

Aug. 3, 1926.

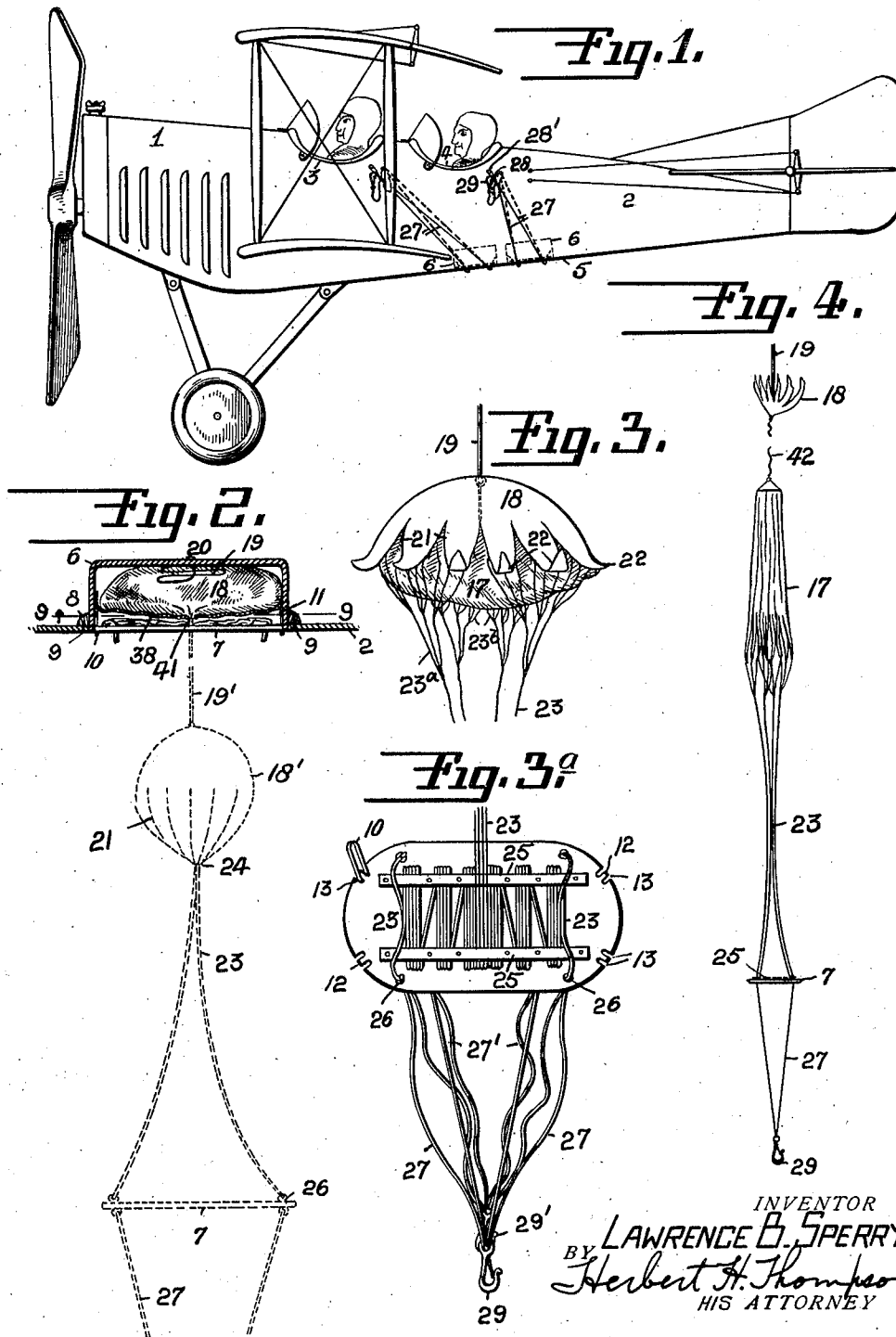
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L. B. SPERRY

PARACHUTE

Filed March 24, 1919

3 Sheets-Sheet 1



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Fig. 5.

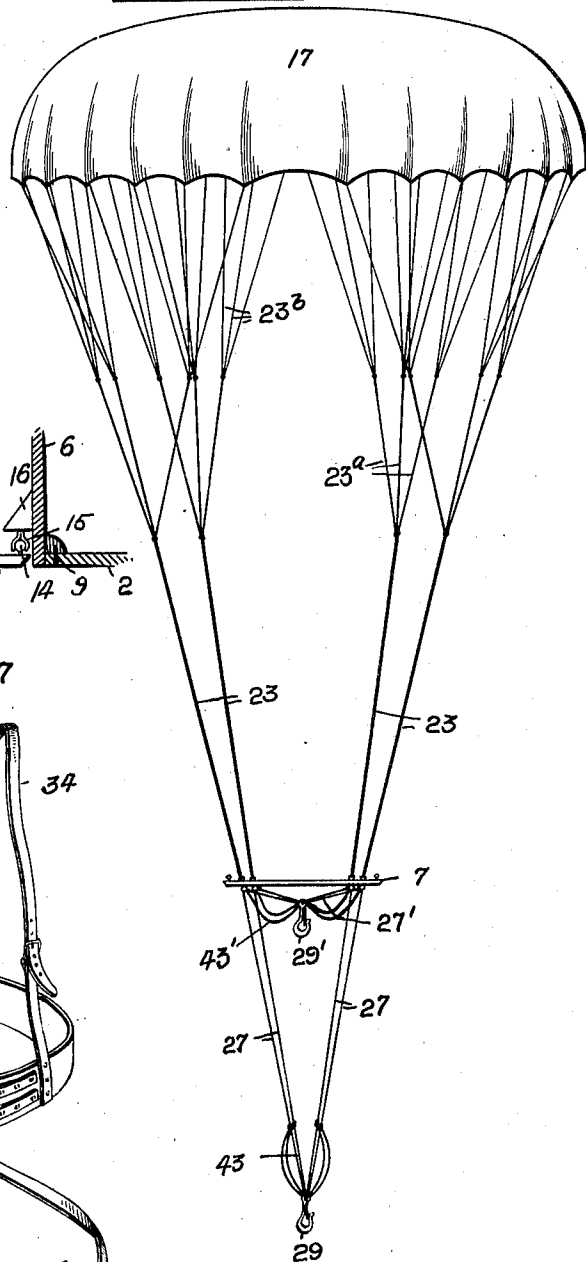


Fig. 6.

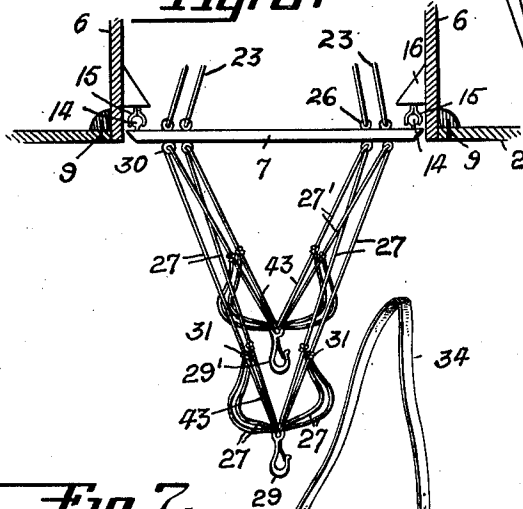
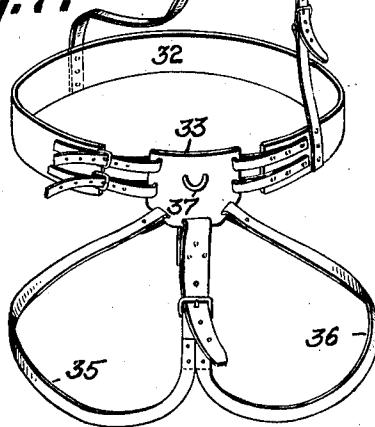


Fig. 7.



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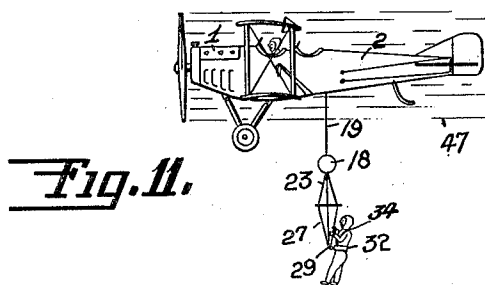
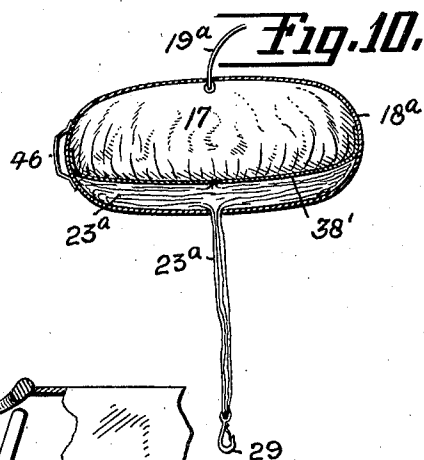
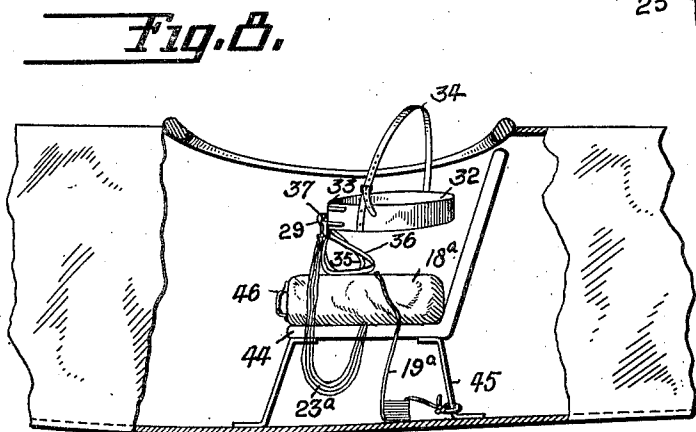
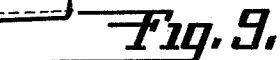
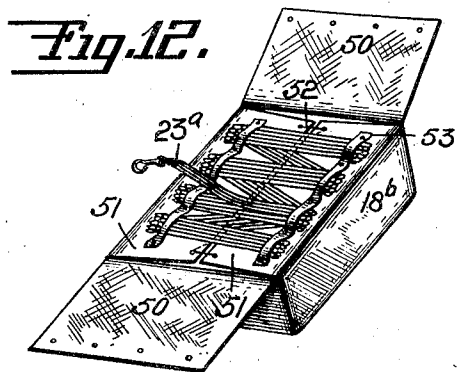
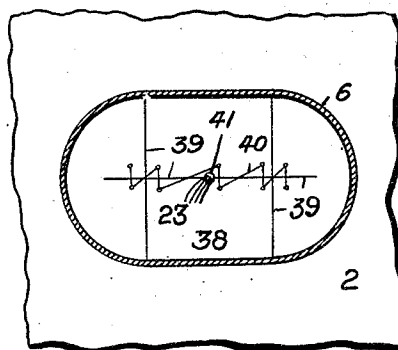
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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE.

LAWRENCE B. SPERRY, OF GARDEN CITY, NEW YORK; THE BANK OF AMERICA, OF NEW YORK, N. Y., AND WINIFRED ALLEN SPERRY, OF HEMPSTEAD, NEW YORK, EXECUTORS OF SAID LAWRENCE B. SPERRY, DECEASED.

PARACHUTE.

Application filed March 24, 1919. Serial No. 284,755.

This invention relates to parachutes, more particularly to parachutes adapted to the use of aviators in escaping from air craft, and especially from rapidly moving craft such as aeroplanes.

One of the great difficulties in the use of parachutes for escaping from aeroplanes is that the slip stream from the propeller is apt to catch the parachute and tear it or to blow it against the tail parts of the plane, or otherwise foul it so that it will fail to function properly.

The main object of the invention is to devise a method and means whereby a parachute may be mounted on an aeroplane, being always ready for quick attachment to the aviator, and adapted to function with a high degree of reliability.

Referring to the drawings wherein I have shown what I now consider to be the preferred forms of my invention.

Fig. 1 is a side elevation of an aeroplane, showing one method of carrying the parachutes in accordance with my invention.

Fig. 2 is a fragmentary section of the fuselage of an aeroplane illustrating one method of carrying the parachute; showing also one of the stages in the releasing of the same.

Figs. 3, 3^a, 4, and 5 illustrate further stages in the releasing and opening of the parachute.

Fig. 6 is a detail of the double set of cords adapted to be attached to the aviator's belt.

Fig. 7 is a view of a belt adapted to be used with my invention.

Fig. 8 shows a modified method of carrying the parachute.

Fig. 9 is a section taken on line 9—9, Fig. 2.

Fig. 10 is a section of the bag shown in Fig. 8.

Fig. 11 is a view of an aviator escaping from an aeroplane.

Fig. 12 shows a modified form of bag.

In the drawings the aeroplane is shown at 1 having a fuselage 2, within which are shown pits 3 and 4 for two persons, a pilot and an observer or passenger. Set within the fuselage through openings in the bottom 5 thereof are shown two receptacles 6 (see also Fig. 2). The receptacle is provided with a removable cover 7, and may be oval in shape as shown by the shape of the cover

in Fig. 3^a. This shape will permit the receptacle to be inserted end first into the fuselage, and then adjusted into position with cover 7 substantially flush with the bottom of the fuselage 2. A strip of quarter-round moulding or the like 8 may be fastened to the receptacle 6 to serve as a shoulder to rest against the inside of the fuselage for holding the receptacle in place. Screws 9 passing through the bottom of the fuselage and into the quarter-round moulding 8 may be provided to secure the receptacle in place.

The cover 7 may be fastened in position by any suitable means which will permit ready separation when a substantial pull is exerted thereon. In Fig. 2 this means is shown as comprising several elastic bands 10 fastened at 11 to the inside of the receptacle and passing over pegs 12 formed in the edge of the cover by making slits 13 therein. Another means is shown in Fig. 6 comprising a separable fastener, the ball 14 of which is shown secured to the cover 7 and the socket 15 to a projection 16 integral with the receptacle 6.

The parachute 17 is preferably contained within a bag 18, within receptacle 6. The top of the bag is secured by means of a cord 19 to the receptacle at 20. The bottom of the bag may be provided with a plurality of slits 21. The several ends 22 thus formed being fastened together around the protruding cords 23 as shown at 24 in the dotted line position. The cords 23 are shown as folded back and forth under resilient strips 25 (Fig. 3^a) secured to the inside of cover 7, and fastened at their ends to said cover at four points 26.

On the outside of cover 7 I have shown four cords 27 (Fig. 6) attached at points directly below the aforesaid points 26, so that said last mentioned cords will be in effect continuations of the four parachute cords 23 (Fig. 5).

When in position on the aeroplane the cords 27 may be carried around the fuselage to a position convenient to the aviator, being secured as by means of an elastic cord 28 to a peg 28', the fastener 29 at the end of the cords being snapped over the elastic cord 28 or otherwise supported where it may be readily reached by the aviator.

In order that the aviator may escape from

either side of the aeroplane, duplicate cords 27' carrying a snap hook 29' may be carried around the other side of the fuselage and fastened in a similar manner to that in which
 5 cords 27 and hook 29 are fastened. If desirable, in order that one set of cords and hook will not hang in the way of the aviator when the parachute is being used, the cords 27 and 27' may be continuations of each
 10 other passing through eyelets 30 (Fig. 6) in cover 7, so that when one set is used the other will be drawn up out of the way as shown in Fig. 5, knots or the like 31 being provided in the cords so they will be properly centralized, and so that any one thereof
 15 may be pulled upon without further sliding through eyelets 30.

The aviator may be provided with a belt (Fig. 7) comprising a strap 32 adapted to
 20 fit around the body, being buckled or otherwise secured to a front plate 33 and provided with a strap 34 adapted to pass over the shoulder. Straps 35, 36 may also be attached to front plate 33 and adapted to fit
 25 around the legs of the aviator. This constitutes a belt out of which the aviator can not fall. A bail 37 may be provided on the front plate 33 to which the snap hook 29 is attached.

30 While flying the aviator may have one of the hooks 29 attached to his belt, or he may permit them to remain in their places, reaching for one when he intends to jump from the plane or anticipates a possible necessity
 35 for doing so. He will, of course, reach for the hook on the side of the fuselage from which he desires to jump.

Having the hook attached to his belt, when the aviator jumps from the plane the fastening 28 will break so that the cords 27
 40 may hang directly from the cover 7 in the bottom of the fuselage. The elastic bands 10 or separable fasteners 14-15 will obviously permit cover 7 to be readily pulled out, while the cords 27' and hook 29' on the
 45 opposite side of the fuselage will also separate therefrom and be drawn in toward cover 7 as shown in Fig. 5. A partition 38 of fabric fastened at its edges to container
 50 6, may be spread across the inside of said container, between bag 18 containing the parachute, and the cover 7 with the cords 23, the cords passing through the partition
 55 at 41 so that said cords 23 will be withdrawn from under strips 25 before the bag 18 leaves container 6.

Said partition 38 may be slit in several places 39 and held in normal position by any
 60 suitable means as, for instance, by lacing 40, so that as soon as cords 23 are drawn out from under said strips 25 the pull on the bag will cause partition 38 to open allowing the bag to be pulled out of the container 6.
 65 As soon as cord 19 reaches its full length it will check the fall of bag as shown by the

dotted line position 18', 19' in Fig. 2. The bag will then be torn open at 24 (Fig. 2) so that the parachute will be free to fall out as seen in Fig. 3. In order that the parachute
 70 will not fall in a bundle and fail to open a light cord 42 may be fastened to the top of the parachute 17 and to bag 18 as shown in Fig. 4. As soon as the parachute reaches full length the cord 42 will break. The
 75 opening of the parachute during the continuation of the fall is thus insured.

As shown in Fig. 5, the four cords 23 may be divided into several smaller cords 23^a, which in turn are shown as divided into
 80 several still smaller cords 23^b; the latter being attached to the parachute. By this method each of cords 23 controls one-fourth of the parachute. As previously pointed
 85 out each of cords 27 is in effect a continuation of one of cords 23, so that the aviator may, by pulling down on one of said cords 27, cause the parachute to tilt in a desired
 90 direction and thus glide in such direction. In this way the aviator may within reason choose a spot of landing, and thereby avoid falling into trees or upon other undesirable
 95 objects.

In order to absorb the shock produced when the parachute opens, elastic material
 43 may be used as shown in cords 27, or in
 95 any other suitable place.

Returning now to the purpose of the bag 18 and the cord 19; it has been found that
 100 where the parachute begins to unfold near the fuselage it is apt to be torn open by the propeller blast, or to be carried thereby against the tail parts of the aeroplane. By
 105 the use of the bag and cord the parachute may be dropped in a compact bundle (Fig. 11) a sufficient distance below the aeroplane to escape the propeller blast 47 and there permitted to unfold.

The cord 19 may be elastic so that after the parachute breaks away, the bag 18 may
 110 be drawn back to the fuselage. Thus, if one of several persons leaves the aeroplane, the others continuing to fly, the bag will not be left dangling and apt to foul the steering
 115 elements of the plane.

The container 6 with the parachute and all of its parts contained therein, may constitute a complete parachute unit which may
 120 readily be put in place in a manner hereinbefore described, so that when a parachute has been used a new unit may be inserted.

In Fig. 8 I have shown a modification of my invention, wherein instead of showing the parachute fitted in the bottom of the
 125 fuselage as hereinabove specified, it may be carried in any other suitable place. In this instance the bag 18^a is shown as constituting a cushion for the aviator's seat 44, fastened by means of a cord 19^a to the aeroplane, as for instance to the leg 45 of seat
 130 44. Cords 23^a are shown hooked to bail

37 of the aviator's belt. Obviously the bag may be carried under the aviator's seat or in any other place where it may readily be reached by the aviator, who would grab it by a handle 46 and jump overboard with it. As shown in Fig. 10 the bag may have a partition 38' similar to partition 38 (Figs. 2 and 9), the parachute 17 being carried in the upper compartment and cords 23 in the lower one as shown, so that cords 23 and the parachute 17 will be drawn out successively.

As shown in Fig. 12, the bag 18^b may be provided with flaps 50, 51. In such case partition 38' may be dispensed with. The pair of flaps 51 may be closed over the parachute within the bag and fastened by means of light lacing 52. The cords 23^a may be folded between outer flaps 50 and inner flaps 51 and tucked under strips attached to either pair of flaps. I have shown the strips 53 on flaps 51. Flaps 50 will close over said cords 23^a and be laced. In operation, the bag having passed without the propeller slip stream as in Fig. 11, flaps 50 will be torn open, the cords 23^a will then pay out after which the inner flaps 51 will open to permit the parachute to fall out as in Fig. 4.

In accordance with the provisions of the patent statutes, I have herein described the principle of operation of my invention, together with the apparatus, which I now consider to represent the best embodiment thereof, but I desire to have it understood that the apparatus shown is only illustrative and that the invention can be carried out by other means. Also, while it is designed to use the various features and elements in the combination and relations described, some of these may be altered and others omitted without interfering with the more general results outlined, and the invention extends to such use.

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

1. In combination, an aeroplane fuselage having an opening through the bottom, a parachute within said fuselage adjacent said opening, a cord for said parachute passing from said opening around the outside of said fuselage to a point adjacent the aviator's seat, said cord being attached to the fuselage at such point and adapted to become released in response to a predetermined strain.

2. In combination, a fuselage having an opening in the bottom thereof, a bag within said fuselage adjacent said opening, a parachute within said bag, cords for said parachute, said cords passing from adjacent said opening around the outside of the fuselage to a point adjacent the aviator's seat.

3. In combination, a container adapted to

be carried by an aircraft, a cover for said container separably fastened thereto, a bag within said container and attached thereto by a cord, a parachute within said bag, cords for said parachute, said cords being fastened to said cover, and additional cords attached to said cover and adapted to be secured to an aviator's belt.

4. In combination, a container adapted to be carried by an aircraft, a cover for said container separably fastened thereto, a bag within said container and attached thereto by a cord, a parachute within said bag, cords for said parachute, the ends of said cords being fastened to said cover, means on said cover for receiving portions of said cords, and means on said cover adapted to be attached to an aviator's belt.

5. In combination, a container adapted to be carried by an aircraft, a cover for said container separably fastened thereto, a bag within said container and attached thereto by a cord, a parachute within said bag, cords for said parachute, the ends of said cords being fastened to said cover, and resilient strips attached to said cover for tucking the slack of said cords under.

6. In combination, a parachute and cords therefor, means for containing said parachute and cords, said means having a removable cover to which said cords are fastened, and a partition in said containing means for separating said parachute from said cords for retaining the parachute within said first mentioned means while said cords are being paid out from said removable cover, said partition having an opening therethrough through which said cords extend.

7. In combination, a cushion for an aircraft seat, means adapted to suspend said cushion from the aircraft without the propeller blast thereof, and a parachute adapted to be contained within said cushion.

8. In combination, a bag, a parachute within said bag, cords for said parachute, means for holding said parachute within said bag until said cords have paid out, means for attaching the top of said parachute to said bag until said parachute has unfolded, and resilient means for attaching said bag to an aircraft for withdrawing said bag to the fuselage when the parachute is detached therefrom.

9. An aviator's belt comprising a front plate, a band attached thereto and adapted to encircle the body of the aviator, a strap attached to said band adapted to fit over the aviator's shoulder, a pair of straps attached to said plate adapted to fit around the aviator's legs, and attachment means on said plate.

10. In combination, an aeroplane fuselage having an opening through the bottom, a container for a parachute within said opening, and a resilient connection between said

container and said fuselage for tending to retain said container within said opening.

11. In combination with an aeroplane, a container for a parachute, a detachable parachute within the same for supporting an aviator, and a resilient connection between said container and said aeroplane, whereby upon release of said parachute from said container the container is withdrawn to the aeroplane.

12. In combination with an aeroplane fuselage having an opening therein, a parachute within said opening, cords secured to said parachute, connecting means extending from said cords to points on opposite sides of said fuselage, said means being so attached to the fuselage at such points as to become detached in response to strain in excess of a predetermined value.

13. In combination with an aeroplane fuselage having an opening therein, a parachute within said opening, cords secured to said parachute, extensions on said cords reaching to opposite sides of said fuselage and attached thereto, either of said extensions being adapted to become detached from the fuselage when the other thereof is brought into use, and said extensions being so interconnected that the free end of the one so detached is withdrawn to inoperative position.

14. A parachute for aircraft comprising a foldable fabric, said parachute being folded into the form of a seat cushion on which the aviator sits.

15. A parachute for aircraft comprising a foldable fabric, said parachute being fold-

ed into the form of a seat cushion on which the aviator sits and means for connecting the parachute to the aviator's body.

16. A parachute for aircraft comprising a foldable fabric, a cover in which the folded fabric is positioned to form a cushion on which the aviator sits, means for connecting the parachute to the aviator's body, and means for releasing the parachute from said cover when the aviator jumps out of the aircraft.

17. A parachute for aircraft comprising a foldable fabric, a cover in which the folded fabric is positioned to form a cushion on which the aviator sits, means for connecting the parachute to the aviator's body, means for connecting the cover to the aircraft, and means for releasing the parachute from said cover when the aviator jumps out of the aircraft.

18. A parachute for aircraft comprising a foldable fabric, a cover in which the folded fabric is positioned to form a cushion on which the aviator sits, means for connecting the parachute to the aviator's body, and means for connecting the cover to the aircraft, said means permitting the cover and parachute to drop below the slip-stream of the propeller when the aviator jumps out of the aircraft, and means for releasing the parachute from said cover when said cover and parachute have dropped below the slip-stream.

In testimony whereof I have affixed my signature.

LAWRENCE B. SPERRY.