

S. L. VAN METER, Jr.

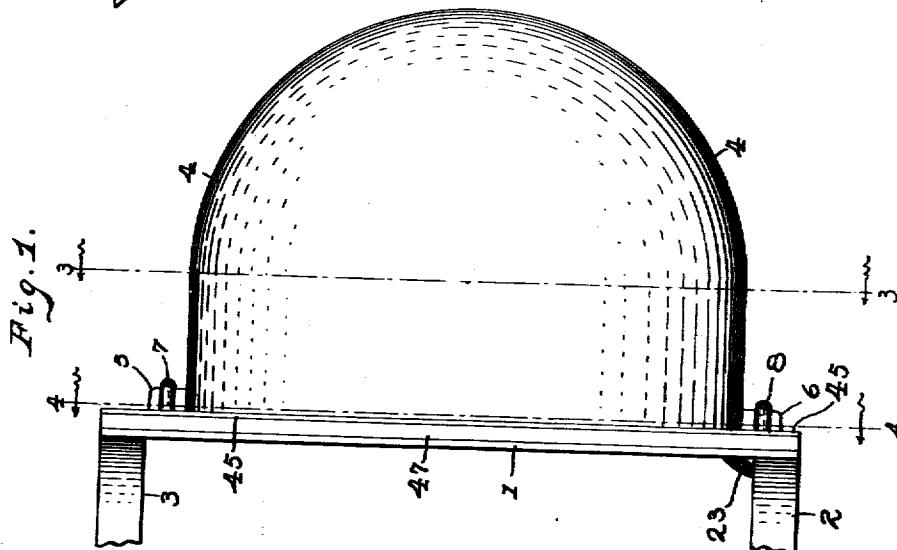
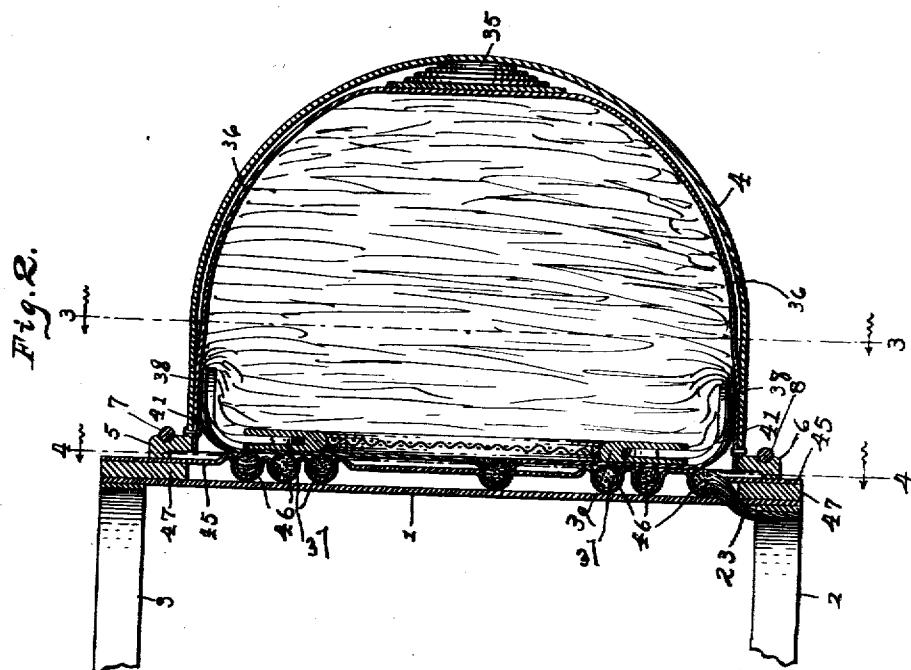
## AVIATORY LIFE BUOY.

AVIATION LIFE BOAT.

1,192,479.

Patented July 25, 1916.

4 SHEETS—SHEET 1.



Witnesses

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*Solomon. Van Metz, Jr.*  
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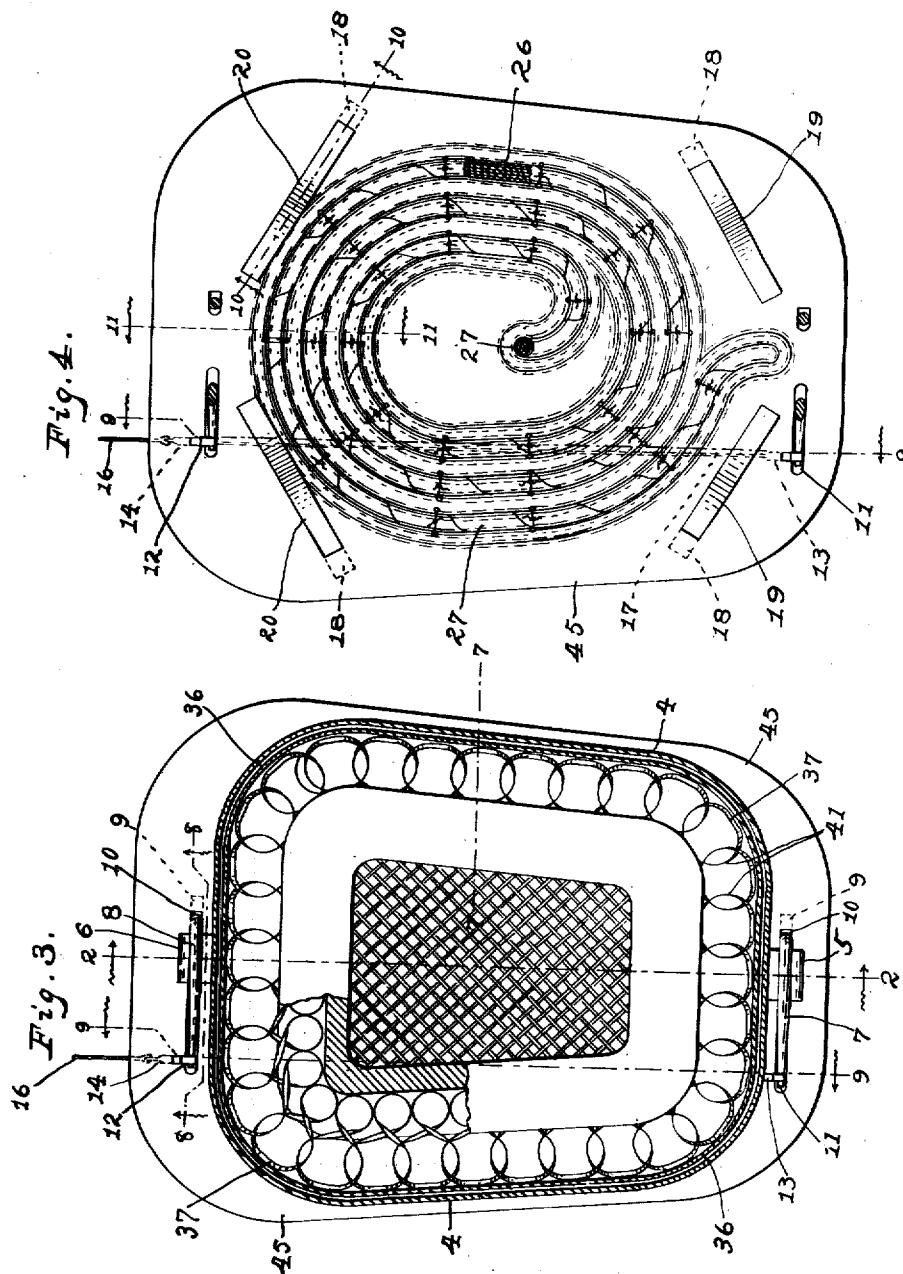
Attorneys

S. L. VAN METER, JR.  
AVIATORY LIFE BUOY.  
APPLICATION FILED MAR. 27, 1911.

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4 SHEETS—SHEET 2.



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4 SHEETS—SHEET 3.

Fig. 5.

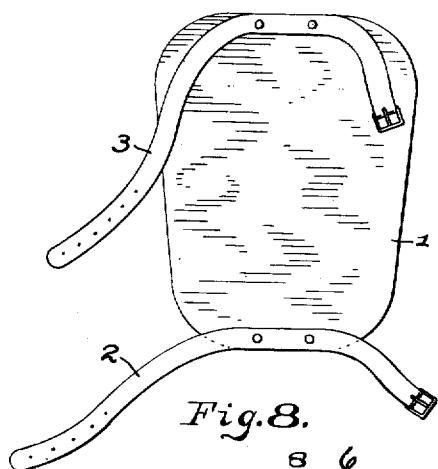


Fig. 8.

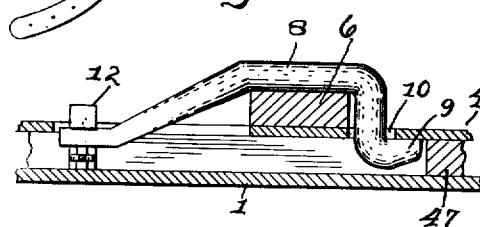


Fig. 6. 39

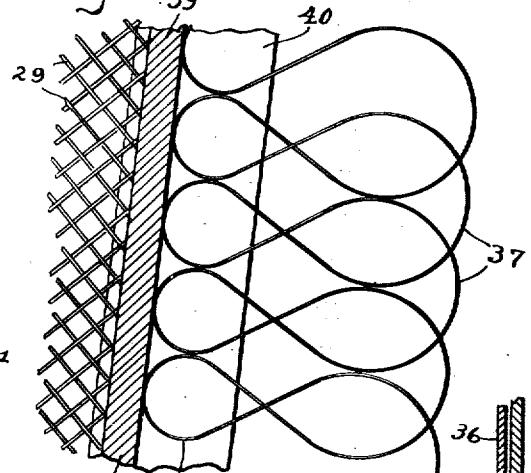


Fig. 7.

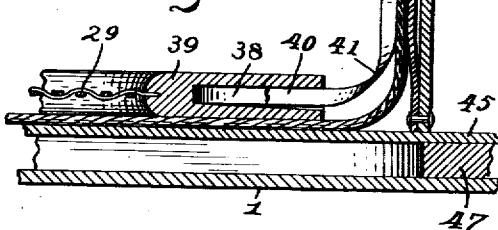


Fig. 9.

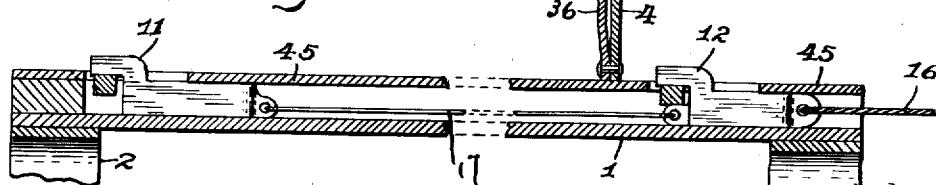


Fig. 10.

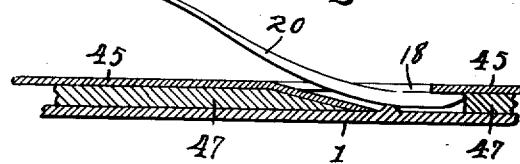
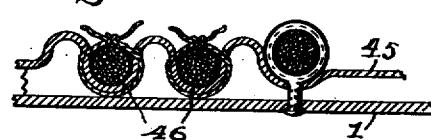


Fig. 11.



Witnesses

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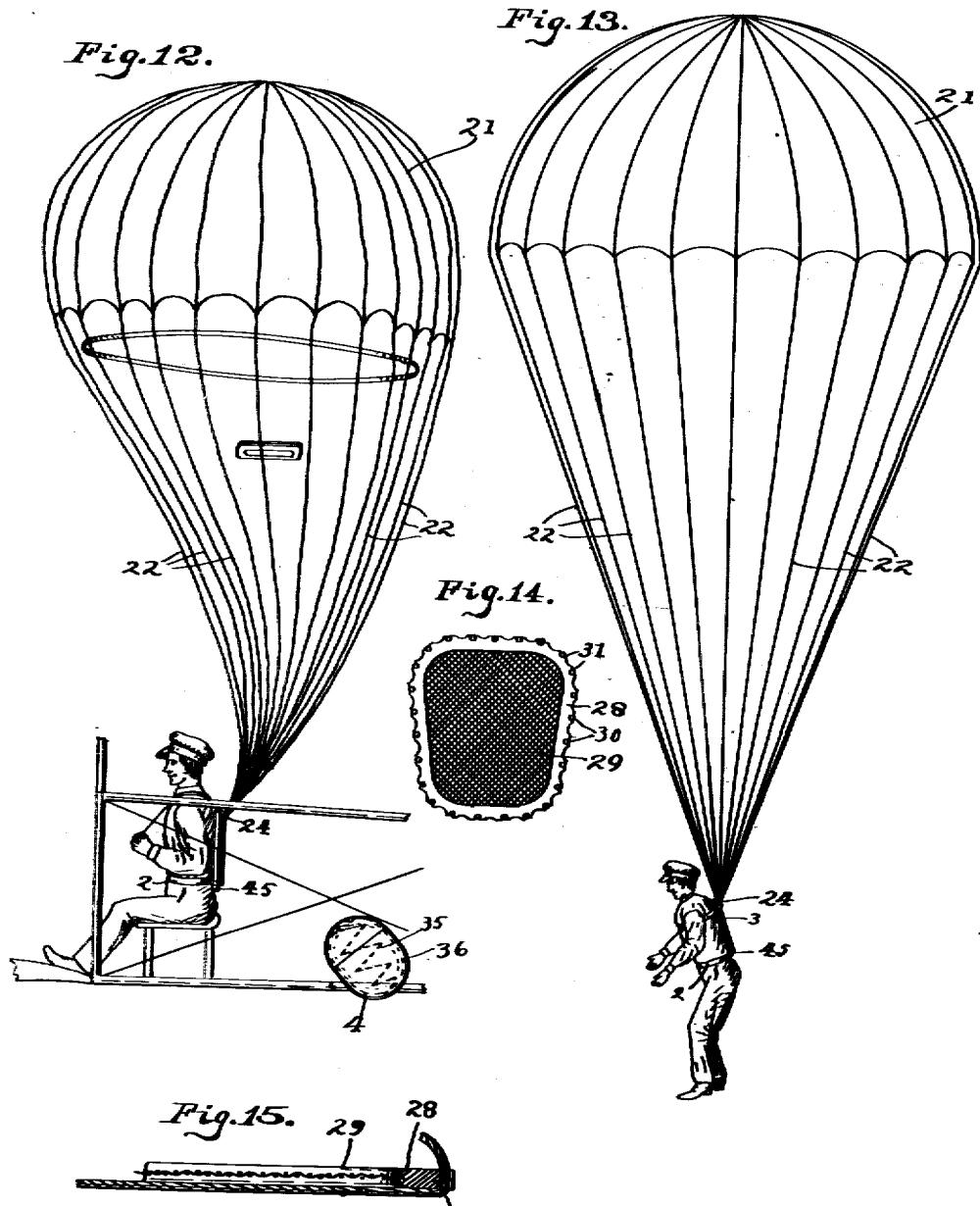
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1,192,479.

Patented July 25, 1916.  
4 SHEETS—SHEET 4.



Witnesses

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# UNITED STATES PATENT OFFICE.

SOLOMON LEE VAN METER, JR., OF LEXINGTON, KENTUCKY.

## AVIATORY LIFE-BUOY.

1,192,479.

Specification of Letters Patent.

Patented July 25, 1916.

Application filed March 27, 1911. Serial No. 617,196.

To all whom it may concern:

Be it known that I, SOLOMON L. VAN METER, Jr., a citizen of the United States, and a resident of Lexington, county of Fayette, and State of Kentucky, have invented 5 certain new and useful Improvements in Aviatory Life-Buoys, of which the following is a specification.

The object of my invention is to produce 10 a safety device for aviators which shall be capable of being put into instant use by the aviator should an accident occur to the aeroplane and adapted to sustain the aviator while falling. To accomplish the aforesaid 15 object, I provide a member in the form of a parachute adapted to sustain in the air the weight of the aviator sufficiently to retard his downward movement and insure a safe descent to earth.

With the above object in view, my invention is embodied in preferable form in the device hereinafter described and illustrated 20 in the accompanying drawings.

In these drawings, Figure 1 is a side elevation of a device with part of the attaching straps cut away; Fig. 2, a section on the line 2—2 of Fig. 3; Fig. 3, a section on the line 3—3 of Figs. 1 and 2; Fig. 4 a section on the line 4—4 of Figs. 1 and 2; Fig. 5 a 25 detail view in elevation of the inner face of the attaching plate; Fig. 6 a detail plan of part of the expanding member; Fig. 7 a detail longitudinal section on line 7—7 of Fig. 3; Fig. 8, a detail section on line 8—8 of Fig. 3; Fig. 9 a section on line 9—9 of Fig. 4; Fig. 10 a section on line 10—10 of Fig. 4; Fig. 11, a section on line 11—11 of Fig. 4; Fig. 12 a side view in elevation of the parachute in attached and partly expanded position; Fig. 13, a side view in elevation of the 30 parachute expanded with the aviator suspended therefrom; Fig. 14 a plan view of a modified form of expander and Fig. 15 a cross section of the device shown in Fig. 14.

Referring to the drawings, 1 indicates a body plate which is adapted to be secured directly to the back of the aviator by straps 2 and 3. (See Fig. 5). The plate 1 constitutes the supporting member of my apparatus.

Detachably connected to said plate is a casing for the parachute consisting of a cap 4 preferably made of aluminum. Said cap is provided with opposite terminal lugs 5 and 6 as means for effecting its detachable

connection to the plate 1. When cap 4 is assembled to the plating, lugs 5 and 6 lie closely against the plate as shown in Figs. 1 and 2 and are there confined by keepers 7 and 8. These keepers consist of detachable bars which extend over the lugs and through 55 slots formed in a plate 45 which is substantially of the shape of the plate 1 and which extends across the open end of the cap 4. Each keeper is provided with a tail piece 9 (see Figs. 3 and 8) which extends under the 60 plate 45 and which enters one of the said slots 10 in said plate 45. The end of each keeper opposite its tail piece is engaged by one of two sliding lugs or bars 11—12 working 65 in alined slots 13—14 in the plate 45. 70 The plate 45 is secured to and spaced from the main plate 1 by means of spacing blocks 47. By means of the engagement of one end of the keeper in the slot 10 and of the other end thereof, with its respective lug or catch 75 11—12, the keeper is detachably held on the body plate 1. The catch 12 is connected to the line 16 and a connecting member 17 unites the catches as shown in Fig. 9. These 80 catches serve to hold the cap 4 on the plate 1 until they are released by a pull exerted by the aviator upon the line 16. Leaf springs 19 and 20 engage at one end slots 18 formed in the plate 1 and plate 45. Their opposite 85 ends are free and bear against the inner face of the border of a frame 39 which is attached to the parachute canopy. These springs have a constant pressure against the frame 39 and when the catches 11 and 12 are released, the springs act to throw the frame 90 and canopy outward away from the plate 1. These springs thus constitute power means for casting the parachute into the air when the restraining means for such power means are released by the aviator. 95

The border member 39 constitutes part of an expander member, the central portion of which consists of a reticulated spring body 29, the object of this member being to hold the throat of the parachute expanded so 100 that it will readily catch the air when cast from the aviator.

The parachute consists of a canopy 21 and suspensory cords 22. The cords 22 converge toward a common center where they 105 pass through the plate 1 and are fixed with a screw to the reverse side of said plate and to the body straps 2 as shown at 23; (see

2  
Figs. 2 and 4.) The cords preferably pass through a ring 24 secured adjacent to the shoulder strap in order that when the parachute is thrown into service the body of the wearer may be suspended in an upright position.

In order to prevent the entanglement of the cords as the parachute is passed away from the body plate, said cords are adapted to be collected in coils indicated by 26 in Fig. 4 which are wound in convolutions 46 formed by inwardly pressed grooves in the metal plate 45. These coils are adapted to be covered by a frangible sheath of paper or similar material 27 which is tied by readily breakable crossing strips of twine. The end of the coil passes through the plate 45 and is secured to the strap 2 as before stated, and when the parachute is cast away from the plate these twines are broken. The convolute arrangement of the cords, the sheath and twines serve as shock resisting means to lessen the force of the shock applied to the body of the aviator when the parachute catches the air.

In order to assist in releasing the cap 4 from the plate and also to insure by positive means the expulsion of the parachute 21 from the cap upon the latter's release, there is employed a helical spring 35 loosely confined between the outer end of the cap 4 and the parachute. A lining 36 of textile material is preferably employed for the purpose of surrounding the parachute and enabling the same to slip easily out of the cap 4 and also to prevent entanglement of the parachute or canopy with the spring 35.

For the purpose of positively expanding or distending the throat of the parachute 40 when the same is cast from the body of the aviator, a spring 37 is provided which fits within a circumferential groove 40 in the border 39. This spring is fit in cross section and is bent into loops 38 which are confined against the side wall of the cap and is further bent at 41 to impart additional flexure to the spring and to aid in reducing it to that degree of compactness which will admit of the application over it and the parachute of the cap 4 to the frame 1. Figs. 1 and 3 show the spring in position within the cap and Fig. 6 shows the spring partly expanded, namely to horizontal position, while in Fig. 12 the spring is shown fully distended. The spring may be attached along its circumference to the edge of the parachute canopy at the throat or mouth of the latter.

In Figs. 14 and 15 a modification of the frame 39 is shown in which a peripheral plate 30 forming the border portion of the frame is provided with outwardly opening notches corresponding in number to the number of suspensory cords 22. These notches 31 are adapted to receive the various

cords and thus the frame 28 is made to perform the function not only of an expander but also of a cord distributor.

In the operation of the device, in order to put the parachute into service, the operator 70 pulls on the line 16, which releases the catches 11 and 12 from the retaining members 8 which in turn release the springs 19 and 20 permitting these springs to force the cap 4 and the parachute inclosed thereby 75 outwardly away from the plate 1 so as to cast the parachute freely into the air. When the cap 4 is thus cast into the air the spring 35 will serve to separate the parachute and cap and the confined spring 37 will spring 80 outwardly expanding the throat of the parachute so that the same will readily catch the air.

Having thus described my invention, what I claim is:

1. The combination with a parachute having a collapsible flexible body without means of rigid support for said body, a frame adapted to distend the throat of said parachute and spring means carried by said frame and operable to positively expand the parachute at the throat thereof. 85

2. The combination with a parachute of expansible means therefor, means operable to hold said expansible means normally inoperative, said holding means being automatically detachable from the parachute upon the release thereof, and means to release said holding means. 95

3. The combination with a parachute of an annular spring within said parachute at the throat thereof, an annular spring compressing member, catch means to hold the latter member in holding position and means to release said catch means. 100

4. The combination with a parachute of radially expansible means therefor, automatically detachable means to hold said expansible means compressed, means to release said holding means, means to inclose said 110 parachute when in folded condition, also automatically separable from the parachute.

5. The combination with a parachute of a radially expansible spring secured to the parachute at the throat thereof, a member 115 automatically separable from the parachute and having means to inclose said parachute when collapsed and means to hold said spring normally compressed and manually controlled means to release said member 120 from the parachute and spring.

6. The combination with a frame provided with a channel, of a collapsible parachute comprising canopy and suspensory cords secured to the frame and means for 125 detachably arranging the suspensory cords in said channel for preventing their entanglement whenever the parachute is called into service.

7. The combination with a parachute of 130

an expansible spring secured to the parachute and bent normally throughout its circumference into projecting loops and releasable means for holding the spring compressed in such looped form.

8. The combination with a parachute of a spring attached thereto, a retaining device with which said spring is engaged, said spring being normally compressed into loops 5 which engage with said device and inclose a compressing member adapted to surround said retaining device and co-acting with said loops of the spring to hold the same projected substantially vertically when the 10 spring is in compressed condition and means to release said inclosing and compressing member to permit the lateral projection of said loops and the radial expansion of the 15 spring.

9. In a safety device for aviators in combination with an aeroplane and a parachute, means for confining the parachute, means attaching the parachute to the body of the aviator, means for supporting said confining 20 means and power means mounted on the aeroplane and operatively controlled by the aviator for casting the parachute and confining means into the air.

10. In a safety device for aviators, in combination with an aeroplane and a parachute, 25

means for attaching the parachute to the body of the aviator, means for inclosing and confining the parachute, means for supporting said confining means detachably, means mounted on the aeroplane and operatively controlled by the aviator for casting the parachute and its inclosing and confining means into the air, said inclosing and confining means being automatically and bodily separable from the parachute when 30 said devices are cast into the air.

11. In a safety device for aviators, in combination with an aeroplane and a parachute, means for attaching the parachute to the body of the aviator, means for casting 35 the parachute from the aeroplane, said means being manually controlled by the aviator, and shock absorbing means between the parachute attaching means and the body of the aviator.

In witness of the foregoing I have hereunto set my hand in the presence of witnesses at Lexington in the county of Fayette, State of Kentucky, this 11th day of March, 1914.

SOLOMON LEE VAN METER, JR.

Witnesses:

WILLIAM E. ROBINSON,  
LILY S. McCANN.

an expansible spring secured to the parachute and bent normally throughout its circumference into projecting loops and releasable means for holding the spring compressed in such looped form.

8. The combination with a parachute of a spring attached thereto, a retaining device with which said spring is engaged, said spring being normally compressed into loops which engage with said device and inclose a compressing member adapted to surround said retaining device and co-acting with said loops of the spring to hold the same projected substantially vertically when the spring is in compressed condition and means to release said inclosing and compressing member to permit the lateral projection of said loops and the radial expansion of the spring.

9. In a safety device for aviators in combination with an aeroplane and a parachute, means for confining the parachute, means attaching the parachute to the body of the aviator, means for supporting said confining means and power means mounted on the aeroplane and operatively controlled by the aviator for casting the parachute and confining means into the air.

10. In a safety device for aviators, in combination with an aeroplane and a parachute,

means for attaching the parachute to the body of the aviator, means for inclosing and confining the parachute, means for supporting said confining means detachably, means mounted on the aeroplane and operatively controlled by the aviator for casting the parachute and its inclosing and confining means into the air, said inclosing and confining means being automatically and bodily separable from the parachute when said devices are cast into the air.

11. In a safety device for aviators, in combination with an aeroplane and a parachute, means for attaching the parachute to the body of the aviator, means for casting the parachute from the aeroplane, said means being manually controlled by the aviator, and shock absorbing means between the parachute attaching means and the body of the aviator.

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#### DISCLAIMER.

1,192,479.—*Solomon Lee Van Meter, jr., Lexington, Ky. AVIATORY LIFE BUOY.*  
Patent dated July 25, 1916. Disclaimer filed October 15, 1927, by the patentee.

Hereby enters this disclaimer to that part of the claim in said Letters Patent which is in the following words, to wit:

“2. The combination with a parachute of expansible means therefor, means operable to hold said expansible means normally inoperative, said holding means being automatically detachable from the parachute upon the release thereof, and means to release said holding means, except when said combination is embodied in a free type, manually operated parachute apparatus carried on the person of the user and sometimes referred to as a parachute pack of the ‘jump’ type.”

[Official Gazette November 1, 1927.]

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[*Official Gazette November 1, 1927.*]

EXTENSION OF PATENT.

Patent No. 1,192,479

Granted July 25, 1916.

SOLOMON LEE VAN METER, JR.

The above entitled patent has been extended, under the provisions of the Act of May 31, 1928, for eight years, five months and twenty-one days from the expiration of the original term thereof.

*Thomas E. Robertson*

Commissioner of Patents.

July 3, 1929.