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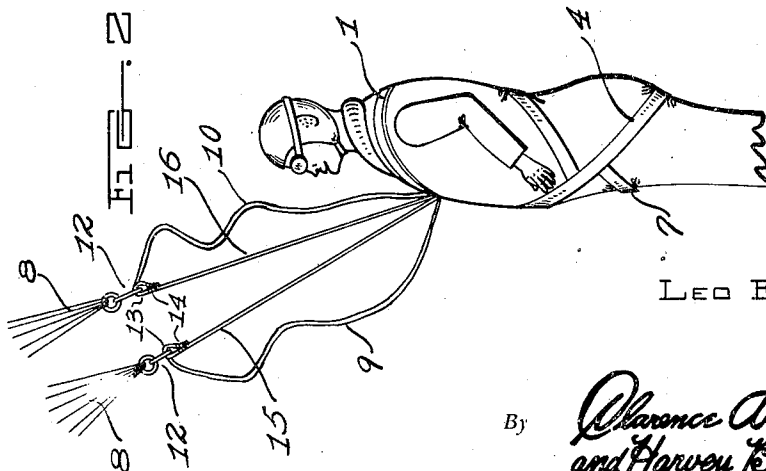
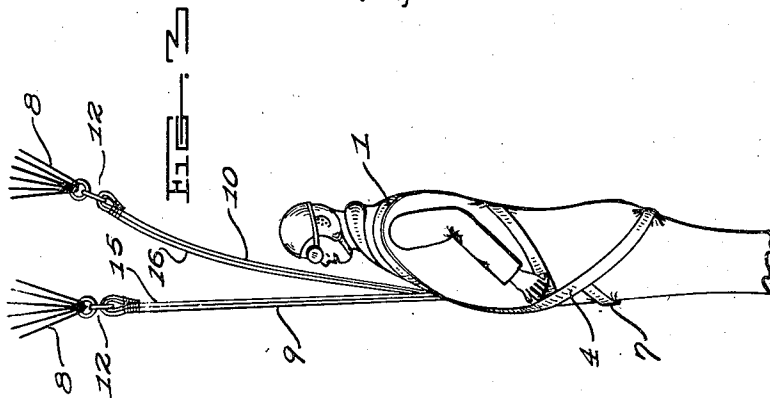
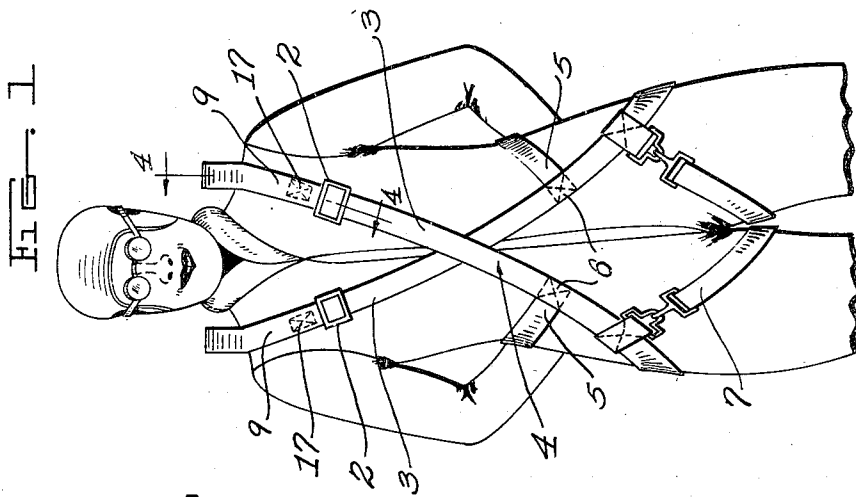
L. E. SUPINA

2,462,234

PARACHUTE

Filed Feb. 9, 1946

2 Sheets-Sheet 1



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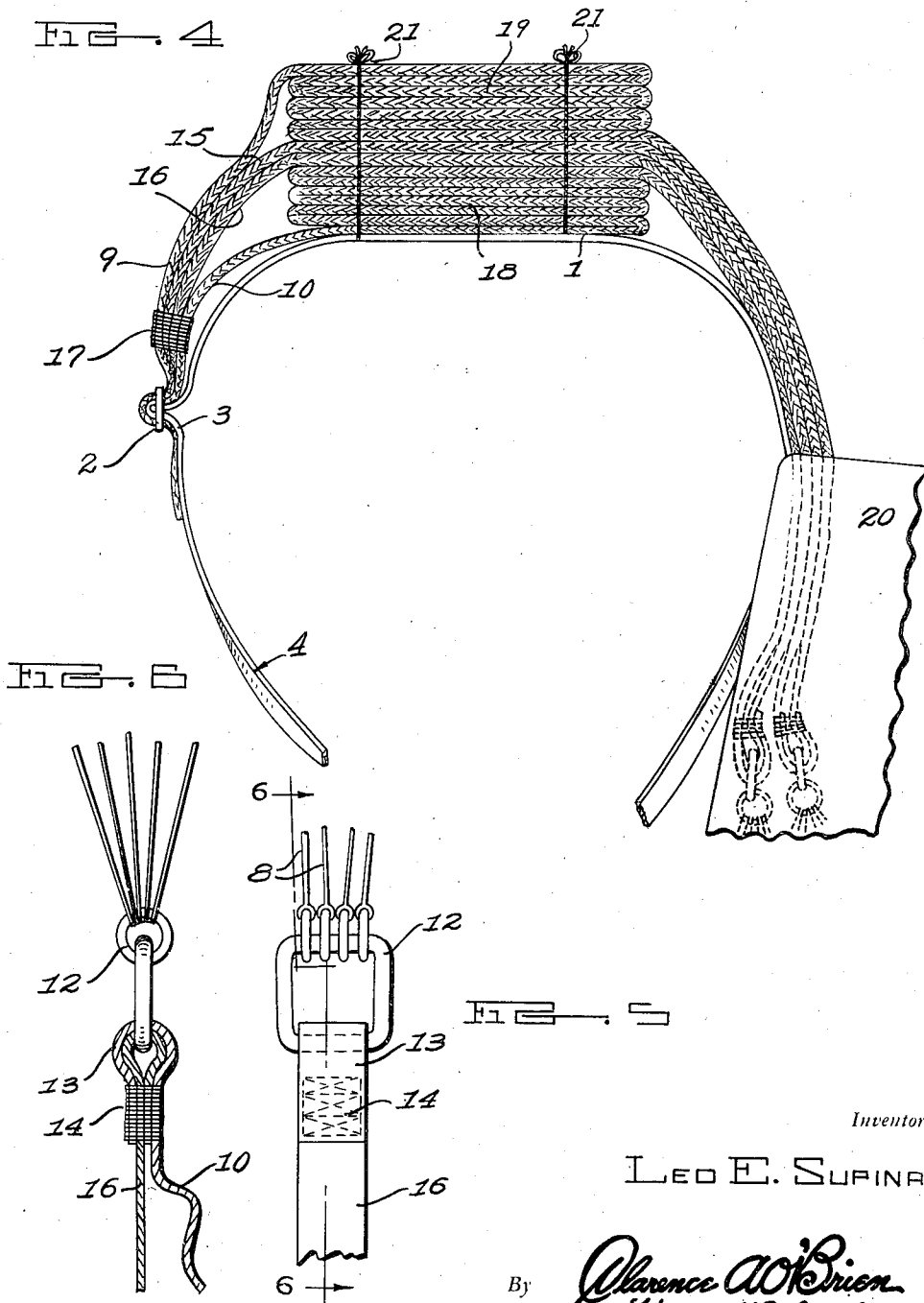
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PARACHUTE

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2 Sheets-Sheet 2



UNITED STATES PATENT OFFICE

2,462,234

PARACHUTE

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2 Claims. (Cl. 244-151)

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My invention relates to improvements in parachutes, and specifically to shock absorbing means therefor.

The primary object of the invention is to equip parachutes with efficient means of simple construction for absorbing shock and jar against the canopy and also against the jumper, when the canopy opens, and which acts to cushion landing impact and to assist the jumper in remaining upright in landing.

Another object is to provide means of the character and for the purpose above set forth which is adapted to be easily embodied in present-day parachutes without materially increasing the cost or weight thereof.

To the accomplishment of the above and subordinate objects presently appearing, the preferred embodiment of my invention has been illustrated in the accompanying drawings, set forth in detail in the succeeding description, and defined in the claims appended hereto.

In said drawings:

Figure 1 is a view in front elevation illustrating my improved shock absorbing means embodied in a parachute folded, and packed with the harness applied to a jumper.

Figure 2 is a view in side elevation illustrating the manner in which the shock absorbing means functions when the canopy begins to open.

Figure 3 is a similar view illustrating the manner in which the shock absorbing means functions when the entire weight of the jumper is being sustained by the parachute.

Figure 4 is a fragmentary view in section taken on the line 4-4 of Figure 1 and drawn to an enlarged scale.

Figure 6 is a fragmentary view in front elevation illustrating the manner in which the shock absorbing webs of my invention are connected to the shroud lines, and

Figure 6 is a view in longitudinal section taken on the line 6-6 of Figure 5.

Reference being had to the drawings by numerals, my improved shock absorbing means has been shown therein as forming part of the equipment of a well known type of parachute, illustrated in part sufficient for the present purposes. The harness of said parachutes includes a pair of shoulder straps, one of which is best shown in Figure 4 and designated 1, with front ends connected by adapter buckles 2 to the upper crossed ends 3 of a seat strap 4, and lower ends 5 stitched, as at 6, to said seat strap 4 in front of the harness. The numeral 7 designates the usual leg straps which need be merely identified in passing.

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Harness of the type illustrated is adapted to be suspended from the shroud lines 8 of the parachute canopy, not shown, by means of a pair of front and rear riser webs, or straps, at each side of the harness, one of such pairs being shown, as sufficient to a proper understanding of the invention, and designated 9, 10. As will be understood, the riser webs, or straps, 9, 10 are of inelastic material. The pairs of front and rear riser webs, or straps, 9, 10 are connected, at corresponding ends of each pair, to the harness in front thereof at the juncture of the shoulder straps 1 with the ends 3 of the seat strap 4 in a manner which will be understood and is therefore not shown in the drawings. The other ends of said straps 9, 10, or webs, are connected to the shroud lines 8 by ring couples, as at 12, with said ends looped, as at 13, through one of the rings and stitched, as at 14.

According to my invention, a pair of front and rear shock absorbing webs, or straps, 15, 16 is provided for each pair of front and rear riser webs, or straps, 9, 10, and which are shorter relatively than said webs, or straps, 9, 10 and formed of elastic material suitably reactive for a purpose presently seen. The shock absorbing webs, or straps, 15, 16 are connected, at corresponding ends of each pair, to the pairs of front and rear riser webs, or straps, 9, 10 by stitching said ends to said webs, or straps 9, 10, as at 17, in between said riser webs, or straps, and adjacent to the connections 12. The other ends of the shock absorbing webs, or straps, 15, 16 of each pair are connected to the ring couples 12 in the same manner as the front and rear riser webs, or straps, 9, 10, in the loops 13, and secured by the stitches 14.

Referring now to Figure 4, when the parachute is packed and folded, the front and rear riser webs, or straps, 9, 10 of each pair are folded over and lengthwise of the shoulder straps 1, on the same side of the harness, back and forth in loop formation to take up the slack therein caused by said webs, or straps, 9, 10 being longer, normally, than the shock absorbing webs, or straps, 15, 16. The rear riser web, or strap, 10 in each pair is folded to arrange the folds 18 on top of the strap, whereas, the front riser web, or strap, 9 is folded to arrange the folds 19 underneath the strap. The shock absorbing webs, or straps, 15, 16 are passed rearwardly between the folds 18, 19 to the canopy or chute pack 20. The folds 18, 19 and said shock absorbing webs, or straps, 15, 16 are temporarily fastened together, or tacked, by tacking cords 21 adapted to break under the pull of

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the canopy, not shown, and load on the canopy, as soon as said canopy begins to open.

The operation of the described invention will be readily understood. As soon as the canopy begins to open, the impact of the jumper against said canopy causes the cords 21 to break and the shock absorbing webs, or straps, 15, 16 stretch under the weight of the load thereon. This breaks and cushions the impact against the canopy and the jumper, gradually, as the canopy opens up and assumes the full load thereon, and until said shock absorbing webs stretch sufficiently for the front and rear pairs of riser webs, or straps, 9, 10 to function in sustaining the full load. When the jumper lands, feet foremost, the reaction of said shock absorbing webs, or straps, 15, 16, or in other words, contraction thereof, tends to pull the canopy downwardly, and hence, the jumper upwardly, so that the jumper is assisted in maintaining erect position in landing.

The foregoing will, it is believed, suffice to impart a clear understanding of my invention without further explanation.

Manifestly, the invention, as described, is susceptible of modification without departing from the inventive concept, and right is herein reserved to such modifications as fall within the scope of the appended claims.

What I claim is:

1. In a parachute, a harness, shroud lines, riser webs connected in pairs at one end to said harness at opposite sides thereof and connected at the other ends thereof to said shroud lines, and elastic shock absorbing webs normally shorter than said riser webs connecting said harness to

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said shrouds and interposed between said pairs of riser web, said riser webs being folded intermediate the ends thereof upon opposite sides of said elastic webs, and pull-apart means connecting the folds of said elastic webs and said riser webs.

2. In a parachute, a harness, shroud lines, riser webs connected in pairs at one end to said harness at opposite sides thereof and connected at the other ends thereof to said shroud lines, and elastic shock absorbing webs normally shorter than said riser webs connecting said harness to said shroud and interposed between said pairs of riser webs, said riser webs being folded intermediate the end thereof upon opposite sides of said elastic webs, and pull-apart means connecting the folds of said elastic webs and said riser webs comprising cord strands extended through said folds and webs.

LEO E. SUPINA.

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