventional snap fastener, means under the control of the wearer of the garment being provided for the release of the fasteners and opening the flaps or apron members 12, as will presently more fully appear.

The parachute body of the present invention, designated generally by the numeral 14, is normally folded within the annular pocket afforded between the skirt portion 11 of the inner garment body 1 and the closed outer flaps or apron portions 12, the parachute body being constructed and formed to have the usual umbrella shape when opened in use and attached about its restricted central opening to a belt 15 which is fastened around the inner garment body 1 just below the annular row of stitching 9 which fastens the two garment bodies 1 and 2 together be-

low the arm holes 4, said belt 15 being split at the front of the garment and provided with a suitable strap-and-buckle connection 16 at its meeting ends whereby it is readily and securely tightened about the body of the wearer so as to prevent the passage of air therebetween as well as afford a substantial support for the parachute body. As shown more clearly in Figure 4, the parachute body 14 is in three folds between the skirt portion 11 and flaps or apron portions 12 of the garment, the inner portion 17 of the parachute body depending from the supporting belt 15 next adjacent the skirt 11 to near the bottom of the skirt, thence folded upwardly, as at 18, and extended back to near the belt 15, from which point it is folded downwardly, as at 19, with the peripheral portion 20 close to the lower margins of the flaps or apron portions 12. In this connection, it is here noted that the parachute is made of silk or other suitable light weight fabric having the requisite strength and is readily gathered in making the folds so that the bulk is minimized and the garment with the parachute so folded therein may be worn without undue discomfort to the wearer.

As shown, the parachute body comprises a plurality of separate sectors 21 which are tapered longitudinally and rounded at their inner and outer ends so that when joined along their longitudinal margins, the parachute body is given the required umbrella formation. The assembled structure is reinforced by radial strips 22, which are provided along the seams where the respective sectors 21 are joined, and an annular reinforcing band 23 is provided midway between the inner supporting belt 15 and the outer periphery of the parachute, while said peripheral portion is reinforced by an annular band 24, it being of course understood that the respective reinforcements 22, 23 and 24 are made of a heavier fabric than the material comprising the respective sectors 21.

Coincident with each of the sectors 21 and between the inner reinforcing band 23 and the peripheral band 24 are crossed stay cords 25 which are respectively attached at one end securely to the corner portions of the reinforcements 22 and 23, as at 26, and at their opposite ends to the diagonally opposite corner portions of the reinforcements 22 and the peripheral reinforcing band 24, as at 27. The cords 25, intermediate their ends, cross each other slidably through a grommet 28 and each cord is of a length somewhat greater than the direct diagonal distance between the opposed corner portions 26 and 27 of the parachute reinforcements 22, 23 and 24 so that in the opened condition of the parachute under the air pressure therebeneath in use, said crossed cords 25 are tautened angularly and convergently from their ends which are attached to the parachute reinforcements, as just above described, to the grommets 28, which latter have stay straps 29 extending radially between them and the adjacent portions of the peripheral reinforcement 24 as shown more clearly in Figure 6. The straps 29 are also of a length so that they are tautened coincidentally with the tautening of the cross cords 25 and the respective grommets 28 are connected by straps 30 to bands 31 placed about the ankles of the wearer and held in place by stirrup straps 32 carried under the feet, said ankle bands 31 being made of cloth or fabric of suitable strength, or sheet metal, as may be preferred, and suitable means for releasably fastening the stirrup straps 32 to the bands 31 being obviously provided.

The length of each of the strap members 30 is

governed by the diameter of the parachute in its opened condition, and to prevent undue sagging and looseness of the straps in the closed condition of the device as worn by the user, said straps are preferably looped slidably through radial supports 33 provided therefor on the ankle bands 31, the ends of said straps being attached to sleeve members 34, which are slidable on the intermediate portions of the straps, by which provision said sleeve members may be adjusted to normally prevent undue looseness in the straps between the folded parachute body and the ankle bands 31, as shown more clearly in Figure 1, said sleeve members 34 sliding downwardly on the straps 30 until arrested by engagement with the radial supports 33 on the ankle members 31 as the parachute body is moved into open condition and the respective straps 30 are pulled taut, as shown in Figure 2. However, in some cases, the slidable adjustment between the straps 30 and the ankle bands 31 may be eliminated and the straps merely folded up loosely with the body of the parachute within the pocket space between the skirt portion 11 of the inner garment and the flaps or apron portions 12 of the outer garment. In this connection, it is noted that pockets 35 may be provided on the lower portions of the two front flaps or apron members 12 of the outer garment, in which pockets the respective ankle bands and retaining straps 32 may be placed while the garment is being worn and prior to the time when the device is to be placed ready for the emergency.

As a practical means for disengaging the snap fasteners 13, bands 36 are provided to be strapped about the wrist of the user of the device, said bands being connected by cords 37 to the outer releasable member 38 of the respective snap fasteners 13, so that, by lifting the arms, said cords 37 are tautened and the outer member of the fasteners disengaged from the inner member thereof and by continued upward movement of the arms the flaps or apron members 12 are opened, thereby permitting the unfolding of the parachute body and the distending thereof by the air pressure thereunder during the descent. In addition to the cords 37 a web 38 comprising a marginally tapered sheet of fabric is attached at its narrow inner end portion to the garment just beneath the arm hole 4, as at 39, and its outer upper corner portion is attached to the wrist band 36, as at 40, while its lower corner portion is attached to the adjacent flap or apron member 12, as at 41. Preferably, there are but two of these webs 38, one being located on each side of the garment, and normally in the lowered position of the arms said webs are loosely gathered and located entirely outside of the garment, as are the cords 37, to permit reasonable movement of the arms without disconnecting the snap fasteners 13 or lifting the lower end portions of the flaps or apron members 12.

In order to enable the user to see directly downward through the opened parachute during the descent, in the event the fabric thereof is not of itself transparent, a sight opening, which is covered by suitable transparent material, as at 42, may be conveniently provided in the upper front portion of the body of the parachute. So, too, in order to restrict the spreading movement of the feet and to afford a substantial tie between the two ankle bands 31, each of the bands is provided with a strap 43, one of which has an eye 44 at its end and the other is provided with a snap hook 45 whereby said straps may be readily attached and detached at will.

From the foregoing it is apparent that a simple yet practical and efficient parachute device is produced including a garment which may be donned by a person before ascending in an aircraft or otherwise to a high elevation from which a leap may be necessary and with the parachute folded compactly therebeneath the garment may be worn without discomfort during the interim and is readily available when the emergency arises for its use as a safety appliance.

There is a further advantage in the particular structural arrangement of the device of the present invention in that the provision of the flexible connecting means between the ankle bands 31 not only effects a limiting tie but affords ample though restricted movement between the feet of the user of the device for enabling the user to resort to some manipulatory movement of his lower limbs to control to a certain degree the drift of the opened parachute in its descent. Also, by lifting his arms to spread the web members 38 so as to function with sail-like effect above the parachute, drifting in the general direction of an air current is accomplished.

Obviously, the structure admits of considerable modification within the spirit of the invention as defined by the appended claims. The invention, therefore, is not limited to the specific construction and arrangement shown in the accompanying drawings.

What is claimed is:

1. In a safety device of the character described, inner and outer garments attached together as a unit in the upper shoulder and chest portions thereof, the inner garment having a skirt portion depending from its chest portion and the outer garment having a vertically divided skirt portion overhanging the skirt portion of the inner garment, means for detachably securing the separable sections of the skirt portion of the outer garment together, a parachute body foldable normally between the skirt portions of said inner and outer garments, said parachute body being attached to a belt surrounding the chest portion of the inner garment in a plane below the arm pits and having adjustable strap means for tightening the belt around the adjacent body portion of the wearer, convergent stay cords attached to the under side of the parachute body adjacent its periphery and about an annular line inwardly from the periphery, ankle bands having retaining straps engageable under the feet of the wearer, and flexible stay members connecting the convergent portions of said stay cords with said ankle bands.

2. In a safety device of the character described, inner and outer garments having coinciding neck openings and arm holes, said garments being secured together as a unit throughout the upper shoulder and chest portions, each garment having a depending skirt portion and the skirt portion of the outer garment being divided vertically into separable sectors, the meeting lower corner portions of the sectors being detachably secured together by snap fastener elements, flexible connecting means between said snap fastener elements and the arms of the wearer of the garment for disconnecting the skirt sectors of the outer garment, a parachute body attached at its inner portion to a belt surrounding the inner garment below the arm hole openings thereof, adjustable strap means for binding said belt close about the adjacent body portion of the wearer, said parachute body being normally folded between the skirt portions of said inner and outer

garments, said parachute body comprising a plurality of separate sectors of cloth and being reinforced by radial strips of fabric along their longitudinal marginal seams, and the body being provided with a peripheral reinforcing strip and an annular reinforcing strip midway between the periphery and inner belt-attached portion, crossed stay cords extending angularly and convergently from the meeting corner portions of said radial, peripheral and medial annular reinforcing strips, ankle bands having retaining straps engageable under the feet of the wearer, and flexible stay members connecting the converged portions of said crossed stay cords with the ankle bands.

3. In a safety device of the character described, inner and outer garments having coinciding neck openings and arm holes, said garments being secured together as a unit throughout the upper shoulder and chest portions, each garment having a depending skirt portion and the skirt portion of the outer garment being divided vertically into separable sectors, the meeting lower corner portions of the sectors being detachably secured together by snap fastener elements, flexible connecting means between said snap fastener elements and the arms of the wearer of the garment for disconnecting the skirt sectors of the outer garment, a parachute body attached at its inner portion to a belt surrounding the inner garment below the arm hole openings thereof, adjustable strap means for binding said belt close about the adjacent body portion of the wearer, said parachute body being normally folded between the skirt portions of said inner and outer garments, said parachute body comprising a plurality of separate sectors of cloth and being reinforced by radial strips of fabric along their longitudinal marginal seams, and the body being provided with a peripheral reinforcing strip and an annular reinforcing strip midway between the periphery and inner belt-attached portion, crossed stay cords extending angularly and convergently from the meeting corner portions of said radial, peripheral and medial annular reinforcing strips, ankle bands having retaining straps engageable under the feet of the wearer, and flexible tie means connecting said ankle bands.

4. In a safety device of the character described, inner and outer garments having coinciding neck openings and arm holes and being secured together as a unit throughout their upper shoulder and chest portions, said garments having common slitted openings merging with their neck openings and provided with common releasable fastening means, the inner garment having a depending skirt portion and the outer garment having a depending skirt portion freely overhanging the skirt portion of the inner garment, said outer overhanging skirt portion being divided vertically into separate sectors, means for detachably connecting the lower corner portions of said outer skirt sectors, a belt attached to and surrounding the inner garment beneath the arm holes thereof, adjustable strap means for tightening said belt about the body of the wearer, a parachute body attached at its inner portion to said belt and being foldable between said skirt portions of the inner and outer garments, stay cords attached to the under side of the parachute body in the peripheral region thereof, ankle bands having retaining straps engageable beneath the feet of the wearer, radial supports on said angle bands, and flexible stay members attached at one end to said stay cords and being looped with

their opposite end portions through said radial supports on said ankle bands, the extreme ends of said looped portions of said flexible stay members being slidably engaged with the intermediate portions of said members.

5. A safety device of the character described, comprising an upper body garment to be worn by the user, said garment having a depending inner skirt portion and a vertically divided outer skirt portion overhanging the inner skirt portion, a parachute body foldable annularly between said inner and outer skirt portions of the garment,

means for tightening the inner portion of said parachute body around the body of the wearer of the garment below the arm pits, convergent groups of stay cords on the under side of said parachute body between the periphery and a medial annular portion thereof, ankle bands having provision for securing them to the feet of the user, and flexible stay members connecting the convergent portions of said groups of stay cords to said ankle bands.

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