No. 888,220. PATENTED MAY 19, 1908.

J. C. BURNELL.

ADVERTISING AND OTHER AIR SHIP.

APPLICATION FILED JUNE 13, 1907.

Fig. 1.

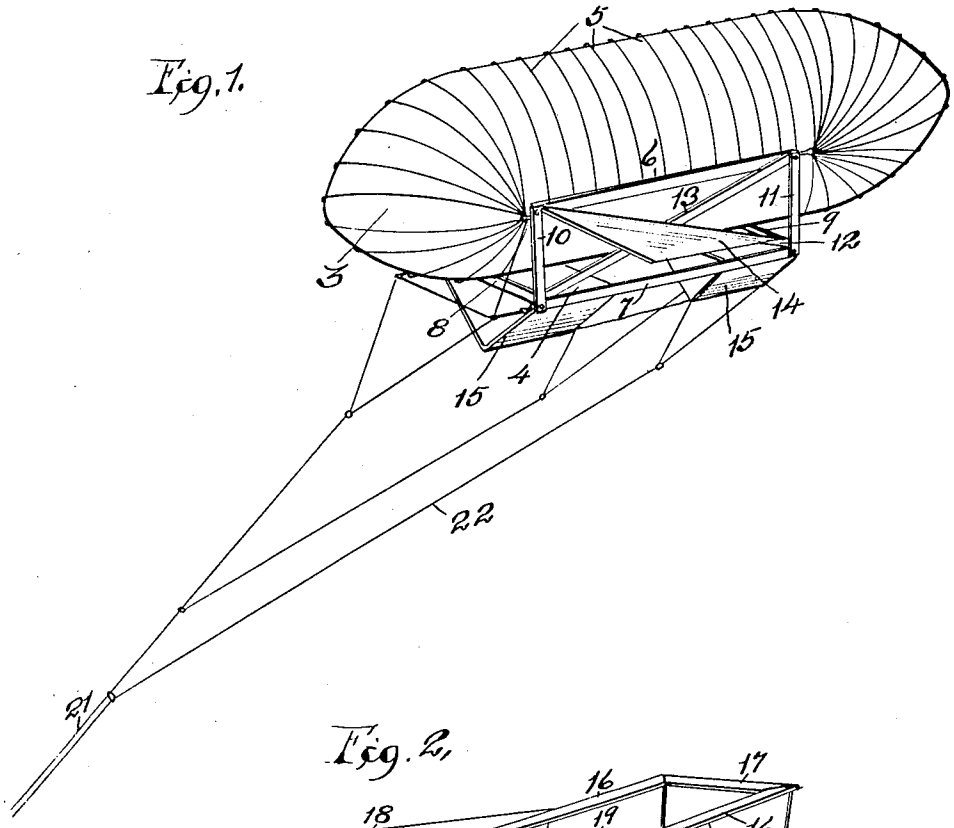


Fig. 2.

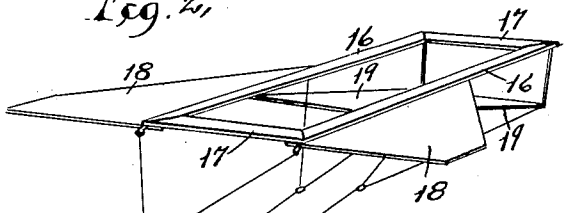
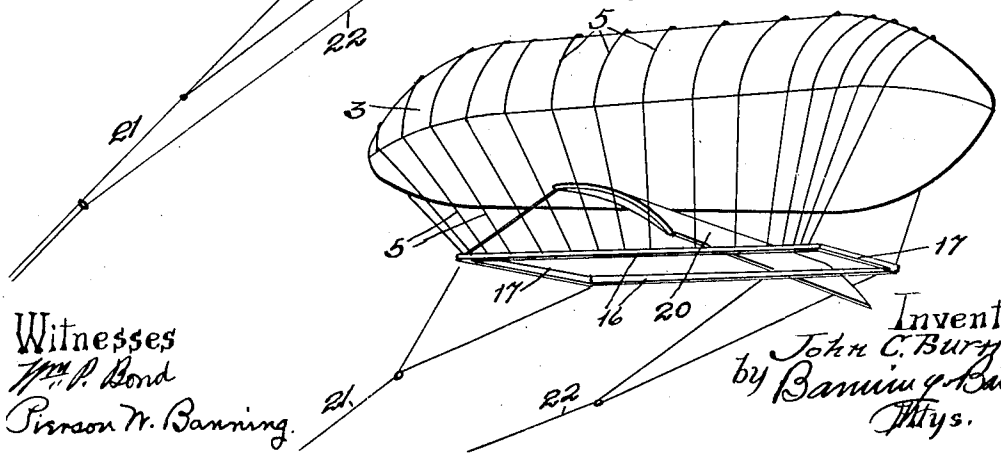


Fig. 3.



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UNITED STATES PATENT OFFICE.

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ADVERTISING AND OTHER AIR-SHIP.

No. 888,220. Specification of Letters Patent. Patented May 19, 1908.

Application filed June 13, 1907. Serial No. 378,828.

To all whom it may concern:

Be it known that I, JOHN C. BURNELL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Advertising and other Air-Ships, of which the following is a specification.

It has been customary for a long time to display advertisements by means of kites adapted to be sailed above the ground, to the string or line of which the advertisement is ordinarily attached. Inflated balloons or air ships have also been used for a similar purpose, and secured by means of cords or lines similar to those employed in flying kites. As is well understood, the tendency of a kite, by reason of the angle at which it is suspended, is to rise under the impetus of a strong wind, so that the angle of the line or cord with the ground will more nearly approach the perpendicular. With regard to balloons or air ships, secured by a line or cord, the reverse is true, and the stronger the wind the greater will be the tendency to fall, so that the line will more nearly approach the horizontal.

The object of the present invention is to provide planes or wings, so secured and adjusted to the balloon or air ship that this tendency to fall will be counteracted and a position of equilibrium established.

The present invention is, in effect, a combination of a kite and air ship, and has the distinct advantage of being able to soar, either in a calm or in a wind, so that its field of usefulness will be greatly increased, whereby it will be enabled to serve as an advertising device, under many conditions which preclude the use of kites for that purpose.

The invention consists in the features of construction and combination of parts hereinafter described and claimed.

In the drawings, Figure 1 is a perspective view of the entire device, showing one form of construction; Fig. 2 a perspective view of the frame of another form of construction; and Fig. 3 a perspective view of a third modification.

The air ship comprises a balloon or bag 3, of horizontal elongated formation, which balloon or bag is secured to a frame 4, by means of a network of cables 5, or in any other suitable manner. The frame of Fig. 1 comprises upper side rails 6, which embrace the sides of the plane body, lower side rails 7, which lie below the plane body, and front and rear cross rails 8 and 9, respectively. The frame also comprises front and rear uprights 10 and 11, respectively, which include the ends of the upper and lower side rails; and, in order to secure rigidity, diagonal braces 12 and 13 are employed. To one of the brace rails, on each side, is secured a wing or plane 14, which is set in diagonal relation with respect to the elongated balloon or body, rising from rear to front and adapted to receive the impetus of the wind and cause the balloon to rise. In addition to the diagonal side planes 14, the frame has secured thereto, immediately below the frame, a pair of triangular open end boxes 15, of the well known Conyne-kite formation, which serve to steady the air ship and keep it more nearly in horizontal position.

The particular shape of the steadying planes, however, can be changed, more or less, without departing from the spirit or object of the invention. In Fig. 2, in place of a somewhat complicated frame heretofore described, is employed a rectangular frame, comprising single side rails 16, to which the balloon body is secured, and connecting end rails 17. To the sides of the frame are secured outwardly extending steadying wings 18, and depending from the frame is a lifting plane 19, set at substantially the same angle as the wings or planes 14, in the first described construction. The function of the diagonally disposed lifting plane 19 is the same function as that of the diagonally disposed wings or planes 14, and the function of the horizontal steadying wings 18 is substantially the same function as that of the triangular boxes of the first described construction.

It is apparent, furthermore, that the lifting wings or planes might be secured at points other than those heretofore described, and at the same time perform the intended function of counteracting the tendency of the wing to depress the balloon. Fig. 3 shows another method of attaching the lifting plane. In Fig. 3 the lifting plane 20 is secured to the upper side of the frame rather than to the lower side as in Fig. 2, and the plane itself is of concavo-convex formation, its forward edge being elevated considerably above its rear edge, which latter is attached to the frame. In this form of construction, the curved formation of the plane serves to bring the point of the greatest lifting impetus

immediately forward of the rear edge, at which point the angle of the elevation of the plane, with respect to the frame, is greatest.

The balloon of any one of the several forms is supported by means of a main cord or line 21, secured to the forward end of the air ship, and an adjusting cord or line 22, secured near the rear end of the air ship, which adjusting cord permits the elevation of the balloon or gas bag to be regulated, more or less, depending upon the velocity of the wind and other wind conditions.

In use, on a calm day, the tendency of the air ship will be to rise directly from the ground, and in these circumstances the aeroplanes perform no function whatever. If, however, a wind should rise, the method of securing the lines to the air ship will hold the latter pointed into the wind, by reason of its elongated formation. The wind pressure on the gas bag, however, will tend to force the line down and decrease the angle of elevation, and this tendency will be proportionate to the velocity of the wind. This tendency to fall, however, will be counteracted by the action of the lifting planes or wings, which, by reason of the angle at which they are set, will exert a tendency to raise the air ship, which will be proportionate to the velocity of the wind, and these two forces, the balloon force and the kite force, acting in opposition to each other, will hold the air ship in substantial equilibrium.

In the construction of Fig. 1, the triangular boxes tend to hold the gas bag in level position and allow the wind to rush through the boxes, but as soon as the air ship moves from its horizontal position the wind, striking upon the sides of the boxes, will exert a pressure tending to force the air ship back into a steady horizontal position. The steadying planes coöperate with the lifting planes in enabling the ship to rise against the strength of the wind without pitching or rolling to an injurious extent. The steadying wings of Fig. 2 of course act in the same way as the box of Fig. 1, being normally held in edgewise relation to the wind, and increasing the pressure as soon as they are thrown out of normal position. These steadying devices, in combination with the adjusting lines, permit the ship to be flown under substantially all weather conditions, which adapts the device particularly for advertising purposes.

What I regard as new and desire to secure by Letters Patent is:

1. In an air ship of the class described, the combination of an elongated cigar shaped gas bag, a frame extending in parallel relation with respect to and beneath the gas bag and to which the gas bag is secured, a lifting plane secured to the frame and extending in diagonal relation with respect to the horizontal axis of the gas bag for counteracting the tendency of the bag to fall under wind pressure, and a line secured near the forward end of the frame, substantially as described.

2. In an air ship of the class described, the combination of an elongated cigar shaped gas bag, a longitudinally extending frame to which the gas bag is secured, a line secured to the forward end of the frame, a diagonally disposed lifting plane, secured to the frame and adapted to counteract the tendency of the gas bag to fall under wind pressure, and a steadying plane extending parallel with the axis of the gas bag and secured to the frame and normally held in edgewise relation with respect to the wind, substantially as described.

3. In an air ship of the class described, the combination of an elongated cigar shaped gas bag, a longitudinally extending frame to which the gas bag is secured, a line secured to the forward end of the frame, a diagonally disposed lifting plane, secured to the frame and adapted to counteract the tendency of the gas bag to fall under wind pressure, a steadying plane, secured to the frame and extending parallel with the axis of the gas bag and normally held in edgewise relation with respect to the wind, and an adjusting line secured to the rear end of the frame, substantially as described.

4. In an air ship of the class described, the combination of an elongated gas bag, a frame to which the gas bag is secured, a pair of diagonally disposed outwardly extending lifting planes, set at an angle, with respect to the horizontal axis of the gas bag, a pair of triangular boxes, secured to the lower side of the frame and forming, in effect, steadying planes, and a line secured at the forward end of the frame, substantially as described.

5. In an air ship of the class described, the combination of an elongated gas bag, a frame to which the gas bag is secured, a pair of diagonally disposed outwardly extending lifting planes, set at an angle, with respect to the horizontal axis of the gas bag, a pair of triangular boxes, secured to the lower side of the frame and forming, in effect, steadying planes, a line secured to the forward end of the frame, and an independently movable adjusting line secured to the rear end of the frame, substantially as described.

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Witnesses.
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