

June 2, 1953

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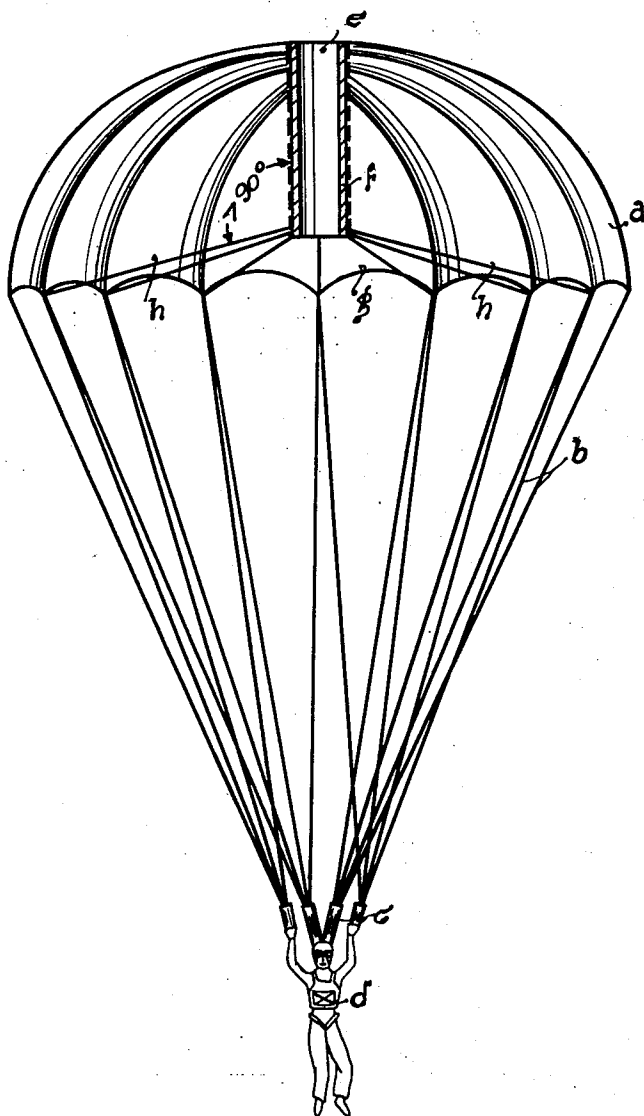
2,640,666

PARACHUTE

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2 Sheets-Sheet 1

Fig. 1



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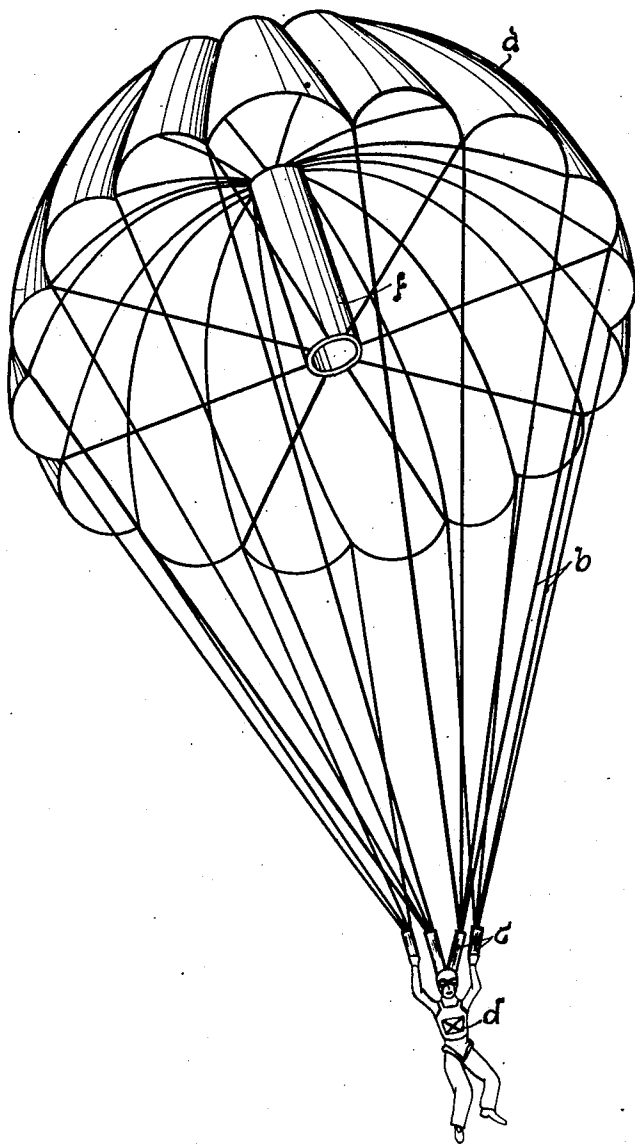
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FIG. 2



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UNITED STATES PATENT OFFICE

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PARACHUTE

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3 Claims. (Cl. 244-145)

1

The present invention relates to parachutes and essentially has for its object to provide certain new and useful improvements in the construction and operation of such devices.

It is well known that the efficiency of parachutes heretofore constructed largely depends on the distance of fall of the body suspended from the cordage thereof, in order to completely unfold its cloth and to permit its being filled with air in order to oppose an adequate resistance to the descent.

Thus, up to the present, the use of parachutes was conditioned by a minimum limit of height so as to permit the descent at a speed adapted to provide for a degree of safety sufficient to avoid accidents to the user. In the case of parachutes so far constructed and known, the said minimum limit of height is considerably great and, thus, so far all attempts made to use a parachute at relatively small heights from the ground turned out to be of fatal consequences to the user.

It is one object of the present invention to provide an improvement in parachutes of the known type, whereby it is possible to attain a quicker filling with air, and display of the cloth envelop, thus permitting the safe use of the parachute at relatively small heights from the ground. So far, this could not be attained due to the unavoidable loss of air through the central opening of the envelop, which loss of air, during the initial moment of descent, reaches almost 100% of the amount of air admitted into the envelop, and such a loss of air being reduced to a reasonable amount only at a moment when the parachute is completely displayed and operating under full load. During that lapse of time when the percentage of loss of air is too high so as to permit the cloth envelop to exert its retaining effect, the body of the user will have traversed a distance at continued increasing speed in accordance with the well known principle of gravity, as given by the equation:

$$s = \frac{1}{2} g \times t^2$$

Another object of the invention is to provide improvements in parachutes whereby it is possible to avoid lateral displacements thereof, thus permitting the user to land safely within very small areas.

The invention has been illustrated on the appended drawings showing by way of example two preferred forms of realization thereof.

Fig. 1 is a diagrammatic view of the general arrangement;

2

Fig. 2 illustrates a parachute in unfolded, or displayed, condition, provided with the improvement according to the invention.

As will be seen on the drawings, *a* denotes the cloth envelop of a parachute of known type, *b* being the cordage connected to said envelop and carrying the belting *c* fixed to the body of the user *d*. As is represented on the drawings, the cloth envelop *a* is formed with a central aperture *e* around which a flexible tubular member *f* is secured to the envelop. This member *f* extends axially from the inside of the envelop *a* and may be made of the same material of the latter (preferably silk cloth), the tubular member extending from the dome of the envelop in its unfolded and displayed condition up to a point near the plane of its free edge. At its lower free edge the tubular member *f* is provided with a reinforcing rim *g* (Fig. 2) made of any adequate material, either flexible or rigid, to which rim is secured a plurality of cords *h*, the other ends of which are secured to the free edge of the envelop *a* at the connecting points of cordage *b*. It is not necessary that the number of cords *h* be equal to the number of cords *b*; it being sufficient to provide the former in a symmetrical number adapted to hold the reinforcing rim *g* of the flexible tubular member *f* in centered position with respect to the dome of the displayed envelop *a*.

The principle and operation of the improvement as described will be explained as follows:

When the user attached to the improved parachute according to the invention jumps into the air, the central aperture *e* is at that time closed by the member *f* still in the folded condition. When the envelop *a* is being unfolded by the pressure of air the latter still presses the tubular member *f* against the aperture *e*, keeping it closed until further air gaining access to the interior of said envelop will display the same after a very short time until assuming its fully extended condition, whereupon the weight of the user *d* suspended from the cordage *b* will cause stretching thereof. At the same time, through the displaying effect of the envelop *a*, the free edge of the latter will exert a pull on cords *h* which consequently will straighten out the flexible tubular member *f*, holding it in its correct coaxial position as shown in the drawings, in a way similar to the draft of an umbrella. Once the parts of the unit have reached this stage, the parachute will descend at moderate speed and a certain proportion of the air enclosed within its envelop, passing into the mouth *g* of mem-

3

ber *f*, traverses the latter escaping to the atmosphere through the central aperture *e*. Thus, the flexible member *f* at first acts as a closing valve and thereupon as a channel for the escape of air.

The flow of air escaping during the descent from the aperture *e* at the top of the envelop *a* functions so as to permit the descent in a smooth and steady fall, avoiding oscillations and excessive lateral movements of the parachute, enabling the user to land precisely within relatively small areas.

It is evident that the flexible tubular member *f* may be given any desired cross-sectional shape, either polygonal, circular, etc.

Evidently, the most prominent feature of the present invention resides in the fact that the same provides for the possibility of making use of a parachute at substantially reduced heights from the ground, and thereby may be considered an important improvement from the point of view of the safety factor in air navigation.

Having thus fully described and ascertained the nature of my invention and the manner in which the same is to be performed and carried into practice, I claim:

1. In a parachute comprising a canopy having a central aperture, a suspended harness and suspending cords connecting said harness to the outer edge of the canopy, in combination, a collapsible tubular member of substantially the same diameter as said aperture, open at both ends and having one edge fixedly secured to the inner surface of the canopy coaxially with and around said aperture; and radially extending centering cords, each secured with one end to the other edge of said tubular member and with the other end to the outer edge of the canopy and being of such length as to be tensioned only in completely opened position of said canopy whereby said tubular member is straightened and takes the shape of an open tube extending at a right angle to a plane passing through the outer edge of the displayed canopy, said tubular member being of such length as to have the edge to which said centering cords are secured spaced a short distance from said plane in opened position of the canopy.

2. In a parachute comprising a canopy having a central aperture, a suspended harness and suspending cords connecting said harness to the outer edge of the canopy, in combination, a collapsible tubular member of cylindrical cross section

4

of substantially the same diameter as said aperture, open at both ends and having one edge fixedly secured to the inner surface of the canopy coaxially with and around said aperture; and radially extending centering cords, each secured with one end to the other edge of said tubular member and with the other end to the outer edge of the canopy and being of such length as to be tensioned only in completely opened position of said canopy whereby said tubular member is straightened and takes the shape of an open tube extending at a right angle to a plane passing through the outer edge of the displayed canopy, said tubular member being of such length as to have the edge to which said centering cords are secured spaced a short distance from said plane in opened position of the canopy.

3. In a parachute comprising a canopy having a central aperture, a suspended harness and suspending cords connecting said harness to the outer edge of the canopy, in combination, a collapsible tubular member of substantially the same diameter as said aperture, open at both ends and having one edge fixedly secured to the inner surface of the canopy coaxially with and around said aperture; and radially extending centering cords, each secured with one end to the other edge of said tubular member and with the other end to the outer edge of the canopy spaced at substantially equal distances about the periphery of the canopy and being of such length as to be tensioned only in completely opened position of said canopy whereby said tubular member is straightened and takes the shape of an open tube extending at a right angle to a plane passing through the outer edge of the displayed canopy, said tubular member being of such length as to have the edge to which said centering cords are secured spaced a short distance from said plane in opened position of the canopy.

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References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,777,934	Owens	Oct. 7, 1930
2,196,947	Swofford	Apr. 9, 1940

FOREIGN PATENTS

Number	Country	Date
816,097	France	Apr. 26, 1937
874,033	France	Apr. 13, 1942