Jan. 23, 1934. E. E. SABIN 1,944,467

GAS BAG ENVELOPE FOR AIRCRAFT

Filed Oct. 29, 1931

Fig. 1.

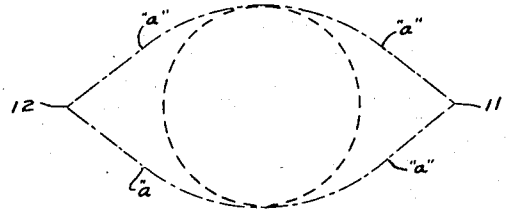


Fig. 2.

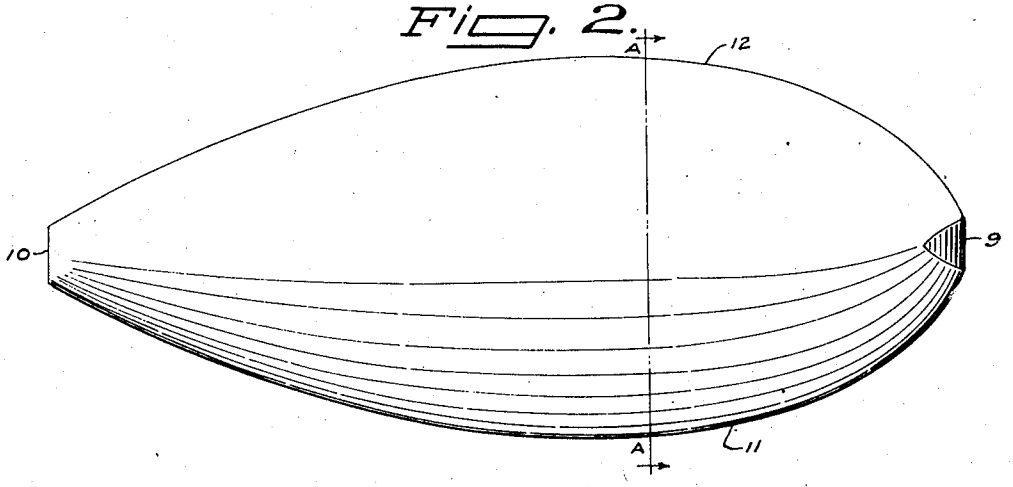


Fig. 3.

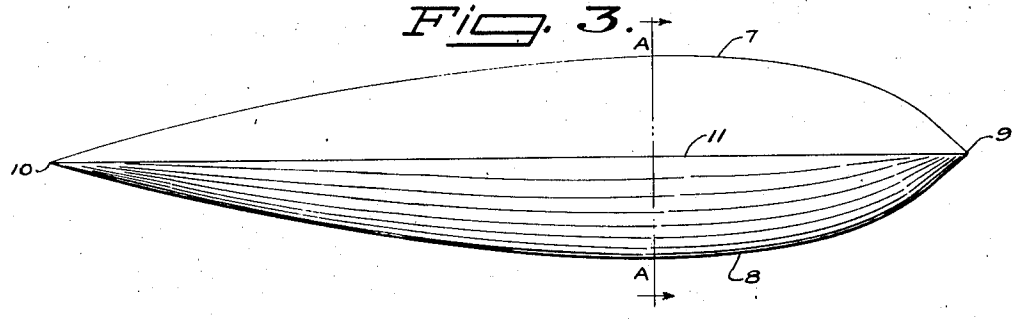
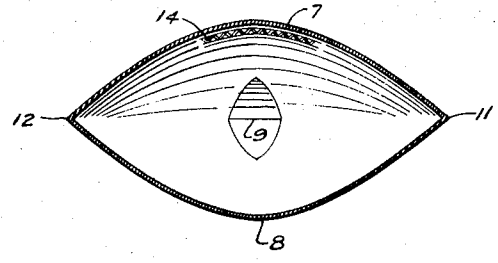


Fig. 4.



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GAS BAG ENVELOPE FOR AIRCRAFT

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3 Claims. (Cl. 244—3)

This invention relates to a new and improved gas bag envelope for aircraft and has for its primary object to improve the shape of the envelope into such a form as will give it greater lifting power, decrease the resistance against the envelope, and also, make it easier to control.

The present types of gas bag envelopes in use are all more or less round and oblong in form, with the result that they offer great resistance to speed, are easily blown from their course and are very unstable.

It is therefore the specific object of the present invention to increase the relative width of envelope in proportion to the height and to form the lateral sides into a sharp edge along the central longitudinal horizontal plane thereof and to thereby increase the horizontal plane in such a manner as to give the envelope increased lifting power and at the same time decrease the side resistance that the envelope is subjected to.

The invention possesses various other objects and features of advantage, some of which, with the foregoing, will be made manifest in the following description of the preferred form of the invention that is illustrated in the drawing accompanying and forming part of the specification.

It is to be understood that it is not intended to limit the invention to the exact embodiment shown by said drawing and description as variations may be adapted within the fundamental principle of the invention as set forth in the claims.

In the accompanying drawing:

Figure 1 is a diagrammatic end view illustrating the general end form of the present types of gas bag envelopes and shows the new features that have been added to increase their lifting power and stability.

Figure 2 is a top plan view of the improved gas bag envelope and shows the preferred form of same on a horizontal plane.

Figure 3 is a side elevational view of the envelope and illustrates its approximate proportionate height relative to the width as shown in Figure 2.

Figure 4 is a transverse sectional view taken on lines A—A of Figures 2 and 3, looking in direction of the arrows.

Referring in detail to the different portions of the envelope wherein like reference numerals designate like portions throughout the several views, the numeral 7 designates the top and 8 the bottom of the improved envelope. It will be noted that the envelope has a considerably greater width than height and that the top and bottom are curved both longitudinally and transversely. The numeral 9 designates the bow of the envelope and the numeral 10 designates the stern. The top 7 is longitudinally curved downwardly toward the bow and also toward the stern and the bottom 8 is likewise curved upwardly toward the bow and stern, both of the longitudinal curved portions of the top and bottom ending at a sharp edge at the bow and stern as shown in Figure 3. It will be noted that the top and bottom rearward curving tapers more gradually than the forward. This construction is provided to enable the envelope to pass through the air with less resistance on the top and bottom. Likewise the sides are curved inwardly toward the bow and stern and terminate in a horizontal sharp edge as shown in Figure 2. The forming the bow of the envelope with a horizontal sharp edge assists the craft to climb when the bow is tilted upward when travelling against a head wind and will cause the craft to climb above the wind zone.

As hereinbefore stated, one of the objects of the invention is to increase the relative width of the envelope in proportion to the height and to form the lateral sides into a sharp edge along the central longitudinal horizontal plane thereof. In Figure 1 there is illustrated, in dotted lines, the approximate outline of the form of the present type of gas bag envelope, taken transversely through the mid-section, which is generally circular in form. The dot and dash lines illustrate the improved construction that has been added to decrease the resistance against the sides of the envelope, and consists in tapering the sides downwardly to sharp edges 11 and 12 that extend longitudinally along the horizontal center of the envelope from the bow to the stern. It will be noted that the top and bottom surfaces both curve to a point as designated by "a" and then taper straight to a sharp edge on each side of the envelope. This construction reduces the resistance caused by the wind blowing against either side to a minimum, and also, enables the envelope to be horizontally turned, in either direction, with greater ease.

Another advantage in constructing the envelope in a transverse oblong form is that it enables the envelope to maintain equal, or even a greater lifting power, with a much shorter length and thereby reduces the side areas that are often subjected to high wind pressures, with the result that the total amount of resistance applied against the sides is greatly reduced. A still

further advantage in constructing the envelope in a transverse oblong form with downwardly tapering sides is that it increases its stability and buoyancy. They have attempted to stabilize dirigibles in the past by providing stabilizers on the dirigible, which not only adds to the cost of construction but does not increase the buoyancy in any way. The present construction of the envelope not only eliminates the necessity of adding stabilizers but stabilizes itself in the most efficient manner, and at the same time increases its buoyancy. The envelope is supported and held in its proper form by any suitable standard framework, the numeral 14 designating framework that can be constructed to extend around the inner periphery of the envelope in any suitable manner.

Having thus illustrated a certain form of construction pertaining to the invention, it is to be understood that the envelope may be built up in any suitable size and manner, the present illustration not being utilized as indicating the exact and only form in which the envelope can be made, as it is desired to include in this application for Letters Patent of the United States of America any and all patentable novelty that exists in the illustration and description disclosed and all that comes within the fundamental principle of the invention as set forth in the claims hereinafter mentioned.

What is claimed:

1. An aircraft gas bag envelope of less height than width and convex longitudinally and transversely at both its top and bottom, said envelope being curvilinearly tapered both forwardly and rearwardly, and being curvilinearly tapered transversely from a central vertical longitudinal plane toward a substantially central horizontal longitudinal plane, providing sharp curved edges at the juncture of said top and bottom, the bow and the stern of the envelope being each provided with a sharp transversely elongated edge disposed at said horizontal plane, said transverse curvilinear taper being merged near said horizontal plane into a straight-line taper which extends to said horizontal plane, providing sharp edges at the juncture of said top and bottom.

2. An aircraft gas bag envelope of less height than width and convex longitudinally and transversely at both its top and bottom, said envelope being curvilinearly tapered both forwardly and rearwardly, and being curvilinearly tapered transversely from a central vertical longitudinal plane toward a substantially central horizontal longitudinal plane, providing sharp curved edges at the juncture of said top and bottom, the bow and stern of the envelope being each provided with a sharp transversely elongated edge disposed at said horizontal plane, the forward and transverse curvilinear tapers of the envelope being merged near said horizontal plane into stranght-line tapers which extend to said horizontal plane, providing sharp edges at the juncture of said top and bottom.

3. An aircraft gas bag envelope of less height than width and convex longitudinally and transversely at both its top and bottom, said envelope being curvilinearly tapered both forwardly and rearwardly, said forward taper being relatively short and said rearward taper relatively long, and being curvilinearly tapered transversely from a central vertical longitudinal plane toward a substantially central horizontal longitudinal plane, providing sharp curved edges at the juncture of said top and bottom, the bow and stern of the envelope being each provided with a sharp transversely elongated edge disposed at said horizontal plane, the forward and transverse curvilinear tapers of the envelope being merged near said horizontal plane into straight-line tapers which extend to said horizontal plane, providing sharp edges at the juncture of said top and bottom.

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