Sept. 2, 1930. E. L. HOFFMAN 1,774,513

PARACHUTE PACK

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FIG 4

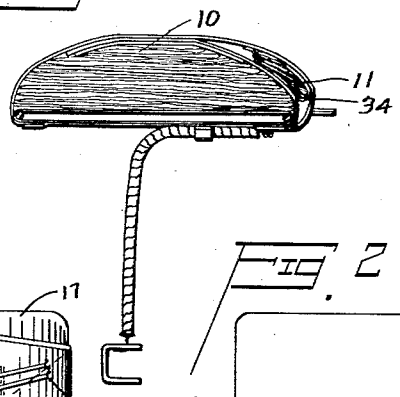


FIG 1

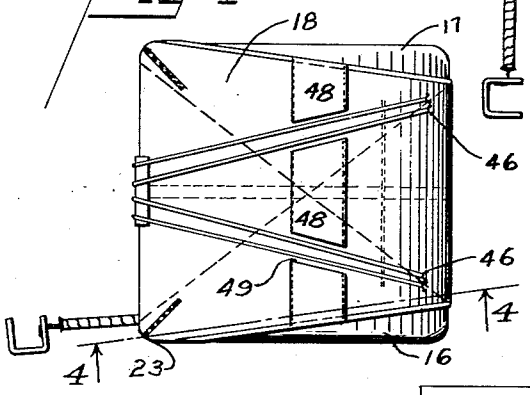


FIG 2

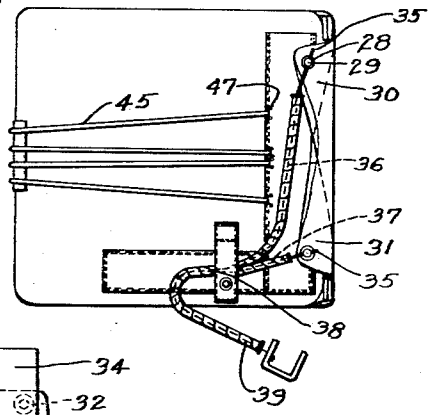
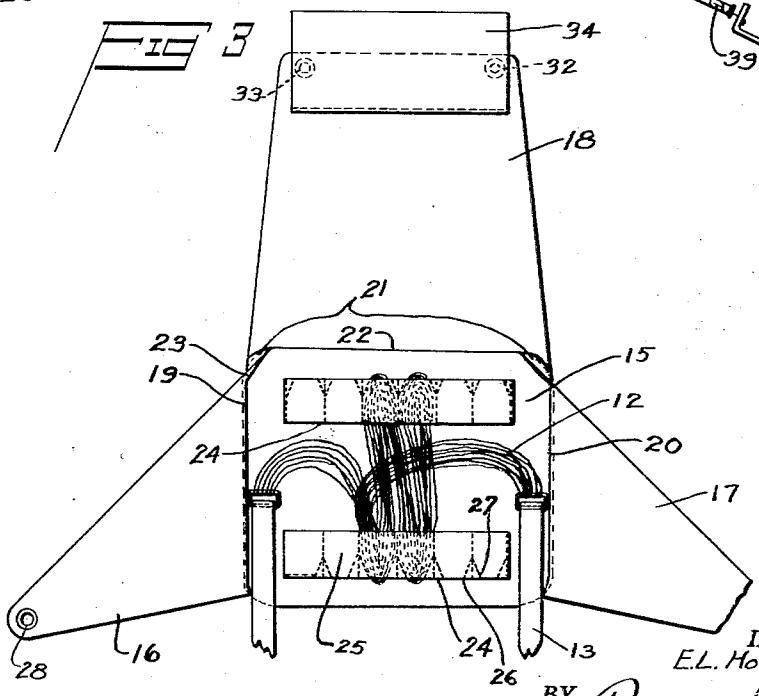


FIG 3



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PARACHUTE PACK

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FIG 5

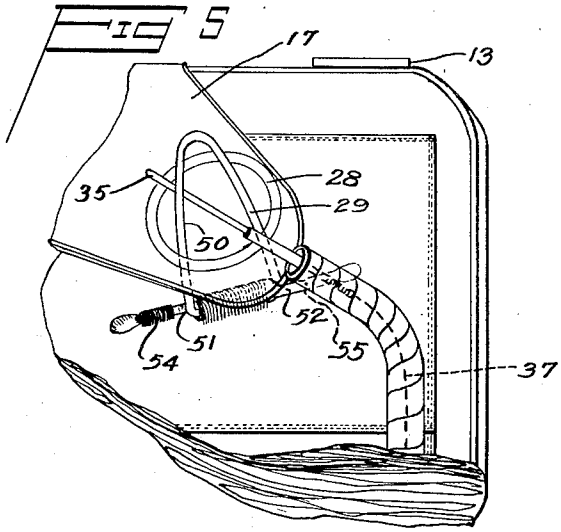


FIG 8

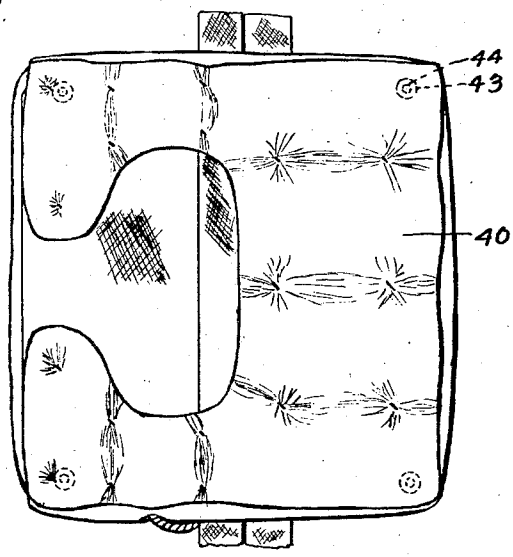


FIG 7



FIG 6

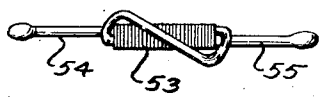
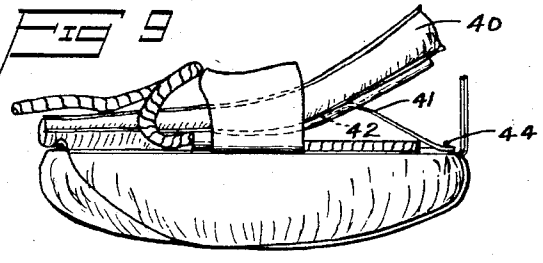


FIG 9



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Patented Sept. 2, 1930 1,774,513

UNITED STATES PATENT OFFICE

EDWARD L. HOFFMAN, OF DAYTON, OHIO

PARACHUTE PACK

Application filed September 6, 1929. Serial No. 390,815.

(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 the Government for governmental purposes, without the payment to me of any royalty thereon.

The present invention relates generally to improvements in parachute packs and more particularly wherein the improvements are directed toward providing a container which is simple in construction and one which will open promptly and positively when operated whereby to eject a parachute into an air stream.

The main object of the present invention is the provision of a container of novel form and one consisting essentially of a face piece or body portion of flexible material provided with side flaps and an end flap adapted to overlie the side flaps when the container is in a packed condition, the shape of the flaps and method of attaching same to the body portion providing a pack construction in which the hazard of the parachute working loose and becoming exposed to an air stream before it is intended to be released is eliminated. A parachute pack constructed in accordance with the present invention also permits of the rip cord and housing therefor being rigged close to the wearer's body; thus preventing or eliminating to a certain extent their catching on projecting objects.

Another object of the present invention is the construction of a parachute container, the arrangement of the flaps of which causes the pilot parachute to be forcibly thrown away from the container into the air when the pack is released.

The invention is further characterized by the provision in a pack of the class described of a new and improved releasing means or locking staple which is fastened to the parachute pack and adapted to hold the flaps of the pack together. The releasing devices in use on parachutes of present day construction consist of brass cones with a hole near the apex and a rather wide round base. These devices have been found by experiment to be objectionable, due to the fact that the spring ribs of the conventional pilot parachutes may press against certain sides of the base and prevent the pack from opening when released.

The present invention, therefore, has as its main objects the correction of these various faults inherent in parachute packs of conventional design in order that the parachute as a whole may offer a reasonably dependable means of safety.

Further objects and advantages of my invention will be more fully set forth, reference being made to the following detailed description of the preferred form of my invention and to the accompanying drawings in which—

Fig. 1 is a top plan view of a pack in the embodiment of my invention.

Fig. 2 is a bottom plan view of the pack showing the means for holding the flaps together when packed.

Fig. 3 is a view of the parachute container when opened showing in detail the construction of the flaps and methods of arranging the suspension lines in the container.

Fig. 4 is a sectional view taken on the line 4—4 of Fig. 1.

Fig. 5 is an enlarged detail view of one corner of the pack showing the improved releasing device secured to the pack.

Figs. 6 and 7 respectively are plan views of the improved locking staple in accordance with my invention shown connected to the container and having a right and left-hand twist respectively.

Fig. 8 is a plan view of the bottom of the pack showing the method of attaching the seat cushion thereon and

Fig. 9 is a side view of Fig. 8.

Referring more particularly to the drawings in which corresponding numerals designate like parts in the various figures, the parachute pack in the embodiment of the invention herein illustrated is designed to carry the sustaining parachute 10 and a pilot parachute 11 for releasing the sustaining parachute from the container as will be noted by referring to Fig. 4 of the drawings. The suspension lines 12 are connected to the harness straps 13 which extend into the container from the body harness on the person of the aviator. These provisions are of standard, well known type and require no further explanation.

The parachute pack or container may be

made of any suitable, flexible material which is preferably waterproof and comprises a body portion 15 which constitutes the back of the container, side flaps 16 and 17, and an end flap 18 which folds over the side flap and back portion to retain the folded parachute therein.

The side flaps 16 and 17 are sewed to the body portion of the container by means of seams along the lines 19 and 20, as shown in Fig. 3, and adapted to extend partially around the corners of the body portion, as indicated by numerals 21. In a like manner the flap 18 is sewed to the body portion along the line 22, the said flap being sewed and extending around the corner of the body portion and to a point substantially along the sides thereof, as indicated by numerals 23. In this manner when the container is in a packed condition the flaps will assume the position indicated in Fig. 1 so that the possibility of the parachute being pulled out the corners is eliminated. The suspension lines 12 of the main parachute extend from the straps 13 and are laid back and forth with looped ends tucked in pockets 24 provided in each of two pieces of webbing sewed at intervals onto the back portion and at opposite ends thereof, leaving slacked loop portions 25 to serve as pockets. Each pocket respectively is also formed at their outer ends as is indicated by numerals 26 and 27 with seams diverging from points along the sides of the pockets and extending inwardly toward one another so that the openings in one side of the pockets are greater than the openings in the other side. The suspension lines when packed in the pockets are held securely enough so that the operation of folding and packing the parachute is not hampered by loose suspension lines, but the suspension lines may, nevertheless, be very easily disengaged by the pull of the pilot parachute from the pack. This arrangement further insures against any likely entanglement of the suspension lines either through careless packing or when the parachute is released in that the loops formed by the suspension lines when drawn into the pockets cannot be pulled through the small end of the pockets and yet sufficient opening is left to permit of a packing hook being inserted in the small end and disengaged from the loops after packing.

When the parachute is packed in the container, the harness straps 13 are first sewed lightly in place in the positions indicated in Fig. 3, after which the suspension lines are drawn into the pockets in loops as shown. The parachute is then folded and placed in the container, the side flaps 16 and 17 are next folded in place and held in position by means of grommets 28 provided in the ends thereof which are adapted to fit over locking staples 29 as shown in Figs. 2 and 5 of the drawings. the flaps at this time being in the position indicated by numerals 30 and 31 respectively.

In a like manner the end flap 18 is folded over and held in position by means of grommets 32 and 33 which are adapted to fit over the locking staples 29 in the same manner as heretofore described. The pilot parachute having been folded within an auxiliary tongue 34 sewed at one end of the flap 18 and folded over to contain the pilot chute therein, as indicated in Fig. 4.

When the pack is made up by folding the container around the parachute and the flaps are folded into position as heretofore explained, it is held closed by means of a plurality of wire pins 35 which are inserted through openings in the locking staples 29. The pins 35 are attached to pull wires 36 and 37 which are attached in turn to each other respectively terminating at points 38 in a single pull wire 39 which preferably takes the place of a thin wire cable.

It is very important that the pins do not become accidentally separated from the staples or bent so as to prevent their withdrawal when the releasing cord is pulled and to this end, it is desirable that the aforementioned parts be adequately protected against accidents. This may be accomplished by providing suitable protective covering for the fastening means so constructed that it will not interfere with the making up of the pack or with the free movement of the release cord when the pack is to be opened. To this end I have secured to the bottom of the container a pad 40 suitably padded to add to the comfort of the wearer and having an auxiliary flap 41 secured to the rear edge thereof as indicated by numeral 42, snap fastener elements 43 of conventional design being conveniently placed along the edge of the auxiliary flap, which are adapted to overlie and be engaged by complementary snap fastener elements 44 which are secured to the back of the pack as indicated, so positioned that when folded over the fasteners for the pack the snap fasteners secure it in position.

In order to cause quick and free opening of the pack so as to freely release the parachute contained therein, I provide rubber or other elastic bands 45, these bands being hooked at their one ends to eyelets 46 provided on the flap 18, the other ends of the elastics being hooked to eyelets 47 provided on the back of the container. When the pack is folded these elastics are placed under tension, as they are somewhat shorter (when unexpanded) than the length of the material between their fastened ends; consequently when the edges of the flaps are released by pulling upon the rip cord, the elastic bands tend instantly to pull the ends of the flap apart and at the same time release the side flaps to throw the pack open thus forcibly throwing the pilot parachute away from the pack and into the

air stream and cause the withdrawal of the main parachute therefrom. Wearing straps 48 may be provided which are sewed to the back of the end flap 18 having slots 48 therebetween which are for the purpose of permitting the elastics to sink into the pack whereby to prevent them from being rubbed when in use.

The pins 35 heretofore mentioned may engage the flaps in any suitable manner; but I prefer to use the construction shown in detail in Fig. 5 embodying a wire-like staple 29 having a looped portion 50 adapted to receive the pins 35 therein, the looped portion terminating in end pieces 51 and 52 which are reinforced with wire or other suitable means and soldered together as indicated at 53. The ends of the staple are secured to the pack as by stitching at points 54 and 55, small drops of solder being added to the ends which prevent the stitches from slipping off the ends of the staple. In this manner the staple freely hinges about its projecting ends and at the same time is effectively held in place on the pack.

In order to accommodate various installations and usages to which the staples may be put the top or looped portion may be given a right or left-hand twist as evidenced by referring to Figs. 6 and 7 respectively of the drawings.

While I have illustrated and described the preferred form of construction for carrying my invention into effect, it is to be understood that variations and modifications may be made without departing from the spirit of the invention. I, therefore, do not wish to be limited to the precise details of construction set forth but desire to avail myself of variations and modifications as may come within the scope of the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. A parachute container adapted to hold a parachute folded therein comprising a rectangular, central portion and flaps at the sides and one end only of said rectangular portion adapted to be folded inwardly to retain said parachute folded therein.

2. A parachute container adapted to hold a parachute folded therein comprising a rectangular sheet of flexible material having flaps at the sides and one end only thereof adapted to be folded inwardly to retain said parachute folded therein and means for holding the edges of the flaps in said folded position.

3. A parachute container adapted to hold a parachute folded therein comprising a rectangular sheet of flexible material having flaps at the sides and one end only thereof adapted when folded inwardly to form a closure for said container.

4. A parachute container made of flexible material and adapted to hold a parachute folded therein comprising a central rectangular portion having flaps at the sides and one end only thereof adapted when folded inwardly to form a closure for said container and releasable fastening means mounted on the outside of said rectangular portion and along the edge opposite to said end flap for holding the edges of the flaps in folded position.

5. A parachute container made of flexible material and adapted to hold a parachute folded therein comprising a central, rectangular portion having flaps at the sides and one end only thereof adapted when folded inwardly to form a closure for said container and releasable means for holding the edges of the flaps in folded position, said means comprising wire-like devices attached to said central portion and projecting through said flaps and pins engaging said devices.

6. The combination with a parachute having suspension members attached thereto, of a container adapted to hold said parachute folded therein, said container comprising a body portion of rectangular shape having flaps at the two sides and one end thereof adapted when folded inwardly to form a closure for said parachute and container, and a plurality of spaced pockets at diametrically opposite sides of said container for receiving looped portions of said suspension lines laid back and forth between said pockets in packing the parachute, the looped portions of said pockets having a greater restriction at one end than at the other.

7. In a parachute pack a parachute and a container for said parachute, said container comprising a body portion of rectangular shape having triangular shaped flaps at the two sides thereof and an end flap adapted to entirely overlie the side flaps, said flaps when collectively folded inwardly forming a closure for said container.

8. The combination with a parachute, of a container adapted to hold said parachute folded therein, said container comprising a body portion of rectangular shape having diametrically opposite, triangular-shaped flaps at the sides thereof adapted to be folded over said parachute and an end flap adapted to entirely overlie the side flaps, said flaps forming collectively, when in a folded position, a closure for said container, releasable fastening means for holding the edges of said flaps together and elastic means attached to said end flap adapted to forcibly throw said flap open when released.

9. The combination with a main parachute and a pilot parachute therefor, of a container adapted to hold said parachutes therein, said container comprising a body portion of rectangular shape having diametrically opposite triangular-shaped flaps at the sides thereof adapted to be folded inwardly and

over said main parachute, an end flap adapted to entirely overlap the side flaps whereby to form collectively a closure for said container when in folded position, releasable fastening means for holding said flaps together, an auxiliary flap attached to said end flap, and adapted to be folded around said pilot parachute, and elastic means to forcibly open the end flap and throw said pilot parachute into the air stream.

10. The combination of a main parachute and a pilot parachute therefor, of a container adapted to hold said parachutes therein, comprising a body piece of rectangular shape, having triangular-shaped flaps at the sides thereof and an end flap adapted to entirely overlie the flaps and a portion of said body piece and having elastic means attached thereto and an auxiliary flap attached at its one end to the end of said aforementioned flap, and adapted to form a pocket to contain said pilot parachute when folded over, said auxiliary flap being so positioned as to forcibly throw said pilot chute away from said pack upon the release of said fastening means.

11. A parachute container adapted to hold a parachute folded therein comprising a rectangular body portion and flaps attached to said body portion at the two sides and one end thereof, the width of the flaps being greater than the width of the sides and end respectively of said body portion whereby to form overlapping corners when in a folded position.

12. A container for parachutes comprising a rectangular body portion having flaps at the sides and one end thereof adapted to form, when folded inwardly, a closure for said container and releasable fastening means for holding the edges of said flaps together, said means comprising a series of wire-like locking staples having end portions attached to said body portion, grommets in the edges of said flaps adapted to overlie and engage said locking staples, and a rip cord to releasably retain said grommets in engagement with said locking staples whereby to retain said flaps in folded position.

13. A container for parachutes comprising a rectangular body portion having flaps at the sides and one end thereof adapted when folded inwardly to form a closure for said container and releasable fastening means for holding the edges of said flaps together, said means comprising a series of wire-like locking staples having end portions attached to said body portion and forming a hinged action therebetween, grommets in the edges of said flaps adapted to overlie and engage said locking staples and a rip cord to releasably retain said grommets in engagement with said locking staples whereby to retain said flaps in folded position, the axis of the hinged portions of said locking staples being approximately at right angles to the direction of pull of said flaps when in folded position.

In testimony whereof I affix my signature.

EDWARD L. HOFFMAN.